



**2021 Capitalization Rate Study
Telecommunications - Medium & Small**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Telecommunications - Medium & Small

2021 Assessment Year

Capital Structure ^[1]

Equity	30.00%
Debt	70.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	9.06%	45%
Capital Asset Pricing Model - Ex Ante ^[2]	7.38%	35%
3 Stage Dividend Discount Model - Dividends ^[3]	10.50%	10%
3 Stage Dividend Discount Model - Earnings ^[3]	9.65%	10%
Weighted Average	8.68%	100%
Selected Cost of Equity	8.68%	

Debt Cost of Capital ^[4]

		Weighting
A - Mergent's - Avg. YTM of A Rated Corporate Bonds ^[4]	2.72%	0%
Baa - Mergent's - Avg. YTM of Baa Rated Corporate Bonds ^[4]	3.16%	0%
Ba - MTDOR - Avg. YTM of Ba Rated Corporate Bonds ^[5]	6.54%	50%
B - MTDOR - Avg. YTM of Ba Rated Corporate Bonds ^[5]	7.92%	50%
Weighted Average	7.23%	100%
Selected Cost of Debt	7.23%	

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	30.00%	8.68%		8.68%	2.60%
Debt	70.00%	7.23%	24.00%	5.49%	3.85%
WACC	100.00%				6.45%
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 2021, Mergent Bond Record
- [5] Montana Department of Revenue High Yield Debt Study

MONTANA DEPARTMENT OF REVENUE

**Direct Capitalization Rate Conclusion
Industry: Telecommunications - Medium & Small
2021 Assessment Year**

Capital Structure ^[1]

Equity	30.00%
Debt	70.00%

Equity Capitalization Rate ^[2]

NOI After-tax	7.40%
GCF	41.90%

Debt Capitalization Rate ^[3]

Calculated Current Yield	5.40%
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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	30.00%	7.40%		7.40%	2.22%
Debt	70.00%	5.40%	24.00%	4.10%	2.87%
Total	100.00%				5.09%
Total (Rounded)					5.10%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	30.00%	41.90%		41.90%	12.57%
Debt	70.00%	5.40%	24.00%	4.10%	2.87%
WACC	100.00%				15.44%
Total (Rounded)					15.45%

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
2021 Assessment Year

Screening Requirements:

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

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, radio, satellite, or similar facilities.
4. Not engaged in material M&A activity.
5. Over \$100 Billion in market capitalization for Large Telecom Study.

Ticker Symbol	Headquartered /Incorporated in the U.S.	Actively traded on American exchange	Over \$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
AEY	No	NASDAQ	No	N/A	No		No	
ALSK	Yes	NASDAQ	No	Yes	Yes	No	No	[1]
AMX	No	NYSE	No	N/A	No		No	
ATNI	No	NASDAQ	No	N/A	No		No	
ATUS	Yes	NASDAQ	No	Yes	Yes		Yes	
BAND	Yes	NASDAQ	No	No	No		No	
BCE	No	NASDAQ	No	N/A	No		No	
BCOMF	No	NASDAQGS	No	N/A	No		No	
CABO	Yes	NASDAQ	No	Yes	Yes	No	No	[2]
CBB	Yes	NYSE	No	Yes	Yes	No	No	[3]
CEL	No	NYSE	No	N/A	No		No	
CHTR	Yes	NASDAQ	Yes	Yes	Yes		No	[9]
CMSA	Yes	NASDAQ	Yes	Yes	Yes		No	[9]
CNSL	Yes	NASDAQ	No	Yes	Yes		Yes	
DISH	Yes	NASDAQ	No	No	Yes		No	[7]
DTEGY	No	NASDAQ	No	N/A	No		No	
DY	Yes	NYSE	No	No	No		No	
FTRCQ	Yes	NASDAQ	No	Yes	Yes		No	[4]
GOGO	Yes	NASDAQ	No	Yes	Yes	No	No	[5]
GSAT	No	NYSE	No	N/A	No		No	
HMTV	No	NASDAQ	No	N/A	No		No	
IDT	Yes	NYSE	No	No	No		No	
IRDM	No	NASDAQ	No	N/A	No		No	
JCOM	Yes	NASDAQ	No	No	No		No	
KT	No	NYSE	No	N/A	No		No	
LBTYA	No	NASDAQ	No	N/A	No		No	
LILA	No	NASDAQ	No	N/A	No		No	
LUMN	Yes	NYSE	No	Yes	Yes		Yes	
OOMA	Yes	NYSE	No	No	No		No	
OTEL	Yes	NASDAQCM	No	Yes	Yes		No	[6]
RNET	Yes	NASDAQ	No	Yes	No		No	
SATS	Yes	NASDAQ	No	Yes	Yes		No	[7]
SHEN	Yes	NASDAQ	No	Yes	Yes	No	No	[8]
SYTA	No	NASDAQCM	No	N/A	No		No	

