



**2021 Capitalization Rate Study
Business Tax & Valuation Bureau
Centrally Assessed Properties**

Governor Greg Gianforte

Director Brendan Beatty

METHODOLOGY

The Business Tax and Valuation Bureau develops a capitalization rate for each centrally assessed utility industry group using the band-of-investment technique, also known as the weighted average cost of capital. The typical industry rate for each source of capital (common equity and debt) is weighted according to its proportion in the typical market capital structure for each industry to derive a weighted average direct capitalization rate for the specific industry. The rate for each of the sources of capital is taken from directly observed information in the market.

For a company in a given industry, the capitalization rate for its industry is applied directly to a corresponding estimate of the company's comparable benefit stream to derive an income indicator of value for the company.

It is important to note that the cash flow used in yield capitalization is "true", "net" or "free" cash flow and not the "gross" cash flow used in the Department's direct "gross" cash flow indicator.

The correct application of a yield capitalization rate is to use the rate for the industry to discount a stream of estimated future (free) cash flows for a company to present value. The development of a valid future cash flow stream requires considerable time and effort. Most companies choose not to spend the time and effort to develop this future cash flow stream. Therefore, in the event a company does not provide a future cash flow stream as requested in the Annual Reporting Forms, the Department normalizes "free" historical cash flows to determine a cash flow stream. The yield capitalization rate for specific industries is applied directly to this derived cash flow stream.

COMPARABLE COMPANIES

The comparable or "guideline companies" are taken from the appropriate industry group in the Value Line Investment Survey. That universe of companies is tested against several industry specific criterion to select which will be used in the study. This selection process is outlined at the beginning of each industry study.

THE RATE FOR DEBT

The measure of the rate for debt used in the direct capitalization rate is the current yield. Current yield is equal to the annual coupon rate divided by price (expressed as a percent). The measure of the cost of debt capital for the yield rate is yield to maturity. The yield to maturity is the interest rate that equates the present value of a bond's cash flow to its current price (expressed as a percent). Yield to maturity assumes that the bond will be held to maturity. If the bond is not held until maturity, or if the interim cash flows are reinvested at a rate that differs from the yield to maturity, an investor's actual yield will differ from the yield to maturity. The yield to maturity calculation equates a bond's cash flows to its current price; this yield calculation considers both coupon and income and any capital gain or loss the investor will realize by holding the bond to maturity.

Valuation theory typically requires the use of current yields (the annual coupon rate divided by price) for direct capitalization and the use of yield to maturity for yield capitalization, the two rates will generally not vary significantly for seasoned issues (except under certain circumstances) and they will be the same for new issues.

The debt rates used in yield capitalization are those reported by Mergent, Inc. Corporate bond yields are grouped according to credit rating and matched appropriately to the corresponding industries' average credit rating. In certain instances, an equivalent rating from Standard & Poor's Financial Services LLC is used in place of the Mergent, Inc. rating.

The present value of operating leases, as reported in guideline companies annual reporting forms, are included in the debt portion of the weighted average cost of capital.

THE RATE FOR PREFERRED STOCK

The measure of the rate for preferred stock used in this study is equal to the book value reported in the annual reporting forms of the guideline companies selected.

DIRECT CAPITALIZATION OF NET OPERATING PROFIT AFTER TAX (NOPAT)

Under direct capitalization of NOPAT, the measure of the rate for common equity is the price to earnings (P/E) ratio. The P/E ratio is the ratio for valuing a company that measures its current share price relative to its per-share earnings. The price to earnings ratio is sometimes known as the price multiple or the earnings multiple.

For each of the companies included in the equity portion of the industry capitalization rate data set, the Business Tax and Valuation Bureau calculates two different measures of the P/E ratio, and then calculates an industry (simple) average and median for each of these measures:

P/E (VL) Historic The end of year closing stock price as reported by Yahoo! Finance is divided by the historic earnings per share as reported in the Value Line Investment Analyzer.

P/E (VL) Projected The end of year closing stock price as reported by Yahoo! Finance is divided by the projected earnings per share as reported in the Value Line Investment Analyzer.

The cost of equity for direct capitalization is then selected according to the quality and quantity of data analyzed.

DIRECT CAPITALIZATION OF “GROSS” CASH FLOW

The Business Tax and Valuation Bureau develops another direct capitalization rate for each centrally assessed utility industry group. This direct capitalization rate is calculated like the rate for capitalizing net operating income. The only difference is that the denominator in the ratio is “gross” cash flow per share. This results in a price to cash flow ratio.

The price to cash flow ratio (P/CF) is a valuation indicator or multiple that measures the value of a stock’s price relative to its

operating cash flow per share. The ratio uses operating cash flow which adds back non-cash expenses such as depreciation and amortization to NOPAT.

For a company in a given industry, the capitalization rate for its industry is applied directly to an estimate of the company's typical "gross" cash flow to derive an income indicator of value for the company.

YIELD CAPITALIZATION OF PROJECTED FUTURE (FREE) CASH FLOWS

The Business Tax and Valuation Bureau also develops a yield capitalization rate for each centrally assessed utility industry group.

The rate for each source of capital is the "cost of capital" for each industry group. The cost of debt is the yield to maturity for debt derived from the Mergent Bond Record and matched to the set of comparable companies for each industry group. The cost of equity capital is calculated using several methods, including two variants of the dividend discount model (DDM) and two variants of the capital asset pricing model (CAPM), or a combination thereof depending on the quantity and quality of available data.

CAPITAL ASSET PRICING MODEL (CAPM)

The capital asset pricing model is a model that describes the relationship between the expected return and risk of investing in a security. It shows that the expected return on a security is equal to the risk-free return plus a risk premium, which is based on the beta of that security.

The formula for CAPM is $k_e = R_f + \beta \times ERP$ where k_e is the cost of equity, R_f is the risk-free rate, β is beta, and ERP is the equity risk premium.

The yield on a 20-year constant maturity U.S. government bond, as reported by the Federal Reserve, is used as a proxy for the risk-free rate. The 20-year maturity is selected as it matches the term used when developing the equity risk premium.

The beta used in CAPM is selected from an analysis of the betas reported for each guideline company in the Value Line Investment Analyzer.

The equity risk premium is an excess return earned by an investor when they invest in the stock market over a risk-free rate defined as the R_m (market return) less the R_f (risk-free) rate. The market return is selected based on an analysis of several independent reporting sources. These include measures calculated ex-post, which measures results after events have occurred, and ex-ante, which looks at future events based on possible predictions.

DIVIDEND DISCOUNT MODEL (DDM)

The dividend discount model (DDM) is a quantitative method used for predicting the price of a company's stock based on the theory that its present-day price is worth the sum of all its future dividend payments when discounted back to their present value. The future dividend payments are projected through five hundred years using three separate growth rates, one for each stage.

The first stage of the model encompasses the first five years of the calculation. The growth rate is the compound annual growth rate between dividends declared per share (estimated for the next year) and dividends declared per share (estimated 3-5 years in the future) as reported by the Value Line investment analyzer. This is the "short-term" growth rate.

The second stage of the model encompasses years six through twenty. The growth rate is a linear regression beginning at the short-term growth rate and regressing to a long-term growth rate as determined by the Business Tax and Valuation Bureau. The long-term growth rate used is a nominal growth rate defined as the sum of inflation and real growth in gross domestic product. Inflation and real growth figures are selected by analyzing what is reported by several widely used and available surveys and forecasts.

The third stage of the model encompasses years twenty-one through five hundred. The growth rate used is the long-term nominal growth rate described above.



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The internal rate of return is then calculated for the entire model. The model is completed using two separate measures of growth, earnings and dividends.

Properly developed and applied, yield capitalization and direct capitalization usually result in similar indicators of value.

The Centrally Assessed Property Appraisers, of the Business Tax & Valuation Bureau of the Montana Department of Revenue, produced this study. The team members include:

Doug Roehm
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**2021 Capitalization Rate Study
Scheduled Airlines - Freight**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

**Yield Capitalization Rate Conclusion
Industry: Scheduled Airlines - Freight
2021 Assessment Year**

Capital Structure ^[1]

Equity	60.00%
Debt	40.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	7.98%	45%
Capital Asset Pricing Model - Ex Ante ^[2]	6.54%	45%
3 Stage Dividend Discount Model - Dividends ^[3]	7.10%	5%
3 Stage Dividend Discount Model - Earnings ^[3]	6.85%	5%
Weighted Average	<u>7.23%</u>	100%
Selected Cost of Equity	<u>7.23%</u>	

Debt Cost of Capital

		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%	100%
Weighted Average	<u>6.54%</u>	100%
Selected Cost of Debt	<u>6.54%</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	60.00%	7.23%		7.23%	4.34%
Debt	40.00%	6.54%	24.00%	4.97%	1.99%
WACC	100.00%				6.33%
WACC (Rounded)					6.35%

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: Scheduled Airlines - Freight
2021 Assessment Year**

Capital Structure ^[1]

Equity	60.00%
Debt	40.00%

Equity Capitalization Rate ^[2]

NOI After-tax	5.80%
GCF	12.10%

Debt Capitalization Rate ^[3]

Calculated Current Yield	4.20%
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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	60.00%	5.80%		5.80%	3.48%
Debt	40.00%	4.20%	24.00%	3.19%	1.28%
Total	100.00%				4.76%
Total (Rounded)					4.80%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	60.00%	12.10%		12.10%	7.26%
Debt	40.00%	4.20%	24.00%	3.19%	1.28%
WACC	100.00%				8.54%
Total (Rounded)					8.55%

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: Scheduled Airlines - Freight

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the air transport industry.

Companies were then selected using the following screening criteria:

1. Operates primarily as a freight carrier / air cargo service.
2. Actively traded on an American exchange.
3. Headquartered / incorporated in the United States
4. No significant merger & acquisition activity during the year.