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies
Industry: Telecommunications - Medium & Small
2021 Assessment Year

Screening Requirements:

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4. Not engaged in material M&A activity.
5. Over \$100 Billion in market capitalization for Large Telecom Study.

Ticker Symbol	Headquartered /Incorporated in the U.S.	Actively traded on American exchange	Over \$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
T	Yes	NYSE	Yes	Yes	Yes		No	[9]
TCX	No	NASDAQGS	No	N/A	No		No	
TDS	Yes	NYSE	No	Yes	Yes		Yes	
TEF	No	NYSE	No	N/A	No		No	
TIGO	No	NASDAQ	No	N/A	No		No	
TMUS	Yes	NASDAQ	Yes	Yes	Yes		No	[9]
USM	Yes	NYSE	No	Yes	Yes		Yes	
VG	No	NASDAQ	No	N/A	No		No	
VOD	No	NASDAQ	No	N/A	No		No	
VZ	Yes	NYSE	Yes	Yes	Yes		No	[9]
WOW	Yes	NASDAQ	No	Yes	Yes		Yes	
ZM	Yes	NASDAQ	Yes	Yes	Yes		No	[7], [9]

Notes

- [1] Agreed to be acquired by ATN International Inc. after prior agreement was terminated .
- [2] Acquiring Hargray Communications to close in second quarter of 2021.
- [3] Being acquired by Macquarie Infrastructure Partners.
- [4] In Chapter 11 bankruptcy.
- [5] In December 2020 sold Commercial Aviation Business and still unranked.
- [6] In July 2020 announced agreement to be acquired by Oak Hill Capital, a private equity firm.
- [7] Primary business not consistent with other GPC.ie., satellite, broadband, cloud based.
- [8] Wireless unit being sold to T-Mobile US Inc.
- [9] Companies with a market capitalization over \$100 billion will be in the Large Telecom Cap Rate Study

Prior Year Guideline Companies

Removed CBB and SHEN for M&A
Added USM and CenturyLink (CTL became LUMN)

Greater than \$100 MM market cap

Added TMUS as a guideline Company

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure

Telecommunications - Medium & Small

2021 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	476	37.87	18,044	0	27,970	296	46,310	39%	0%	61%
CNSL	Consol. Communic.	TELUTIL	C+	79	4.89	387	0	2,011	26	2,425	16%	0%	84%
LUMN	Lumen Technologies	TELUTIL	B	1,097	9.57	10,496	0	33,512	1,784	45,792	23%	0%	77%
TDS	Telephone & Data	TELESERV	B	114	18.40	2,105	0	3,657	1,069	6,831	31%	0%	69%
USM	U.S. Cellular	TELESERV	B+	86	30.69	2,642	0	2,708	991	6,341	42%	0%	58%
WOW	WideOpenWest Inc.	CABLETV	C++	87	10.67	927	0	2,203	28	3,158	29%	0%	71%
All Companies						34,601	0	72,062	4,194	110,856	31%	0%	69%
Average											30%	0%	70%
Median											30%	0%	70%
Trimmed Average											31%	0%	69%
High											42%	0%	84%
Low											16%	0%	58%
Selected											30%		70%

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

2021 Changes to Guideline Companies

Removed CBB and SHEN for M&A

Added USM and CenturyLink (CTL became LUMN)

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

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)
Telecommunications - Medium & Small
2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	9.06%	7.38%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	1.05	1.05
$ERP =$	Equity Risk Premium ($R_m - R_f$)	7.25%	5.65%
$R_m =$	Market Rate of Return	8.70%	7.10%

Risk Free Rate Measures (R_f):

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

January 1, 2021 Page 701

Selected Yields on Taxable U.S. Treasury Securities as of 12/21/20

10-year	0.95%
30-year	1.68%

Federal Reserve Statistical Release^[2] and U.S. Department of the Treasury, Daily Treasury Yield Curve Rates^[3]

U.S. government securities, Treasury constant maturities, Nominal, December 31, 2020

10-year	0.93%
20-year	1.45%
30-year	1.65%
Risk Free Rate Selected	<u>1.45%</u>

Notes

[1] "Value Line Selection & Opinion", Value Line (January 3, 2020)

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

[3] <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/>

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)
Telecommunications - Medium & Small
2021 Assessment Year

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

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

Duff & Phelps, 2021 Cost of Capital Navigator

		<u>R_m</u> ^[4]	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP "Historical" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	8.70%	8.70%	1.45%	7.25%
ERP "Supply-side" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	7.45%	7.45%	1.45%	6.00%
Ex Post Equity Risk Premium Selected		8.70%		1.45%	7.25%

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

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

		<u>R_m</u> ^[4]	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP - <i>Ex Ante</i>		7.44%	7.44%	1.45%	5.99%

Duff & Phelps, 2021 Cost of Capital Navigator

		<u>R_m</u> ^[4]	<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, 2021)

		<u>R_m</u> ^[4]	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
Implied Premium (FCFE) - <i>Ex Ante</i>		6.17%	5.65%	0.93%	4.72%
Implied Premium (FCFE with sustainable payout) - <i>Ex Ante</i>		6.39%	5.87%	0.93%	4.94%

	<u>R_m</u> ^[4]	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
<u>Average</u>	6.67%	6.74%		5.29%
<u>Median</u>	6.39%	6.66%		5.22%
<u>High</u>	7.44%	8.00%		5.99%
<u>Low</u>	6.17%	5.65%		4.72%

Equity Risk Premium Selected

7.10%		1.45%	5.65%
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Notes

[4] R_m estimated using selected Risk Free Rate (R_f)

[4] R_m estimated using selected Risk Free Rate (R_f)

MONTANA DEPARTMENT OF REVENUE

**Support for Beta Selection in CAPM
Telecommunications - Medium & Small
2021 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	1.05
CNSL	Consol. Communic.	TELUTIL	C+	1.05
LUMN	Lumen Technologies	TELUTIL	B	1.00
TDS	Telephone & Data	TELESERV	B	1.00
USM	U.S. Cellular	TELESERV	B+	0.75
WOW	WideOpenWest Inc.	CABLETV	C++	1.45
Average				1.05
Median				1.03
Trimmed Average				1.03
High				1.45
Low				0.75
Selected				1.05

MONTANA DEPARTMENT OF REVENUE

**Inflation & Real Growth
Telecommunications - Medium & Small
2021 Assessment Year**

A	B	C	D	Nominal Growth	
				E	F
Source Description	Inflation (CPI)	Real Growth (GDP)	Nominal Growth	Low	High
Livingston Survey ^[1]	2.19%	2.21%	4.40%		
Survey of Professional Forecasters ^[2]	2.24%	2.27%	4.51%		
Congressional Budget Office ^[3]	1.90%	3.70%	5.60%		
Average	2.11%	2.73%	4.84%		
Median	2.19%	2.27%	4.46%		
High	2.24%	3.70%	5.94%		
Low	1.90%	2.21%	4.11%		
Selected	2.00%	2.50%	4.50%	4.11%	5.94%