Company Ticker	Air Cargo	Actively traded on an American exchange	Headquartered in the United States	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
AAL	No						
AAWW	Yes	Yes	Yes	Yes	No	Yes	
AIRT	Yes	Yes	Yes	Yes	No	Yes	
ALGT	No						
ALK	No						
ATSG	Yes	Yes	Yes	Yes	No	Yes	
CPA	No						
DAL	No						
FDX	Yes	Yes	Yes	Yes	No	Yes	
HA	No						
JBLU	No						
LUV	No						
MESA	No						
RLGT	No						
RYAAY	No						
SAVE	No						
SKYW	No						
UAL	No						
UPS	Yes	Yes	Yes	Yes	No	Yes	
VTOL	No						

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure
Industry: Scheduled Airlines - Freight
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>					
AAWW	Atlas Air Worldwide	AIRTRANS	B	27.517	54.54	1,501	0	2,502	477	4,480	34%	0%	66%
AIRT	Air T Inc	AIRTRANS	C	2.882	24.90	72	0	86	9	167	43%	0%	57%
ATSG	Air Transport Services Grp.	AIRTRANS	B	59.560	31.34	1,867	0	1,550	69	3,485	54%	0%	46%
FDX	FedEx Corp.	AIRTRANS	A++	261.954	259.62	68,009	0	22,800	14,118	104,927	65%	0%	35%
UPS	United Parcel Serv.	AIRTRANS	A+	719.507	168.40	121,165	0	28,300	3,100	152,565	79%	0%	21%
All Companies						192,613	0	55,238	17,773	265,624	73%	0%	27%
Average											55%	0%	45%
Median											54%	0%	46%
High											79%	0%	66%
Low											34%	0%	21%
Selected											60%		40%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - No changes to guideline companies

		Median	
Current Year	54%	0%	46%
Prior Year	48%	0%	52%
2 Years Prior	48%	0%	52%
3 Year Average	50%	0%	50%

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Capital Asset Pricing Model (CAPM)
Industry: Scheduled Airlines - Freight
2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	7.98%	6.54%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	0.90	0.90
$ERP =$	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]

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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/>

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

Duff & Phelps, 2021 Cost of Capital Navigator

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

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)
Industry: Scheduled Airlines - Freight
2021 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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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)

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM
Industry: Scheduled Airlines - Freight
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>
AAWW	Atlas Air Worldwide	AIRTRANS	B	0.75
AIRT	Air T Inc	AIRTRANS	C	1.00
ATSG	Air Transport Services Grp.	AIRTRANS	B	0.75
FDX	FedEx Corp.	AIRTRANS	A++	1.10
UPS	United Parcel Serv.	AIRTRANS	A+	0.80
Average				0.88
Median				0.80
High				1.10
Low				0.75
Selected				0.90

MONTANA DEPARTMENT OF REVENUE

Inflation & Real Growth

Industry: Scheduled Airlines - Freight

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)

Industry: Scheduled Airlines - Freight

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
AAWW	Atlas Air Worldwide	54.54	0.00	0.00%				
AIRT	Air T Inc	24.90	0.00	0.00%				
ATSG	Air Transport Services Grp.	31.34	0.00	0.00%				
FDX	FedEx Corp.	259.62	2.60	1.00%	4.78%	4.62%	5.79%	5.62%
UPS	United Parcel Serv.	168.40	4.24	2.52%	5.86%	5.56%	8.38%	8.08%
Average							7.08%	6.85%
Median							7.08%	6.85%
High							8.38%	8.08%
Low							5.79%	5.62%
Selected							7.10%	6.85%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Scheduled Airlines - Freight

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>
AAWW	Atlas Air Worldwide	54.54	0.00	0.00%	0.00	
AIRT	Air T Inc	24.90	0.00	0.00%	0.00	
ATSG	Air Transport Services Grp.	31.34	0.00	0.00%	0.00	
FDX	FedEx Corp.	259.62	2.60	1.00%	3.30	6.14%
UPS	United Parcel Serv.	168.40	4.24	2.52%	5.75	7.91%

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>
AAWW	Atlas Air Worldwide	9.50	15.00	12.10%
AIRT	Air T Inc	0.00	0.00	
ATSG	Air Transport Services Grp.	1.73	0.00	
FDX	FedEx Corp.	17.80	21.85	5.26%
UPS	United Parcel Serv.	9.00	11.90	7.23%

Notes

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

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**DDM Sustainable Long Term Growth
Industry: Scheduled Airlines - Freight
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
		<i>Yahoo</i>	<i>Note [1]</i>	<i>Note [2]</i>	D_1/P_0	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
AAWW	Atlas Air Worldwide	54.54	0.00%	4.50%	0.00%			(54.54)	0.00	0.00	0.00	0.00	0.00
AIRT	Air T Inc	24.90	0.00%	4.50%	0.00%			(24.90)	0.00	0.00	0.00	0.00	0.00
ATSG	Air Transport Services Grp.	31.34	0.00%	4.50%	0.00%			(31.34)	0.00	0.00	0.00	0.00	0.00
FDX	FedEx Corp.	259.62	6.14%	4.50%	1.00%	5.79%	4.78%	(259.62)	2.60	2.76	2.93	3.11	3.30
UPS	United Parcel Serv.	168.40	7.91%	4.50%	2.52%	8.38%	5.86%	(168.40)	4.24	4.58	4.94	5.33	5.75

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
		<i>Yahoo</i>	<i>Note [1]</i>	<i>Note [2]</i>	D_1/P_0	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
AAWW	Atlas Air Worldwide	54.54	12.10%	4.50%	0.00%			(54.54)	0.00	0.00	0.00	0.00	0.00
AIRT	Air T Inc	24.90	0.00%	4.50%	0.00%			(24.90)	0.00	0.00	0.00	0.00	0.00
ATSG	Air Transport Services Grp.	31.34	0.00%	4.50%	0.00%			(31.34)	0.00	0.00	0.00	0.00	0.00
FDX	FedEx Corp.	259.62	5.26%	4.50%	1.00%	5.62%	4.62%	(259.62)	2.60	2.74	2.88	3.03	3.19
UPS	United Parcel Serv.	168.40	7.23%	4.50%	2.52%	8.08%	5.56%	(168.40)	4.24	4.55	4.88	5.23	5.61

Notes

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

[2] From worksheet: Inflation & Real Growth

MONTANA DEPARTMENT OF REVENUE

**DDM Sustainable Long Term Growth
Industry: Scheduled Airlines - Freight
2021 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
AAWW	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
AIRT	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
ATSG	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
FDX	3.50	3.71	3.93	4.17	4.42	4.69	4.97	5.27	5.59	5.93	6.29	6.66	7.07	7.49	7.94	8.30	8.68	11,909,423,202
UPS	6.19	6.67	7.18	7.73	8.33	8.97	9.66	10.40	11.20	12.06	12.98	13.98	15.06	16.21	17.46	18.25	19.07	26,173,871,102

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
AAWW	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
AIRT	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
ATSG	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
FDX	3.36	3.53	3.72	3.91	4.11	4.33	4.55	4.79	5.04	5.30	5.58	5.87	6.18	6.50	6.84	7.14	7.46	10,246,159,484
UPS	6.00	6.42	6.88	7.36	7.88	8.44	9.03	9.67	10.35	11.08	11.86	12.70	13.59	14.55	15.58	16.28	17.01	23,351,007,325

MONTANA DEPARTMENT OF REVENUE

Support for Cost of Debt Component - Yield to Maturity

Industry: Scheduled Airlines - Freight

2021 Assessment Year

A	B	C	D	E	F
Ticker	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moody's.com</i>	
AAWW	Atlas Air Worldwide	AIRTRANS	B		
AIRT	Air T Inc	AIRTRANS	C		
ATSG	Air Transport Services Grp.	AIRTRANS	B	Ba2	12
FDX	FedEx Corp.	AIRTRANS	A++	Baa2	9
UPS	United Parcel Serv.	AIRTRANS	A+	A2	6
	Average				9
	Median				9
	High				12
	Low				6
Selected				Ba1	11

MONTANA DEPARTMENT OF REVENUE
Support for Direct Capitalization - Equity Capitalization Rate
Industry: Scheduled Airlines - Freight
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
AAWW	Atlas Air Worldwide	54.54	13.53	9.50	4.03	5.74	24.81%	17.42%	15.10	22.20	3.61	2.46	27.69%	40.70%	1,501	1,792.20	0.84
AIRT	Air T Inc	24.90	(0.37)	0.00					1.84	0.00	13.53		7.39%		72	24.00	2.99
ATSG	Air Transport Services Grp.	31.34	(1.01)	1.73		18.12		5.52%	5.94	0.00	5.28		18.95%		1,867	460.30	4.06
FDX	FedEx Corp.	259.62	13.64	17.80	19.03	14.59	5.25%	6.86%	23.32	31.95	11.13	8.13	8.98%	12.31%	68,009	18,295.00	3.72
UPS	United Parcel Serv.	168.40	8.22	9.00	20.49	18.71	4.88%	5.34%	10.39	11.35	16.21	14.84	6.17%	6.74%	121,165	3,267.00	37.09
Average					14.52	14.29	11.65%	8.78%			9.95	8.47	13.84%	19.92%			9.74
Median					19.03	16.35	5.25%	6.19%			11.13	8.13	8.98%	12.31%			3.72
High					20.49	18.71	24.81%	17.42%			16.21	14.84	27.69%	40.70%			37.09
Low					4.03	5.74	4.88%	5.34%			3.61	2.46	6.17%	6.74%			0.84
Selected					17.24		5.80%				8.26		12.10%				3.60

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Industry: Scheduled Airlines - Freight

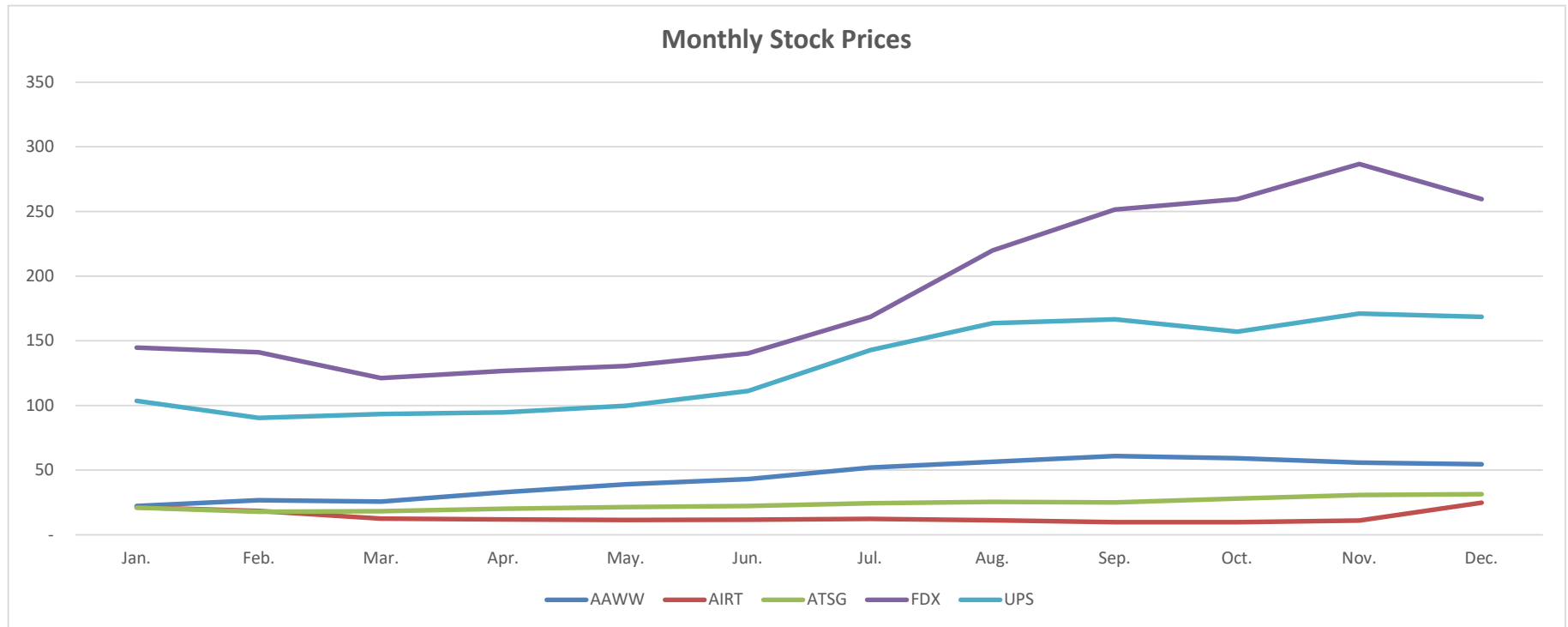
2021 Assessment Year

(\$ 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>
AAWW	Atlas Air Worldwide	115	2,464	2,381	2,502	2,319	2,483	4.62%	1.08
AIRT	Air T Inc	5	58	58	86	86	72	6.54%	1.00
ATSG	Air Transport Services Grp.	63	1,482	1,484	1,550	1,479	1,516	4.15%	1.05
FDX	FedEx Corp.	672	17,800	17,581	22,800	22,003	20,300	3.31%	1.04
UPS	United Parcel Serv.	701	26,900	25,238	28,300	24,654	27,600	2.54%	1.15
All Companies		1,555			55,238	50,541	51,971	2.99%	1.09
Average								4.23%	1.06
Median								4.15%	1.05
High								6.54%	1.15
Low								2.54%	1.00
Selected								4.20%	1.05