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>
2008	210.228		1.2390	215.303		1.2021
2009	215.949	2.6%	1.2062	214.537	-0.4%	1.2064
2010	219.179	1.5%	1.1884	218.056	1.6%	1.1869
2011	225.672	2.9%	1.1542	224.939	3.1%	1.1506
2012	229.601	1.7%	1.1345	229.594	2.0%	1.1273
2013	233.049	1.5%	1.1177	232.957	1.4%	1.1110
2014	234.812	0.8%	1.1093	236.736	1.6%	1.0932
2015	236.525	0.7%	1.1013	237.017	0.1%	1.0920
2016	241.432	2.0%	1.0789	240.007	1.2%	1.0783
2017	246.524	2.1%	1.0566	245.120	2.1%	1.0559
2018	251.233	1.9%	1.0368	251.107	2.4%	1.0307
2019	256.974	2.2%	1.0136	255.657	1.8%	1.0123
2020	260.474	1.3%	1.0000	258.811	1.2%	1.0000

Notes

[1] Federal Reserve Bank of Philadelphia The Livingston Survey December 18, 2020 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 12, 2021 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] Congressional Budget Office, The Budget and Economic Outlook: 2021 to 2031, Table 2-1

<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-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

2021 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	2020 Year End Stock Price	2021 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	37.87	0.00					
CNSL	Consol. Communic.	4.89	0.00					
LUMN	Lumen Technologies	9.57	1.00	10.45%	1.04%	1.04%	11.49%	11.49%
TDS	Telephone & Data	18.40	0.70	3.80%	4.00%	5.70%	7.80%	9.50%
USM	U.S. Cellular	30.69	0.00					
WOW	WideOpenWest Inc.	10.67	0.00					
Average							9.65%	10.49%
Median							9.65%	10.49%
High							11.49%	11.49%
Low							7.80%	9.50%
Selected							9.65%	10.50%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Telecommunications - Medium & Small

2021 Assessment Year

A	B	C	D	E	F	G
Ticker	Company	End of Year Closing Stock Price	Div'ds Decl'd per sh 2021 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	37.87	0.00	0.00%	0.00	
CNSL	Consol. Communic.	4.89	0.00	0.00%	0.00	
LUMN	Lumen Technologies	9.57	1.00	10.45%	1.00	0.00%
TDS	Telephone & Data	18.40	0.70	3.80%	0.80	3.39%
USM	U.S. Cellular	30.69	0.00	0.00%	0.00	
WOW	WideOpenWest Inc.	10.67	0.00	0.00%	0.00	

A	B	C	D	E
Ticker	Company	Earnings per share 2021 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	1.60	2.55	12.36%
CNSL	Consol. Communic.	0.65	2.00	32.44%
LUMN	Lumen Technologies	1.60	1.60	0.00%
TDS	Telephone & Data	1.15	1.50	6.87%
USM	U.S. Cellular	1.60	2.00	5.74%
WOW	WideOpenWest Inc.	0.60	1.00	13.62%

Notes

[1] 5 year compound annual growth rate (CAGR) - 4 periods

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Telecommunications - Medium & Small

2021 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	37.87	0.00%	4.50%	0.00%			(37.87)	0.00	0.00	0.00	0.00	0.00
CNSL	Consol. Communic.	4.89	0.00%	4.50%	0.00%			(4.89)	0.00	0.00	0.00	0.00	0.00
LUMN	Lumen Technologies	9.57	0.00%	4.50%	10.45%	11.49%	1.04%	(9.57)	1.00	1.00	1.00	1.00	1.00
TDS	Telephone & Data	18.40	3.39%	4.50%	3.80%	7.80%	4.00%	(18.40)	0.70	0.72	0.75	0.77	0.80
USM	U.S. Cellular	30.69	0.00%	4.50%	0.00%			(30.69)	0.00	0.00	0.00	0.00	0.00
WOW	WideOpenWest Inc.	10.67	0.00%	4.50%	0.00%			(10.67)	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	37.87	12.36%	4.50%	0.00%			(37.87)	0.00	0.00	0.00	0.00	0.00
CNSL	Consol. Communic.	4.89	32.44%	4.50%	0.00%			(4.89)	0.00	0.00	0.00	0.00	0.00
LUMN	Lumen Technologies	9.57	0.00%	4.50%	10.45%	11.49%	1.04%	(9.57)	1.00	1.00	1.00	1.00	1.00
TDS	Telephone & Data	18.40	6.87%	4.50%	3.80%	9.50%	5.70%	(18.40)	0.70	0.75	0.80	0.85	0.91
USM	U.S. Cellular	30.69	5.74%	4.50%	0.00%			(30.69)	0.00	0.00	0.00	0.00	0.00
WOW	WideOpenWest Inc.	10.67	13.62%	4.50%	0.00%			(10.67)	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

2021 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
CNSL	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	1.00	1.01	1.01	1.01	1.02	1.02	1.02	1.02	1.03	1.03	1.03	1.04	1.04	1.04	1.05	1.09	1.14	1,567,954,334
TDS	0.83	0.86	0.89	0.92	0.95	0.98	1.02	1.05	1.09	1.13	1.16	1.20	1.25	1.29	1.33	1.39	1.46	1,999,956,251
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
CNSL	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	1.00	1.01	1.01	1.01	1.02	1.02	1.02	1.02	1.03	1.03	1.03	1.04	1.04	1.04	1.05	1.09	1.14	1,567,954,334
TDS	0.97	1.04	1.11	1.18	1.26	1.35	1.44	1.54	1.64	1.75	1.87	1.99	2.12	2.27	2.42	2.53	2.64	3,625,811,700
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
2021 Assessment Year**

A	B	C	D	E	F	G	H	I
Ticker	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating	Interest Coverage	Synthetic Bond Rating	Synthetic Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moody's</i>		<i>Morningstar</i>	<i>Damodaran</i>	
ATUS	Altice USA	CABLETV	B			1.43	B3	16
CNSL	Consol. Communic.	TELUTIL	C+			1.34	Caa	18
LUMN	Lumen Technologies	TELUTIL	B	Ba3	13	2.12	Ba2	12
TDS	Telephone & Data	TELESERV	B	Ba1	11	2.71	B1	14
USM	U.S. Cellular	TELESERV	B+	Ba1	11	3.23	Ba2	12
WOW	WideOpenWest Inc.	CABLETV	C++			1.17	Ca2	20
Average					12			15
Median					11			15
Trimmed Average					11			15
High						13		20
Low						11		12
Selected				Ba2	12	to	B2	15

<http://pages.stern.nyu.edu/~adamodar/>

Damodaran: Ratings, Interest Coverage Ratios and Default Spread

MONTANA DEPARTMENT OF REVENUE
Support for Direct Capitalization - Equity Capitalization Rates
Telecommunications - Medium & Small
2021 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	37.87	0.78	1.60	48.55	23.67	2.06%	4.22%	3.86	6.50	9.81	5.83	10.19%	17.16%	18,044	2,270	7.95
CNSL	Consol. Communic.	4.89	0.52	0.65	9.40	7.52	10.63%	13.29%	5.01	4.55	0.98	1.07	102.45%	93.05%	387	341	1.14
LUMN	Lumen Technologies	9.57	1.67	1.60	5.73	5.98	17.45%	16.72%	5.94	6.05	1.61	1.58	62.08%	63.23%	10,496	11,162	0.94
TDS	Telephone & Data	18.40	1.93	1.15	9.54	16.00	10.49%	6.25%	9.96	8.90	1.85	2.07	54.12%	48.36%	2,105	4,804	0.44
USM	U.S. Cellular	30.69	2.62	1.60	11.71	19.18	8.54%	5.21%	10.60	9.85	2.90	3.12	34.54%	32.10%	2,642	4,411	0.60
WOW	WideOpenWest Inc.	10.67	0.18	0.60	59.28	17.78	1.69%	5.62%	2.88	3.25	3.70	3.28	26.99%	30.46%	927	(246)	(3.77)
Average					24.04	15.02	8.48%	8.55%			3.47	2.82	48.40%	47.39%			1.22
Median					10.62	16.89	9.51%	5.94%			2.37	2.59	44.33%	40.23%			0.77
Trimmed Average					19.80	15.12	7.93%	7.59%			2.51	2.51	44.43%	43.54%			0.78
High					59.28	23.67	17.45%	16.72%			9.81	5.83	102.45%	93.05%			7.95
Low					5.73	5.98	1.69%	4.22%			0.98	1.07	10.19%	17.16%			(3.77)
Selected							7.40%						41.90%				0.80