MONTANA DEPARTMENT OF REVENUE
Support of Stock Price - From YAHOO Finance
Industry: Scheduled Airlines - Freight
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.
AAWW	Atlas Air Worldwide	22.35	26.72	25.67	32.85	39.06	43.03	52.08	56.39	60.90	59.16	55.81	54.54
AIRT	Air T Inc	21.25	18.50	12.51	12.01	11.54	11.75	12.32	11.32	9.74	9.64	11.00	24.90
ATSG	Air Transport Services Grp.	20.97	17.90	18.28	20.24	21.54	22.27	24.37	25.42	25.06	28.04	30.74	31.34
FDX	FedEx Corp.	144.64	141.17	121.26	126.77	130.56	140.22	168.40	219.84	251.52	259.47	286.58	259.62
UPS	United Parcel Serv.	103.52	90.49	93.42	94.66	99.71	111.18	142.76	163.62	166.63	157.11	171.07	168.40



MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Scheduled Airlines - Freight

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	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year				Note [1]	Note [1]	Note [1]	
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*I/(1-J)	K/G
AAWW	Atlas Air Worldwide	2.00%	5,258	5,031	5,145	328	16	0.31	0.73	385	117.49%
AIRT	Air T Inc	2.00%	10	8	9	6	2	0.03	0.97	6	102.52%
ATSG	Air Transport Services Grp.	2.00%	3,190	2,912	3,051	310	10	0.20	0.82	345	111.15%
FDX	FedEx Corp.	2.00%	65,024	59,511	62,268	3,615	17	0.34	0.71	4,309	119.20%
UPS	United Parcel Serv.	2.00%	62,091	59,727	60,909	2,698	23	0.45	0.64	3,379	125.25%
Average											115.12%
Median											117.49%
High											125.25%
Low											102.52%
Selected											117.00%

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.



**2021 Capitalization Rate Study
Scheduled Airlines - Passenger**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

**Yield Capitalization Rate Conclusion
Industry: Scheduled Airlines - Passenger
2021 Assessment Year**

Capital Structure ^[1]

Equity	55.00%
Debt	45.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	12.69%	50%
Capital Asset Pricing Model - Ex Ante ^[2]	10.21%	50%
3 Stage Dividend Discount Model - Dividends ^[3]	nmf	0%
3 Stage Dividend Discount Model - Earnings ^[3]	nmf	0%
Weighted Average	<u>11.45%</u>	100%
Selected Cost of Equity	<u>11.45%</u>	

Debt Cost of Capital

		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]	<u>6.54%</u>	<u>100%</u>
Weighted Average	<u>6.54%</u>	100%
Selected Cost of Debt	<u>6.54%</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	55.00%	11.45%		11.45%	6.30%
Debt	45.00%	6.54%	24.00%	4.97%	2.24%
WACC	100.00%				8.53%
WACC (Rounded)					8.55%

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: Scheduled Airlines - Passenger
2021 Assessment Year**

Capital Structure ^[1]

Equity	55.00%
Debt	45.00%

Equity Capitalization Rate ^[2]

NOI After-tax	nmf
GCF	29.00%

Debt Capitalization Rate ^[3]

Calculated Current Yield	4.60%
--------------------------	--------------

NOI After-tax Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	55.00%	nmf		nmf	0.00%
Debt	45.00%	4.60%	24.00%	3.50%	1.57%
Total	100.00%				1.57%
Total (Rounded)					nmf

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	55.00%	29.00%		29.00%	15.95%
Debt	45.00%	4.60%	24.00%	3.50%	1.57%
WACC	100.00%				17.52%
Total (Rounded)					17.55%

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: Scheduled Airlines - Passenger

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the air transport industry.

Companies were then selected using the following screening criteria:

1. Operates primarily as a passenger airline.
2. Actively traded on an American exchange.
3. Headquartered / incorporated in the United States
4. No significant merger & acquisition activity during the year.

Ticker Symbol	Passenger Airline	Actively traded on an American exchange	Headquartered in the United States	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
AAL	Yes	Yes	Yes	Yes	Yes	Yes	
AAWW	No						
AIRT	No						
ALGT	Yes	Yes	Yes	Yes	Yes	Yes	
ALK	Yes	Yes	Yes	Yes	Yes	Yes	
ATSG	No						
CPA			No				
DAL	Yes	Yes	Yes	Yes	Yes	yes	
FDX	No						
HA	Yes	Yes	Yes	Yes	Yes	No	[1]
JBLU	Yes	Yes	Yes	Yes	Yes	Yes	
LUV	Yes	Yes	Yes	Yes	Yes	Yes	
MESA	Yes	Yes	Yes	Yes	Yes	Yes	
RLGT	No						
RYAAY			No				
SAVE	Yes	Yes	Yes	Yes	Yes	No	[2]
SKYW	Yes	Yes	Yes	Yes	Yes	Yes	
UAL	Yes	Yes	Yes	Yes	Yes	Yes	
UPS	No						
VTOL	No						

[1] Operates primarily in Hawaii.

[2] Bulk of flights originate from Ft. Lauderdale, FL.

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure

Industry: Scheduled Airlines - Passenger

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>					
AAL	Amer. Airlines	AIRTRANS	C+	621	15.77	9,801	0	30,454	8,428	48,683	20%	0%	80%
ALGT	Allegiant Travel	AIRTRANS	B+	16	189.24	3,105	0	1,294	117	4,516	69%	0%	31%
ALK	Alaska Air Group	AIRTRANS	B	124	52.00	6,459	0	3,611	1,558	11,628	56%	0%	44%
DAL	Delta Air Lines	AIRTRANS	B+	647	40.21	26,030	0	30,983	6,391	63,404	41%	0%	59%
JBLU	JetBlue Airways	AIRTRANS	B	316	14.54	4,595	0	4,993	865	10,453	44%	0%	56%
LUV	Southwest Airlines	AIRTRANS	B+	590	46.61	27,522	0	12,569	1,868	41,959	66%	0%	34%
MESA	Mesa Air Group Inc	AIRTRANS	C	36	6.69	238	0	757	106	1,101	22%	0%	78%
SKYW	SkyWest	AIRTRANS	B+	50	40.31	2,023	0	3,212	288	5,523	37%	0%	63%
UAL	United Airlines Hldgs.	AIRTRANS	C++	312	43.25	13,487	0	27,847	5,598	46,932	29%	0%	71%
All Companies						93,260	0	115,720	25,220	234,199	40%	0%	60%
Average											42%	0%	58%
Median											41%	0%	59%
Trimmed Average											42%	0%	58%
High											69%	0%	80%
Low											20%	0%	31%
Selected											55%	0%	45%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - No change in guideline companies

		Median	
Current Year	41%	0%	59%
Prior Year	62%	0%	38%
2 Years Prior	55%	0%	45%
3 Year Average	53%	0%	47%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Scheduled Airlines - Passenger

2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	12.69%	10.21%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	1.55	1.55
$ERP =$	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/>

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

Duff & Phelps, 2021 Cost of Capital Navigator

		R_m ^[4]	R_m	R_f	ERP
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		<u>8.70%</u>		<u>1.45%</u>	<u>7.25%</u>

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

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

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

Duff & Phelps, 2021 Cost of Capital Navigator

		R_m ^[4]	R_m	R_f	ERP
ERP "Conditional" - <i>Ex Ante</i>			8.00%	2.50%	5.50%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Scheduled Airlines - Passenger

2021 Assessment Year

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

Damodaran Implied ERP (Jan 5, 2021)

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

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM
 Industry: Scheduled Airlines - Passenger
 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>
AAL	Amer. Airlines	AIRTRANS	C+	1.65
ALGT	Allegiant Travel	AIRTRANS	B+	1.30
ALK	Alaska Air Group	AIRTRANS	B	1.50
DAL	Delta Air Lines	AIRTRANS	B+	1.55
JBLU	JetBlue Airways	AIRTRANS	B	1.65
LUV	Southwest Airlines	AIRTRANS	B+	1.10
MESA	Mesa Air Group Inc	AIRTRANS	C	1.55
SKYW	SkyWest	AIRTRANS	B+	1.65
UAL	United Airlines Hldgs.	AIRTRANS	C++	1.65
Average				1.51
Median				1.55
Trimmed Average				1.55
High				1.65
Low				1.10
Selected				1.55

MONTANA DEPARTMENT OF REVENUE

Inflation & Real Growth
Industry: Scheduled Airlines - Passenger
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)

Industry: Scheduled Airlines - Passenger

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
AAL	Amer. Airlines	15.77	0.00	0.00%				
ALGT	Allegiant Travel	189.24	0.00	0.00%				
ALK	Alaska Air Group	52.00	0.00	0.00%				
DAL	Delta Air Lines	40.21	0.00	0.00%				
JBLU	JetBlue Airways	14.54	0.00	0.00%				
LUV	Southwest Airlines	46.61	0.00	0.00%				
MESA	Mesa Air Group Inc	6.69	0.00	0.00%				
SKYW	SkyWest	40.31	0.00	0.00%				
UAL	United Airlines Hldgs.	43.25	0.00	0.00%				

Average

Median

Trimmed Average

High

Low

0.00%

0.00%

0.00%

0.00%

Selected

nmf

nmf

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Scheduled Airlines - Passenger

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>
AAL	Amer. Airlines	15.77	0.00	0.00%	0.00	
ALGT	Allegiant Travel	189.24	0.00	0.00%	0.00	
ALK	Alaska Air Group	52.00	0.00	0.00%	0.00	
DAL	Delta Air Lines	40.21	0.00	0.00%	1.50	
JBLU	JetBlue Airways	14.54	0.00	0.00%	0.00	
LUV	Southwest Airlines	46.61	0.00	0.00%	0.00	
MESA	Mesa Air Group Inc	6.69	0.00	0.00%		
SKYW	SkyWest	40.31	0.00	0.00%	0.00	
UAL	United Airlines Hldgs.	43.25	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>
AAL	Amer. Airlines	(7.50)	3.50	
ALGT	Allegiant Travel	4.75	18.00	39.52%
ALK	Alaska Air Group	(4.25)	6.45	
DAL	Delta Air Lines	(2.85)	8.00	
JBLU	JetBlue Airways	(2.30)	2.00	
LUV	Southwest Airlines	(1.00)	4.50	
MESA	Mesa Air Group Inc			
SKYW	SkyWest	0.95	6.50	61.73%
UAL	United Airlines Hldgs.	(10.25)	10.50	

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Industry: Scheduled Airlines - Passenger