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Telecommunications - Medium & Small

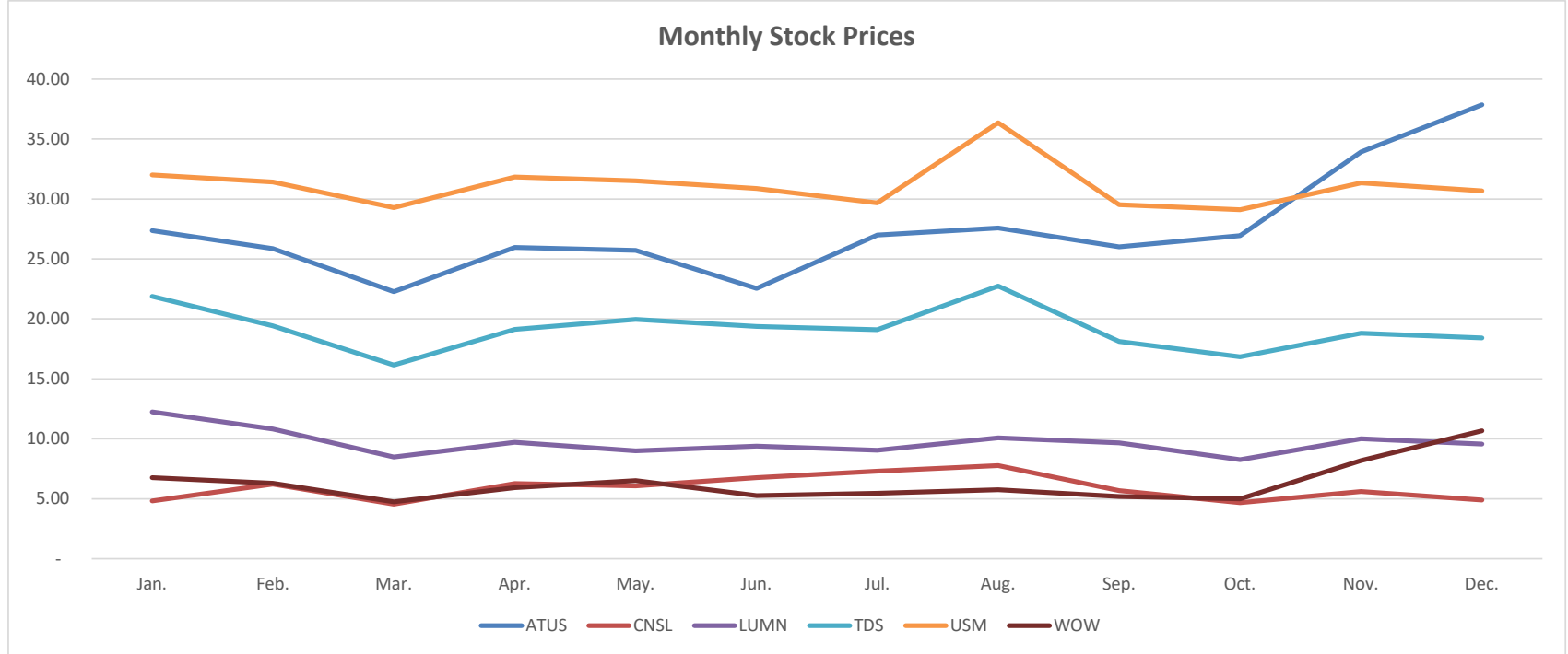
2021 Assessment Year

(\$ 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	1,353	25,961	24,420	27,970	26,722	26,966	5.02%	1.05
CNSL	Consol. Communic.	144	2,141	2,278	2,011	1,950	2,076	6.92%	1.03
LUMN	Lumen Technologies	1,668	35,959	34,694	33,512	31,837	34,736	4.80%	1.05
TDS	Telephone & Data	168	2,429	2,326	3,657	3,429	3,043	5.52%	1.07
USM	U.S. Cellular	112	1,596	1,510	2,708	2,491	2,152	5.20%	1.09
WOW	WideOpenWest Inc.	131	2,220	2,290	2,203	2,266	2,212	5.91%	0.97
All Companies		3,575			72,062	68,696	71,184	5.02%	1.05
Average								5.56%	1.04
Median								5.36%	1.05
Trimmed Average								5.41%	1.05
High								6.92%	1.09
Low								4.80%	0.97
Selected								5.40%	1.05

MONTANA DEPARTMENT OF REVENUE
Support of Stock Price - From YAHOO Finance
Telecommunications - Medium & Small
2021 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	Allice USA	27.36	25.86	22.29	25.97	25.72	22.54	26.99	27.58	26.00	26.95	33.92	37.87
CNSL	Consol. Communic.	4.83	6.22	4.55	6.27	6.06	6.77	7.30	7.78	5.69	4.67	5.60	4.89
LUMN	Lumen Technologies	12.24	10.82	8.48	9.71	8.99	9.40	9.05	10.08	9.67	8.26	10.02	9.57
TDS	Telephone & Data	21.88	19.43	16.17	19.12	19.97	19.38	19.09	22.74	18.13	16.85	18.81	18.40