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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
AAL	Amer. Airlines	15.77	0.00%	4.50%	0.00%			(15.77)	0.00	0.00	0.00	0.00	0.00
ALGT	Allegiant Travel	189.24	0.00%	4.50%	0.00%			(189.24)	0.00	0.00	0.00	0.00	0.00
ALK	Alaska Air Group	52.00	0.00%	4.50%	0.00%			(52.00)	0.00	0.00	0.00	0.00	0.00
DAL	Delta Air Lines	40.21	0.00%	4.50%	0.00%			(40.21)	0.00	0.00	0.00	0.00	0.00
JBLU	JetBlue Airways	14.54	0.00%	4.50%	0.00%			(14.54)	0.00	0.00	0.00	0.00	0.00
LUV	Southwest Airlines	46.61	0.00%	4.50%	0.00%			(46.61)	0.00	0.00	0.00	0.00	0.00
MESA	Mesa Air Group Inc	6.69	0.00%	4.50%	0.00%			(6.69)	0.00	0.00	0.00	0.00	0.00
SKYW	SkyWest	40.31	0.00%	4.50%	0.00%			(40.31)	0.00	0.00	0.00	0.00	0.00
UAL	United Airlines Hldgs.	43.25	0.00%	4.50%	0.00%			(43.25)	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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
AAL	Amer. Airlines	15.77	0.00%	4.50%	0.00%			(15.77)	0.00	0.00	0.00	0.00	0.00
ALGT	Allegiant Travel	189.24	39.52%	4.50%	0.00%			(189.24)	0.00	0.00	0.00	0.00	0.00
ALK	Alaska Air Group	52.00	0.00%	4.50%	0.00%			(52.00)	0.00	0.00	0.00	0.00	0.00
DAL	Delta Air Lines	40.21	0.00%	4.50%	0.00%			(40.21)	0.00	0.00	0.00	0.00	0.00
JBLU	JetBlue Airways	14.54	0.00%	4.50%	0.00%			(14.54)	0.00	0.00	0.00	0.00	0.00
LUV	Southwest Airlines	46.61	0.00%	4.50%	0.00%			(46.61)	0.00	0.00	0.00	0.00	0.00
MESA	Mesa Air Group Inc	6.69	0.00%	4.50%	0.00%			(6.69)	0.00	0.00	0.00	0.00	0.00
SKYW	SkyWest	40.31	61.73%	4.50%	0.00%			(40.31)	0.00	0.00	0.00	0.00	0.00
UAL	United Airlines Hldgs.	43.25	0.00%	4.50%	0.00%			(43.25)	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

Industry: Scheduled Airlines - Passenger

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
AAL	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
ALGT	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
ALK	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
DAL	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
JBLU	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
LUV	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
MESA	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
SKYW	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
UAL	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
AAL	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
ALGT	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
ALK	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
DAL	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
JBLU	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
LUV	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
MESA	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
SKYW	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
UAL	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 Cost of Debt Component - Yield to Maturity

Industry: Scheduled Airlines - Passenger

2021 Assessment Year

A	B	C	D	E	F
Ticker	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moodys.com</i>	
AAL	Amer. Airlines	AIRTRANS	C+	B2	15
ALGT	Allegiant Travel	AIRTRANS	B+	Ba3	13
ALK	Alaska Air Group	AIRTRANS	B		
DAL	Delta Air Lines	AIRTRANS	B+	Baa3	10
JBLU	JetBlue Airways	AIRTRANS	B	Ba2	12
LUV	Southwest Airlines	AIRTRANS	B+	Baa1	8
MESA	Mesa Air Group Inc	AIRTRANS	C		
SKYW	SkyWest	AIRTRANS	B+		
UAL	United Airlines Hldgs.	AIRTRANS	C++	Ba1	11
All Companies					
Average					12
Median					12
Trimmed Average					12
High					15
Low					8
Selected				Ba2	12

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Equity Capitalization Rate

Industry: Scheduled Airlines - Passenger

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
AAL	Amer. Airlines	15.77	(19.87)	(7.50)	(0.79)	(2.10)			(12.02)	(4.15)	(1.31)	(3.80)			9,801	(6,867.00)	(1.43)
ALGT	Allegiant Travel	189.24	(9.20)	4.75	(20.57)	39.84		2.51%	23.80	1.65	7.95	114.69	12.58%	0.87%	3,105	883.60	3.51
ALK	Alaska Air Group	52.00	(10.14)	(4.25)	(5.13)	(12.24)			9.93	(6.70)	5.24	(7.76)	19.10%		6,459	4,331.00	1.49
DAL	Delta Air Lines	40.21	(10.77)	(2.85)	(3.73)	(14.11)			11.44	(6.95)	3.51	(5.79)	28.45%		26,030	15,358.00	1.69
JBLU	JetBlue Airways	14.54	(5.72)	(2.30)	(2.54)	(6.32)			3.88	(3.35)	3.75	(4.34)	26.69%		4,595	4,799.00	0.96
LUV	Southwest Airlines	46.61	(6.10)	(1.00)	(7.64)	(46.61)			(3.82)	(7.64)	1.15	(12.20)	40.53	2.47%	27,522	8,876.00	3.10
MESA	Mesa Air Group Inc	6.69	0.86	0.00	7.78		12.86%		3.10	0.00	2.16		46.34%		238	457.90	0.52
SKYW	SkyWest	40.31	(0.19)	0.95	(212.16)	42.43		2.36%	13.70	9.35	2.94	4.31	33.99%	23.20%	2,023	2,175.00	0.93
UAL	United Airlines Hldgs.	43.25	(27.04)	(10.25)	(1.60)	(4.22)			21.57	(18.63)	2.01	(2.32)	49.87%		13,487	11,531.00	1.17
Average					(27.38)	(0.42)	12.86%	2.43%			1.56	16.94	31.00%	8.84%			1.33
Median					(3.73)	(5.27)	12.86%	2.43%			2.94	(3.06)	28.45%	2.47%			1.17
Trimmed Average					(6.00)	0.14					2.61	4.77	30.91%	2.47%			1.41
High					7.78	42.43	12.86%	2.51%			7.95	114.69	49.87%	23.20%			3.51
Low					(212.16)	(46.61)	12.86%	2.36%			(12.20)	(7.76)	12.58%	0.87%			(1.43)
Selected							nmf				3.45		29.00%				1.40

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Industry: Scheduled Airlines - Passenger

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>
AAL	Amer. Airlines	1,227	24,508	24,315	30,454	32,593	27,481	4.46%	0.93
ALGT	Allegiant Travel	60	1,232	1,422	1,294	1,659	1,263	4.79%	0.78
ALK	Alaska Air Group	98	1,507	1,499	3,611	3,495	2,559	3.83%	1.03
DAL	Delta Air Lines	929	11,454	11,160	30,983	29,157	21,219	4.38%	1.06
JBLU	JetBlue Airways	179	2,456	2,334	4,993	4,863	3,725	4.81%	1.03
LUV	Southwest Airlines	349	2,665	2,665	12,569	10,331	7,617	4.58%	1.22
MESA	Mesa Air Group Inc	44	868	843	757	732	813	5.43%	1.03
SKYW	SkyWest	123	3,025	2,993	3,212	3,204	3,118	3.95%	1.00
UAL	United Airlines Hldgs.	1,063	15,469	14,818	27,847	27,153	21,658	4.91%	1.03
All Companies		4,073			115,720	113,186	89,452	4.55%	1.02
Average								4.57%	1.01
Median								4.58%	1.03
Trimmed Average								4.55%	1.02
High								5.43%	1.22
Low								3.83%	0.78
Selected								4.60%	1.03

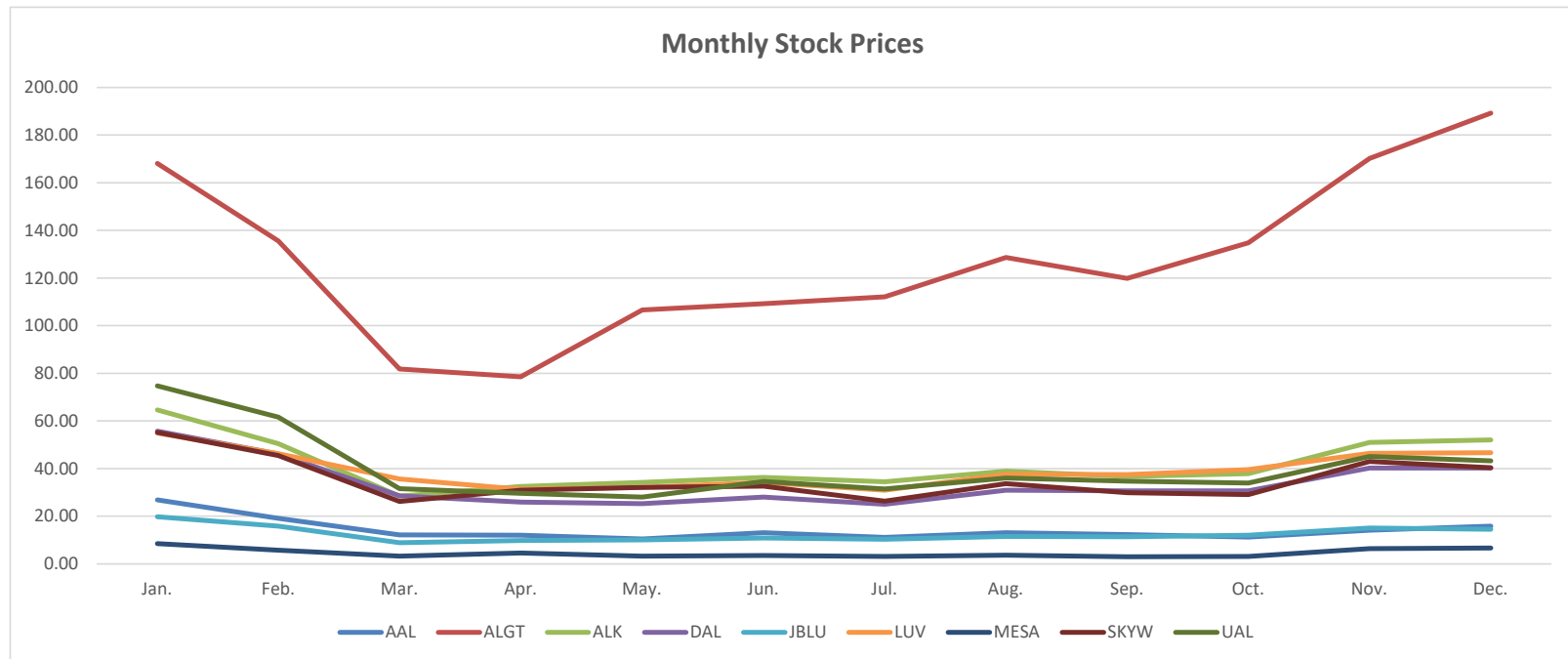
MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Scheduled Airlines - Passenger

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.
AAL	Amer. Airlines	26.84	19.05	12.19	12.01	10.50	13.07	11.12	13.05	12.29	11.28	14.13	15.77
ALGT	Allegiant Travel	168.04	135.54	81.80	78.48	106.55	109.21	112.03	128.60	119.80	134.76	170.19	189.24
ALK	Alaska Air Group	64.59	50.46	28.47	32.52	34.19	36.26	34.44	38.95	36.63	37.89	50.97	52.00
DAL	Delta Air Lines	55.74	46.13	28.53	25.91	25.21	28.05	24.97	30.85	30.58	30.64	40.25	40.21
JBLU	JetBlue Airways	19.83	15.78	8.95	9.74	10.07	10.90	10.34	11.52	11.33	11.97	15.09	14.54
LUV	Southwest Airlines	54.98	46.19	35.61	31.25	32.10	34.18	30.89	37.58	37.50	39.53	46.34	46.61
MESA	Mesa Air Group Inc	8.54	5.77	3.29	4.55	3.25	3.44	3.10	3.66	2.95	3.16	6.38	6.69
SKYW	SkyWest	55.17	45.40	26.19	30.95	32.07	32.62	26.31	33.65	29.86	29.03	42.93	40.31
UAL	United Airlines Hldgs.	74.80	61.59	31.55	29.58	28.04	34.61	31.38	36.00	34.75	33.86	45.05	43.25



MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Scheduled Airlines - Passenger

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	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year				Note [1]	Note [1]	Note [1]	
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*I/(1-J)	K/G
AAL	Amer. Airlines	2.00%	48,456	53,654	51,055	2,370	21.54	0.43	0.65	2,940	124.07%
ALGT	Allegiant Travel	2.00%	2,649	2,721	2,685	176	15	0.30	0.74	206	116.99%
ALK	Alaska Air Group	2.00%	9,742	10,388	10,065	420	24	0.48	0.62	533	126.85%
DAL	Delta Air Lines	2.00%	44,040	48,337	46,189	2,312	20	0.40	0.67	2,827	122.29%
JBLU	JetBlue Airways	2.00%	10,676	10,765	10,721	535	20	0.40	0.67	655	122.36%
LUV	Southwest Airlines	2.00%	27,574	27,713	27,644	1,255	22	0.44	0.65	1,564	124.62%
MESA	Mesa Air Group Inc	2.00%	1,606	1,592	1,599	82	19	0.39	0.68	100	121.67%
SKYW	SkyWest	2.00%	7,818	7,393	7,606	475	16	0.32	0.73	560	117.85%
UAL	United Airlines Hldgs.	2.00%	47,895	44,707	46,301	2,488	19	0.37	0.69	3,004	120.75%
Average											121.94%
Median											122.29%
Trimmed Average											121.94%
High											126.85%
Low											116.99%
Selected											122.00%

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.



**2021 Capitalization Rate Study
Electric Utilities**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Electric Utilities

2021 Assessment Year

Capital Structure ^[1]

Equity	58.00%
Debt	42.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	8.34%	25%
Capital Asset Pricing Model - Ex Ante ^[2]	6.82%	25%
3 Stage Dividend Discount Model - Dividends ^[3]	8.50%	25%
3 Stage Dividend Discount Model - Earnings ^[3]	8.30%	25%
Weighted Average	<u>7.99%</u>	100%
Selected Cost of Equity	<u>7.99%</u>	

Debt Cost of Capital

		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%	100%
Ba - MTDOR - Avg. YTM of Ba Rated Corporate Bonds ^[5]	6.54%	0%
Weighted Average	<u>3.16%</u>	100%
Selected Cost of Debt	<u>3.16%</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	58.00%	7.99%		7.99%	4.63%
Debt	42.00%	3.16%	24.00%	2.40%	1.01%
WACC	100.00%				5.64%
WACC (Rounded)					5.65%

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: Electric Utilities
2021 Assessment Year**

Capital Structure ^[1]

Equity	58.00%
Debt	42.00%

Equity Capitalization Rate ^[2]

NOI After-tax	5.30%
GCF	11.90%

Debt Capitalization Rate ^[3]

Calculated Current Yield	3.80%
--------------------------	--------------

NOI After-tax Direct Capitalization Rate - If Using Marginal Tax

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	58.00%	5.30%		5.30%	3.07%
Debt	42.00%	3.80%	24.00%	2.89%	1.21%
Total	100.00%				4.29%
Total (Rounded)					4.30%

GCF Direct Capitalization Rate - If Using Marginal Tax

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	58.00%	11.90%		11.90%	6.90%
Debt	42.00%	3.80%	24.00%	2.89%	1.21%
WACC	100.00%				8.11%
Total (Rounded)					8.15%

Notes:

[1] From worksheet: Capital Structure

[2] From worksheet: Direct Equity Summary

[3] From worksheet: Calculated Current Yield

MONTANA DEPARTMENT OF REVENUE

Direct Capitalization Rate Conclusion - Using Regulatory Tax Structure (Pre-Tax Debt)

Industry: Electric Utilities

2021 Assessment Year

Capital Structure ^[1]

Equity	58.00%
Debt	42.00%

Equity Capitalization Rate ^[2]

NOI After-tax	5.30%
GCF	11.90%

Debt Capitalization Rate ^[3]

Calculated Current Yield	3.80%
--------------------------	--------------

NOI After-tax Direct Capitalization Rate - If Using Regulatory Tax Str.

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	58.00%	5.30%		5.30%	3.07%
Debt	42.00%	3.80%		3.80%	1.60%
Total	100.00%				4.67%

Total (Rounded) 4.70%

GCF Direct Capitalization Rate - If Using Regulatory Tax Str.

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	58.00%	11.90%		11.90%	6.90%
Debt	42.00%	3.80%		3.80%	1.60%
WACC	100.00%				8.50%

Total (Rounded) 8.50%

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: Electric Utilities

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Electric Utility (West) industries.

Companies were then selected using the following screening criteria:

1. Primarily supplies electricity to residential and commercial customers.
2. Headquartered and primarily operated in the United States.
3. Regulated by a state commission.
4. Generation portfolio primarily composed of coal, natural gas, renewables, and/or hydroelectric.
5. Not engaged in material M&A activity.

Ticker Symbol	Residential & Commercial Sales	Primarily in the US	Regulated	Generating portfolio sufficiently compatible	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
AVA	72%	Yes	Yes	Yes	Yes	Yes	Yes	
BKH	65%	Yes	Yes	Yes	Yes	Yes	Yes	
EIX	82%	Yes	Yes	No	No		No	
HE	64%	Yes	Yes	No	No		No	
IDA	61%	Yes	Yes	Yes	Yes	Yes	Yes	
NWE	86%	Yes	Yes	Yes	Yes	Yes	Yes	
PNM	75%	Yes	Yes	Yes	Yes	No	No	[1]
PNW	89%	Yes	Yes	No	No		No	
POR	77%	Yes	Yes	Yes	Yes	Yes	Yes	
SRE				No	No			
XEL	85%	Yes	Yes	Yes	Yes	Yes	Yes	

[1] Announced strategic merger with AVANGRID on 10/21/20

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure

Industry: Electric Utilities

2021 Assessment Year

(\$ and Shares Outstanding In Thousands, 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>					
AVA	Avista Corp.	UTILWEST	B++	69,239	40.14	2,779,249	0	2,409,324	71,965	5,260,538	53%	0%	47%
BKH	Black Hills	UTILWEST	A	62,795	61.45	3,858,734	0	4,208,167	4,543	8,071,444	48%	0%	52%
IDA	IDACORP Inc.	UTILWEST	A	50,469	96.03	4,846,560	0	2,466,967	0	7,313,527	66%	0%	34%
NWE	NorthWestern Corp.	UTILWEST	B++	54,145	58.31	3,157,182	0	2,747,194	0	5,904,376	53%	0%	47%
POR	Portland General	UTILWEST	B++	89,537	42.77	3,829,512	0	3,808,000	44,000	7,681,512	50%	0%	50%
XEL	Xcel Energy Inc.	UTILWEST	A+	537,438	66.67	35,831,017	0	24,412,000	1,558,000	61,801,017	58%	0%	42%
All Companies						54,302,254	0	40,051,652	1,678,508	96,032,414	57%	0%	43%
Average											55%	0%	45%
Median											53%	0%	47%
Trimmed Average											54%	0%	46%
High											66%	0%	52%
Low											48%	0%	34%
Selected											58%		42%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - PNM was removed due to M&A activity

		<u>Median</u>	
Current Year	53%	0%	47%
Prior Year	60%	0%	40%
2 Years Prior	60%	0%	40%
3 Year Average	58%	0%	42%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Electric Utilities

2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	8.34%	6.82%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	0.95	0.95
$ERP =$	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/>

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

Duff & Phelps, 2021 Cost of Capital Navigator

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

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Electric Utilities

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

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM

Industry: Electric Utilities

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>
AVA	Avista Corp.	UTILWEST	B++	0.95
BKH	Black Hills	UTILWEST	A	1.00
IDA	IDACORP Inc.	UTILWEST	A	0.80
NWE	NorthWestern Corp.	UTILWEST	B++	0.95
POR	Portland General	UTILWEST	B++	0.90
XEL	Xcel Energy Inc.	UTILWEST	A+	0.80
Average				0.90
Median				0.93
Trimmed Average				0.90
High				1.00
Low				0.80
Selected				0.95

MONTANA DEPARTMENT OF REVENUE

**Inflation & Real Growth
Industry: Electric Utilities
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)

Industry: Electric Utilities

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
AVA	Avista Corp.	40.14	1.68	4.19%	4.35%	5.28%	8.53%	9.46%
BKH	Black Hills	61.45	2.31	3.76%	5.22%	4.18%	8.98%	7.94%
IDA	IDACORP Inc.	96.03	2.89	3.01%	5.40%	5.22%	8.41%	8.23%
NWE	NorthWestern Corp.	58.31	2.48	4.25%	4.01%	4.53%	8.27%	8.78%
POR	Portland General	42.77	1.68	3.93%	5.25%	4.37%	9.17%	8.30%
XEL	Xcel Energy Inc.	66.67	1.82	2.73%	4.97%	5.03%	7.70%	7.76%
Average							8.51%	8.41%
Median							8.47%	8.26%
Trimmed Average							8.55%	8.31%
High							9.17%	9.46%
Low							7.70%	7.76%
Selected							8.50%	8.30%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Electric Utilities

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 2023-2025 Est	Short-Term Growth Rate
		<i>Yahoo</i>	<i>Value Line</i>	<i>D / C</i>	<i>Value Line</i>	<i>Note [1]</i>
AVA	Avista Corp.	40.14	1.68	4.19%	1.90	4.19%
BKH	Black Hills	61.45	2.31	3.76%	2.75	5.98%
IDA	IDACORP Inc.	96.03	2.89	3.01%	3.50	6.59%
NWE	NorthWestern Corp.	58.31	2.48	4.25%	2.75	3.50%
POR	Portland General	42.77	1.68	3.93%	2.00	5.98%
XEL	Xcel Energy Inc.	66.67	1.82	2.73%	2.15	5.71%

A	B	C	D	E
Ticker	Company	Earnings per share 2021 Est	Earnings per share 2023-2025 Est	Short-Term Growth Rate
		<i>Value Line</i>	<i>Value Line</i>	<i>Note [1]</i>
AVA	Avista Corp.	2.10	2.50	5.98%
BKH	Black Hills	3.80	4.25	3.80%
IDA	IDACORP Inc.	4.80	5.75	6.20%
NWE	NorthWestern Corp.	3.50	4.00	4.55%
POR	Portland General	2.65	3.00	4.22%
XEL	Xcel Energy Inc.	2.95	3.50	5.86%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Industry: Electric Utilities