USM	U.S. Cellular	32.02	31.41	29.29	31.83	31.51	30.87	29.67	36.38	29.53	29.12	31.35	30.69
WOW	WideOpenWest Inc.	6.75	6.29	4.76	5.92	6.51	5.27	5.46	5.75	5.19	4.99	8.19	10.67



MONTANA DEPARTMENT OF REVENUE

**Maintenance Capital Expenditures Estimate Based on Guideline Companies
Telecommunications - Medium & Small
2021 Assessment Year**

(\$ In Millions)

1	2		3	4	5	6	7	8	9	10	11
A	B	C	D	E	F	G	H	I	J	K	L
Ticker	Company	Inflation	PP&E, Gross Current Year	PP&E, Gross Previous Year	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	Note [1] C*H	Note [1] 1/(1+C)^H	Note [1] G*I/(1-J)	K/G
ATUS	Altice USA	2.00%	12,238	11,030	11,634	2,083	6	0.11	0.90	2,223	106.68%
CNSL	Consol. Communic.	2.00%	4,227	4,064	4,145	325	13	0.26	0.78	371	114.29%
LUMN	Lumen Technologies	2.00%	57,934	55,425	56,680	4,710	12	0.24	0.79	5,346	113.51%
TDS	Telephone & Data	2.00%	13,659	12,864	13,262	909	15	0.29	0.75	1,057	116.29%
USM	U.S. Cellular	2.00%	8,785	8,293	8,539	683	13	0.25	0.78	779	114.01%
WOW	WideOpenWest Inc.	2.00%	3,246	3,014	3,130	231	14	0.27	0.76	266	115.18%
Average											113.33%
Median											114.15%
Trimmed Average											114.25%
High											116.29%
Low											106.68%
Selected											114.00%

Notes

[1] Cornell, B. & Gerger, R. (2017). Estimating Terminal Values with Inflation: The Inputs Matter-It Is Not a Formulaic Exercise. *Business Valuation Review*, Volume 36, Number 4, 117-123.