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	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
AVA	Avista Corp.	40.14	4.19%	4.50%	4.19%	8.53%	4.35%	(40.14)	1.68	1.75	1.82	1.90	1.98
BKH	Black Hills	61.45	5.98%	4.50%	3.76%	8.98%	5.22%	(61.45)	2.31	2.45	2.59	2.75	2.91
IDA	IDACORP Inc.	96.03	6.59%	4.50%	3.01%	8.41%	5.40%	(96.03)	2.89	3.08	3.28	3.50	3.73
NWE	NorthWestern Corp.	58.31	3.50%	4.50%	4.25%	8.27%	4.01%	(58.31)	2.48	2.57	2.66	2.75	2.85
POR	Portland General	42.77	5.98%	4.50%	3.93%	9.17%	5.25%	(42.77)	1.68	1.78	1.89	2.00	2.12
XEL	Xcel Energy Inc.	66.67	5.71%	4.50%	2.73%	7.70%	4.97%	(66.67)	1.82	1.92	2.03	2.15	2.27

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	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
AVA	Avista Corp.	40.14	5.98%	4.50%	4.19%	9.46%	5.28%	(40.14)	1.68	1.78	1.89	2.00	2.12
BKH	Black Hills	61.45	3.80%	4.50%	3.76%	7.94%	4.18%	(61.45)	2.31	2.40	2.49	2.58	2.68
IDA	IDACORP Inc.	96.03	6.20%	4.50%	3.01%	8.23%	5.22%	(96.03)	2.89	3.07	3.26	3.46	3.68
NWE	NorthWestern Corp.	58.31	4.55%	4.50%	4.25%	8.78%	4.53%	(58.31)	2.48	2.59	2.71	2.83	2.96
POR	Portland General	42.77	4.22%	4.50%	3.93%	8.30%	4.37%	(42.77)	1.68	1.75	1.82	1.90	1.98
XEL	Xcel Energy Inc.	66.67	5.86%	4.50%	2.73%	7.76%	5.03%	(66.67)	1.82	1.93	2.04	2.16	2.29

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

Industry: Electric Utilities

2021 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
AVA	2.06	2.15	2.24	2.33	2.43	2.54	2.64	2.75	2.87	2.99	3.12	3.25	3.38	3.53	3.67	3.84	4.01	5,506,970,169
BKH	3.09	3.27	3.46	3.66	3.88	4.11	4.35	4.61	4.88	5.16	5.47	5.79	6.13	6.49	6.87	7.18	7.50	10,301,776,014
IDA	3.97	4.23	4.50	4.79	5.10	5.43	5.78	6.15	6.55	6.97	7.42	7.90	8.41	8.95	9.53	9.96	10.41	14,286,765,213
NWE	2.95	3.05	3.16	3.28	3.39	3.51	3.64	3.77	3.90	4.04	4.19	4.34	4.49	4.65	4.82	5.03	5.26	7,222,575,239
POR	2.24	2.38	2.52	2.66	2.82	2.99	3.16	3.35	3.55	3.76	3.98	4.21	4.46	4.72	5.00	5.22	5.46	7,492,200,738
XEL	2.40	2.54	2.68	2.83	2.99	3.16	3.33	3.52	3.72	3.93	4.15	4.39	4.63	4.89	5.17	5.40	5.64	7,748,834,117

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
AVA	2.24	2.38	2.52	2.66	2.82	2.99	3.16	3.35	3.55	3.76	3.98	4.21	4.46	4.72	5.00	5.22	5.46	7,492,200,738
BKH	2.78	2.89	3.00	3.12	3.24	3.36	3.49	3.63	3.77	3.91	4.06	4.22	4.38	4.55	4.72	4.94	5.16	7,082,536,654
IDA	3.90	4.14	4.39	4.66	4.94	5.24	5.56	5.90	6.26	6.64	7.05	7.47	7.93	8.41	8.93	9.33	9.75	13,379,688,038
NWE	3.10	3.24	3.39	3.54	3.70	3.87	4.05	4.23	4.42	4.62	4.83	5.05	5.28	5.52	5.77	6.03	6.31	8,656,435,893
POR	2.07	2.15	2.25	2.34	2.44	2.54	2.65	2.76	2.88	3.00	3.13	3.26	3.40	3.55	3.70	3.86	4.04	5,539,859,023
XEL	2.42	2.56	2.71	2.86	3.03	3.20	3.39	3.58	3.79	4.01	4.24	4.48	4.74	5.02	5.31	5.54	5.79	7,952,748,059

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Industry: Electric Utilities

2021 Assessment Year

A	B	C	D	E	F
Ticker	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moody's.com</i>	
AVA	Avista Corp.	UTILWEST	B++	Baa2	9
BKH	Black Hills	UTILWEST	A	Baa2	9
IDA	IDACORP Inc.	UTILWEST	A	Baa1	8
NWE	NorthWestern Corp.	UTILWEST	B++	Baa2	9
POR	Portland General	UTILWEST	B++	A3	7
XEL	Xcel Energy Inc.	UTILWEST	A+	Baa1	8
Average					8
Median					9
Trimmed Average					9
High					9
Low					7
Selected				Baa2	9

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Equity Capitalization Rates

Industry: Electric Utilities

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	
AVA	Avista Corp.	40.14	1.90	2.10	21.13	19.11	4.73%	5.23%	5.16	5.40	7.78	7.43	12.86%	13.45%	2,779,249	2,029,700	1.37	
BKH	Black Hills	61.45	3.73	3.80	16.47	16.17	6.07%	6.18%	7.02	7.30	8.75	8.42	11.42%	11.88%	3,858,734	2,362,100	1.63	
IDA	IDACORP Inc.	96.03	4.69	4.80	20.48	20.01	4.88%	5.00%	8.19	8.40	11.73	11.43	8.53%	8.75%	4,846,560	2,560,000	1.89	
NWE	NorthWestern Corp.	58.31	3.07	3.50	18.99	16.66	5.26%	6.00%	6.72	7.25	8.68	8.04	11.52%	12.43%	3,157,182	2,079,100	1.52	
POR	Portland General	42.77	1.72	2.65	24.87	16.14	4.02%	6.20%	6.80	7.50	6.29	5.70	15.90%	17.54%	3,829,512	2,613,000	1.47	
XEL	Xcel Energy Inc.	66.67	2.78	2.95	23.98	22.60	4.17%	4.42%	6.61	7.20	10.09	9.26	9.91%	10.80%	35,831,017	14,575,000	2.46	
Average					20.99	18.45	4.86%	5.51%					8.89	8.38	11.69%	12.47%		
Median					20.80	17.89	4.81%	5.62%					8.72	8.23	11.47%	12.16%		
Trimmed Average					21.14	17.99	4.76%	5.60%					8.82	8.29	11.43%	12.14%		
High					24.87	22.60	6.07%	6.20%					11.73	11.43	15.90%	17.54%		
Low					16.47	16.14	4.02%	4.42%					6.29	5.70	8.53%	8.75%		
Selected							5.30%						11.90%				1.60	

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Industry: Electric Utilities

2021 Assessment Year

(\$ in Thousands)

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>
AVA	Avista Corp.	104,348	2,151,498	1,895,768	2,409,324	2,008,534	2,280,411	4.58%	1.20
BKH	Black Hills	144,931	3,479,367	3,145,839	4,208,167	3,536,536	3,843,767	3.77%	1.19
IDA	IDACORP Inc.	84,251	2,083,931	1,836,659	2,466,967	2,000,414	2,275,449	3.70%	1.23
NWE	NorthWestern Corp.	96,812	2,436,729	2,253,196	2,747,194	2,432,700	2,591,962	3.74%	1.13
POR	Portland General	136,000	3,039,000	2,597,000	3,808,000	3,046,000	3,423,500	3.97%	1.25
XEL	Xcel Energy Inc.	840,000	20,227,000	18,109,000	24,412,000	20,066,000	22,319,500	3.76%	1.22
All Companies		1,406,342			40,051,652	33,090,184	36,734,589	3.83%	1.21
Average								3.92%	1.20
Median								3.77%	1.21
Trimmed Average								3.81%	1.21
High								4.58%	1.25
Low								3.70%	1.13
Selected								3.80%	1.21

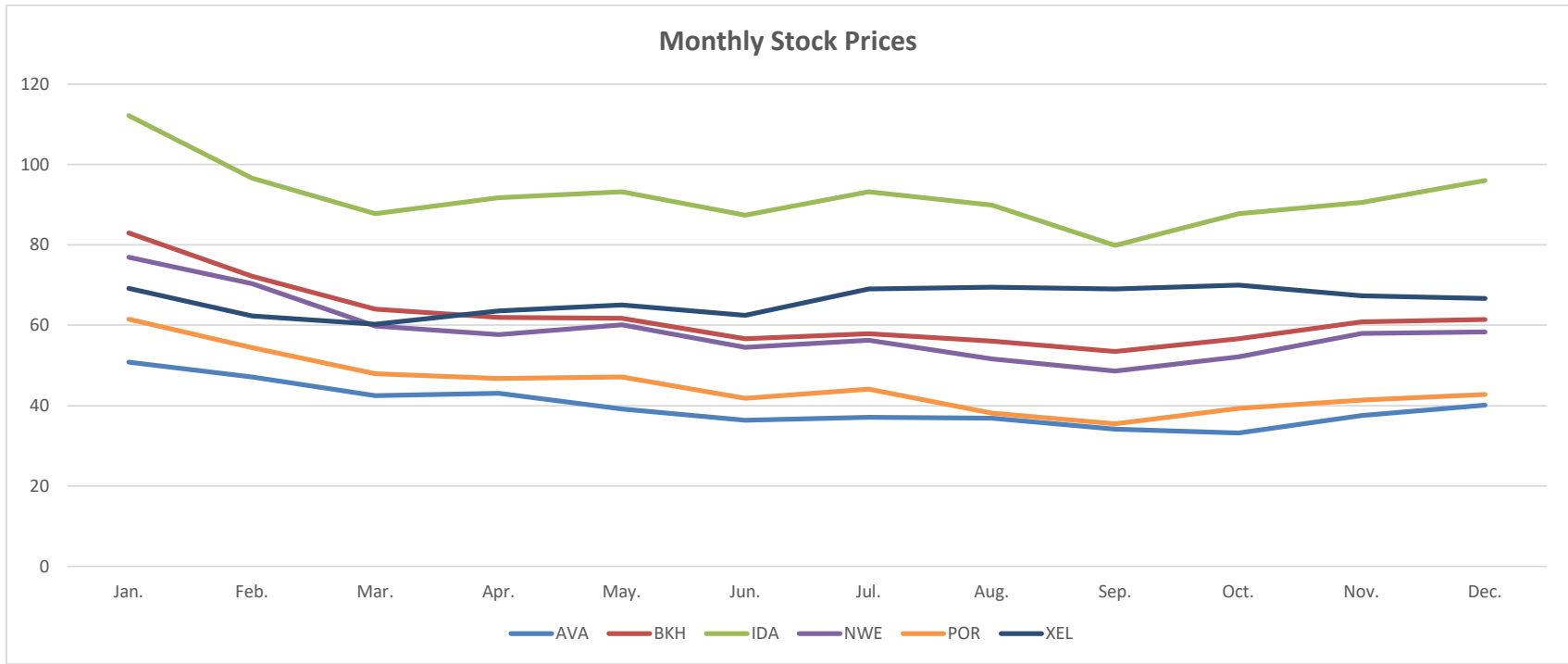
MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Electric Utilities

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.
AVA	Avista Corp.	50.85	47.15	42.49	43.04	39.17	36.39	37.13	36.86	34.12	33.22	37.52	40.14
BKH	Black Hills	83.03	72.2	64.03	61.94	61.71	56.66	57.86	56.08	53.49	56.66	60.83	61.45
IDA	IDACORP Inc.	112.19	96.64	87.79	91.78	93.23	87.37	93.25	89.9	79.9	87.73	90.58	96.03
NWE	NorthWestern Corp.	76.97	70.34	59.83	57.69	60.12	54.52	56.26	51.64	48.64	52.13	58	58.31
POR	Portland General	61.5	54.41	47.94	46.79	47.11	41.81	44.13	38.15	35.5	39.3	41.38	42.77
XEL	Xcel Energy Inc.	69.19	62.32	60.3	63.56	65.03	62.5	69.04	69.47	69.01	70.03	67.36	66.67



MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Electric Utilities

2021 Assessment Year

(\$ In Thousands)

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	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year					Note [1]	Note [1]	Note [1]
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*I/(1-J)	K/G
AVA	Avista Corp.	2.00%	6,985,564	6,627,934	6,806,749	224,223	30	0.61	0.55	301,304	134.38%
BKH	Black Hills	2.00%	7,305,530	6,784,679	7,045,105	224,457	31	0.63	0.54	304,397	135.61%
IDA	IDACORP Inc.	2.00%	6,283,790	6,113,567	6,198,679	175,941	35	0.70	0.50	246,831	140.29%
NWE	NorthWestern Corp.	2.00%	6,916,107	6,553,928	6,735,018	179,644	37	0.75	0.48	257,043	143.08%
POR	Portland General	2.00%	10,974,000	10,928,000	10,951,000	454,000	24	0.48	0.62	576,720	127.03%
XEL	Xcel Energy Inc.	2.00%	59,296,000	55,844,000	57,570,000	1,959,000	29	0.59	0.56	2,609,751	133.22%
Average											135.60%
Median											135.00%
Trimmed Average											135.88%
High											143.08%
Low											127.03%
Selected											135.00%

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.



**2021 Capitalization Rate Study
Pipelines - Gas**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Pipelines - Gas

2021 Assessment Year

Capital Structure ^[1]

Equity	50.00%
Debt	50.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	11.96%	35%
Capital Asset Pricing Model - Ex Ante ^[2]	9.64%	35%
3 Stage Dividend Discount Model - Dividends ^[3]	22.30%	15%
3 Stage Dividend Discount Model - Earnings ^[3]	15.90%	15%
Weighted Average	13.29%	100%
Selected Cost of Equity	13.29%	

Debt Cost of Capital

		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%	100%
Weighted Average	6.54%	100%
Selected Cost of Debt	6.54%	

Weighted Average Cost of Capital (WACC)

Source of Capital	Capital Structure	Capital Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	50.00%	13.29%		13.29%	6.65%
Debt	50.00%	6.54%	24.00%	4.97%	2.49%
WACC	100.00%				9.13%
WACC (Rounded)					9.15%

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: Pipelines - Gas

2021 Assessment Year

Capital Structure ^[1]

Equity	50.00%
Debt	50.00%

Equity Capitalization Rate ^[2]

NOI After-tax	10.60%
GCF	29.85%

Debt Capitalization Rate ^[3]

Calculated Current Yield	4.70%
--------------------------	--------------

NOI After-tax Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	50.00%	10.60%		10.60%	5.30%
Debt	50.00%	4.70%	24.00%	3.57%	1.79%
Total	100.00%				7.09%
Total (Rounded)					7.10%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	50.00%	29.85%		29.85%	14.93%
Debt	50.00%	4.70%	24.00%	3.57%	1.79%
WACC	100.00%				16.71%
Total (Rounded)					16.75%

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: Pipelines - Gas

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Pipeline MLPs industry.

Companies were then selected using the following screening criteria:

1. Primarily engaged in the gathering, treating, processing, and/or transportation of natural gas and natural gas liquids.
2. Actively traded on an American exchange.
3. Incorporated as a limited partnership.
4. Primarily onshore operations.
5. No significant merger & acquisition activity during the year.

Company Ticker	Transportation etc. of NG & NGL's	Actively traded on an American Exchange	Incorporated as LP	Primarily Onshore Operations	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
BKEP						No		
BPMP	No							
CAPL	No							
CEQP	No							
CQP	No							
DCP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
DKL	No							
ENBL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
EPD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
ET	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
GEL	No							
GLP	No							
GPP	No							
HEP	No							
HESM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
MMLP	Yes	Yes	Yes	No				

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies

Industry: Pipelines - Gas

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Pipeline MLPs industry.

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4. Primarily onshore operations.
5. No significant merger & acquisition activity during the year.

Company Ticker	Transportation etc. of NG & NGL's	Actively traded on an American Exchange	Incorporated as LP	Primarily Onshore Operations	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
MMP	No							
MPLX	No							
NBLX	No							
NGL	Yes	Yes	Yes	Yes	Yes	Yes	No	[1]
NS	No							
OMP	No							
PAA	No							
PAGP	No							
PBFX	No							
PSXP	No							
RTLX	No							
SHLX	No							
SMLP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
SPH	No							
SRLP	No							
TCP	Yes	Yes	Yes	Yes	Yes	No	No	[2]
WES	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

[1] 10-K data indicates that the NG and NGL segment is not sufficiently impactful to the overall financial performance of the company.

[2] In October of 2020, TCP received non-binding offer from TC Energy Corporation to acquire all of the outstanding common units of TCP

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure
Industry: Pipelines - Gas
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
		Value Line	Value Line	10-K	Yahoo	ExF	10-K	10-K	10-K	G+H+I+J	G/K	H/K	(I+J)/K
							Note [1]	Note [2]					
DCP	DCP Midstream LP	PIPEMLP	C++	208	18.18	3,788	751	5,927	100	10,566	36%	7%	57%
ENBL	Enable Midstream Part.	PIPEMLP	C++	436	5.12	2,228	362	3,962	28	6,580	34%	6%	61%
EPD	Enterprise Products	PIPEMLP	B+	2,182	19.16	41,823	0	35,000	349	77,172	54%	0%	46%
ET	Energy Transfer LP	PIPEMLP	B+	2,702	6.04	16,322	0	56,210	890	73,422	22%	0%	78%
HESM	Hess Midstream Partners LP	PIPEMLP	C	18	19.17	346	0	1,991	1	2,338	15%	0%	85%
SMLP	Summit Midstream Partners LP	PIPEMLP	C	6	12.49	76	174	1,241	5	1,497	5%	12%	83%
WES	Western Midstream Part.	PIPEMLP	C++	414	13.54	5,602	0	8,290	39	13,931	40%	0%	60%
All Companies						70,186	1,287	112,621	1,412	185,506	38%	1%	61%
Average											29%	3%	67%
Median											34%	0%	61%
Trimmed Average											29%	3%	68%
High											54%	12%	85%
Low											5%	0%	46%
Selected											50%		50%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - Added ET & WES.

Removed CNXM & EQM because they're no longer listed in the Value Line MLP industry. Removed TCP due to M&A activity.

		<u>Median</u>	
Current Year	34%	0%	61%
Prior Year	48%	2%	45%
2 Years Prior	52%	0%	46%
3 Year Average	44%	1%	51%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Pipelines - Gas

2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	11.96%	9.64%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	1.45	1.45
$ERP =$	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 1.45%

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/>

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

Duff & Phelps, 2021 Cost of Capital Navigator

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

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Pipelines - Gas

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

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM

Industry: Pipelines - Gas

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>
DCP	DCP Midstream LP	PIPEMLP	C++	1.60
ENBL	Enable Midstream Part.	PIPEMLP	C++	1.90
EPD	Enterprise Products	PIPEMLP	B+	1.10
ET	Energy Transfer LP	PIPEMLP	B+	1.30
HESM	Hess Midstream Partners LP	PIPEMLP	C	1.10
SMLP	Summit Midstream Partners LP	PIPEMLP	C	1.75
WES	Western Midstream Part.	PIPEMLP	C++	1.40
	Average			1.45
	Median			1.40
	Trimmed Average			1.43
	High			1.90
	Low			1.10
Selected				1.45

MONTANA DEPARTMENT OF REVENUE

**Inflation & Real Growth
Industry: Pipelines - Gas
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)

Industry: Pipelines - Gas

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
DCP	DCP Midstream LP	18.18	1.56	8.58%	16.01%	9.89%	24.59%	18.47%
ENBL	Enable Midstream Part.	5.12	0.66	12.90%	0.73%	21.39%	13.64%	34.29%
EPD	Enterprise Products	19.16	1.80	9.39%	11.12%	8.68%	20.51%	18.08%
ET	Energy Transfer LP	6.04	0.61	10.10%	11.66%	1.09%	21.76%	11.19%
HESM	Hess Midstream Partners LP	19.17	0.00	0.00%	0.00%	0.00%		
SMLP	Summit Midstream Partners LP	12.49	0.00	0.00%	0.00%	0.00%		
WES	Western Midstream Part.	13.54	1.24	9.16%	25.17%	1.25%	34.33%	10.41%
Average							22.96%	18.49%
Median							21.76%	18.08%
Trimmed Average							22.29%	15.91%
High							34.33%	34.29%
Low							13.64%	10.41%
Selected							22.30%	15.90%

Notes:

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Pipelines - Gas

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>
DCP	DCP Midstream LP	18.18	1.56	8.58%	3.10	18.73%
ENBL	Enable Midstream Part.	5.12	0.66	12.90%	0.66	0.00%
EPD	Enterprise Products	19.16	1.80	9.39%	2.90	12.66%
ET	Energy Transfer LP	6.04	0.61	10.10%	1.00	13.15%
HESM	Hess Midstream Partners LP	19.17	0.00	0.00%		
SMLP	Summit Midstream Partners LP	12.49	0.00	0.00%		
WES	Western Midstream Part.	13.54	1.24	9.16%	3.45	29.15%

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>
DCP	DCP Midstream LP	1.95	3.00	11.37%
ENBL	Enable Midstream Part.	0.60	1.40	23.59%
EPD	Enterprise Products	2.00	2.90	9.73%
ET	Energy Transfer LP	0.90	1.25	8.56%
HESM	Hess Midstream Partners LP	1.62		
SMLP	Summit Midstream Partners LP	0.00		
WES	Western Midstream Part.	2.20	3.45	11.90%

Notes:

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Industry: Pipelines - Gas

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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
DCP	DCP Midstream LP	18.18	18.73%	4.50%	8.58%	24.59%	16.01%	(18.18)	1.56	1.85	2.20	2.61	3.10
ENBL	Enable Midstream Part.	5.12	0.00%	4.50%	12.90%	13.64%	0.73%	(5.12)	0.66	0.66	0.66	0.66	0.66
EPD	Enterprise Products	19.16	12.66%	4.50%	9.39%	20.51%	11.12%	(19.16)	1.80	2.03	2.28	2.57	2.90
ET	Energy Transfer LP	6.04	13.15%	4.50%	10.10%	21.76%	11.66%	(6.04)	0.61	0.69	0.78	0.88	1.00
HESM	Hess Midstream Partners LP	19.17	0.00%	4.50%	0.00%			(19.17)	0.00	0.00	0.00	0.00	0.00
SMLP	Summit Midstream Partners LP	12.49	0.00%	4.50%	0.00%			(12.49)	0.00	0.00	0.00	0.00	0.00
WES	Western Midstream Part.	13.54	29.15%	4.50%	9.16%	34.33%	25.17%	(13.54)	1.24	1.60	2.07	2.67	3.45

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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
DCP	DCP Midstream LP	18.18	11.37%	4.50%	8.58%	18.47%	9.89%	(18.18)	1.56	1.74	1.93	2.15	2.40
ENBL	Enable Midstream Part.	5.12	23.59%	4.50%	12.90%	34.29%	21.39%	(5.12)	0.66	0.82	1.01	1.25	1.54
EPD	Enterprise Products	19.16	9.73%	4.50%	9.39%	18.08%	8.68%	(19.16)	1.80	1.98	2.17	2.38	2.61
ET	Energy Transfer LP	6.04	0.00%	4.50%	10.10%	11.19%	1.09%	(6.04)	0.61	0.61	0.61	0.61	0.61
HESM	Hess Midstream Partners LP	19.17	0.00%	4.50%	0.00%			(19.17)	0.00	0.00	0.00	0.00	0.00
SMLP	Summit Midstream Partners LP	12.49	11.90%	4.50%	0.00%			(12.49)	0.00	0.00	0.00	0.00	0.00
WES	Western Midstream Part.	13.54	0.00%	4.50%	9.16%	10.41%	1.25%	(13.54)	1.24	1.24	1.24	1.24	1.24

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

Industry: Pipelines - Gas

2021 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
DCP	3.65	4.30	5.07	5.97	7.03	8.28	9.75	11.48	13.52	15.93	18.76	22.09	26.02	30.65	36.10	37.72	39.42	54,114,201,543
ENBL	0.66	0.66	0.67	0.67	0.67	0.67	0.67	0.68	0.68	0.68	0.68	0.68	0.69	0.69	0.69	0.72	0.75	1,034,849,861
EPD	3.25	3.65	4.09	4.58	5.14	5.76	6.46	7.24	8.12	9.10	10.21	11.44	12.83	14.38	16.13	16.85	17.61	24,176,581,566
ET	1.13	1.27	1.43	1.61	1.81	2.04	2.29	2.58	2.90	3.27	3.68	4.14	4.66	5.25	5.91	6.18	6.46	8,862,066,313
HESM	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
SMLP	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
WES	4.40	5.61	7.15	9.12	11.63	14.83	18.91	24.11	30.74	39.19	49.97	63.72	81.25	103.60	132.09	138.04	144.25	198,016,771,180

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
DCP	2.66	2.95	3.27	3.63	4.03	4.47	4.96	5.50	6.10	6.76	7.50	8.32	9.23	10.23	11.35	11.86	12.39	17,012,066,912
ENBL	1.88	2.30	2.82	3.45	4.22	5.16	6.31	7.72	9.44	11.55	14.13	17.28	21.13	25.85	31.62	33.05	34.53	47,403,878,973
EPD	2.85	3.12	3.42	3.74	4.09	4.47	4.89	5.35	5.85	6.40	7.00	7.66	8.38	9.16	10.02	10.47	10.95	15,025,936,817
ET	0.61	0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.63	0.63	0.63	0.63	0.64	0.64	0.67	0.70	956,452,144
HESM	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
SMLP	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
WES	1.24	1.25	1.25	1.25	1.26	1.26	1.27	1.27	1.27	1.28	1.28	1.29	1.29	1.29	1.30	1.36	1.42	1,944,263,374

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Industry: Pipelines - Gas

2021 Assessment Year

A	B	C	D	E	F
Ticker	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moodys.com</i>	
DCP	DCP Midstream LP	PIPEMLP	C++	Ba2	12
ENBL	Enable Midstream Part.	PIPEMLP	C++	Baa3	10
EPD	Enterprise Products	PIPEMLP	B+		
ET	Energy Transfer LP	PIPEMLP	B+		
HESM	Hess Midstream Partners LP	PIPEMLP	C	Ba2	12
SMLP	Summit Midstream Partners LP	PIPEMLP	C	B3	16
WES	Western Midstream Part.	PIPEMLP	C++	Ba2	12
All Companies					
	Average				12
	Median				12
	Trimmed Average				12
	High				16
	Low				10
Selected				Ba2	12

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Equity Capitalization Rates

Industry: Pipelines - Gas

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
DCP	DCP Midstream LP	18.18	(1.75)	1.95	(10.39)	9.32		10.73%	2.36	4.60	7.70	3.95	12.98%	25.30%	3,788	6,605	0.57
ENBL	Enable Midstream Part.	5.12	0.63	0.60	8.12	8.53	12.32%	11.73%	1.98	1.60	2.58	3.20	38.71%	31.28%	2,228	7,372	0.30
EPD	Enterprise Products	19.16	1.71	2.00	11.21	9.58	8.92%	10.44%	2.99	2.65	6.41	7.23	15.60%	13.83%	41,823	24,764	1.69
ET	Energy Transfer LP	6.04	0.76	0.90	7.95	6.71	12.58%	14.90%	2.50	2.05	2.42	2.95	41.39%	33.94%	16,322	21,827	0.75
HESM	Hess Midstream Partners LP	19.17	1.31	0.00	14.63		6.83%		12.12	0.00	1.58		63.22%		346	132	2.63
SMLP	Summit Midstream Partners LP	12.49	63.91	0.00	0.20				(98.94)	0.00	(0.13)				76	791	0.10
WES	Western Midstream Part.	13.54	1.20	2.20	11.28	6.15	8.86%	16.25%	2.66	4.10	5.09	3.30	19.65%	30.29%	5,602	3,196	1.75
Average					6.14	8.06	9.90%	12.81%			3.67	4.13	31.93%	26.93%			1.11
Median					8.12	8.53	8.92%	11.73%			2.58	3.30	29.18%	30.29%			0.75
Trimmed Average					7.75	8.19	10.03%	12.45%			3.62	3.48	28.84%	28.96%			1.01
High					14.63	9.58	12.58%	16.25%			7.70	7.23	63.22%	33.94%			2.63
Low					(10.39)	6.15	6.83%	10.44%			(0.13)	2.95	12.98%	13.83%			0.10
Selected							10.60%						29.85%				0.75

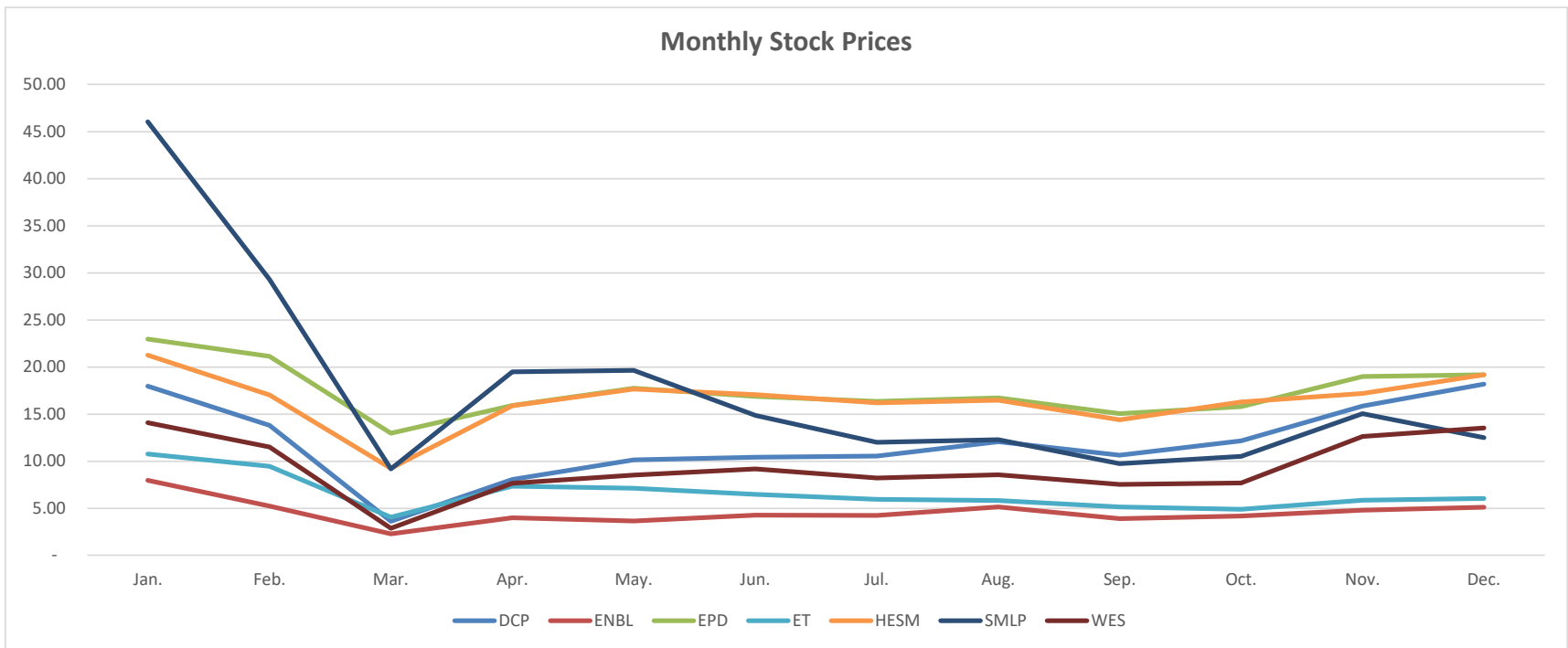
MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Pipelines - Gas

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.
DCP	DCP Midstream LP	17.98	13.82	3.61	8.07	10.14	10.42	10.56	12.06	10.63	12.15	15.85	18.18
ENBL	Enable Midstream Part.	7.96	5.25	2.26	3.99	3.65	4.28	4.25	5.14	3.90	4.19	4.79	5.12
EPD	Enterprise Products	22.96	21.14	12.95	15.90	17.76	16.89	16.36	16.73	15.04	15.78	18.98	19.16
ET	Energy Transfer LP	10.76	9.47	4.03	7.35	7.14	6.47	5.95	5.84	5.15	4.89	5.87	6.04
HESM	Hess Midstream Partners LP	21.26	17.03	9.23	15.89	17.65	17.07	16.20	16.47	14.40	16.29	17.20	19.17
SMLP	Summit Midstream Partners LP	46.03	29.29	9.15	19.50	19.65	14.85	12.00	12.30	9.75	10.50	15.04	12.49
WES	Western Midstream Part.	14.08	11.50	2.85	7.64	8.53	9.17	8.22	8.55	7.55	7.69	12.64	13.54



MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Industry: Pipelines - Gas

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
	Source	10-K	10-K	10-K	10-K	10-K	(D+F)/2	(C/H)	(F/G)
DCP	DCP Midstream LP	302	6,118	5,924	5,927	5,624	6,023	5.01%	1.05
ENBL	Enable Midstream Part.	178	4,184	4,220	3,962	3,951	4,073	4.37%	1.00
EPD	Enterprise Products	1,287	30,370	27,625	35,000	29,866	32,685	3.94%	1.17
ET	Energy Transfer LP	2,327	54,790	51,054	56,210	51,438	55,500	4.19%	1.09
HESM	Hess Midstream Partners LP	95	1,820	1,754	1,991	1,910	1,906	4.97%	1.04
SMLP	Summit Midstream Partners LP	79	1,484	1,628	1,241	1,347	1,362	5.79%	0.92
WES	Western Midstream Part.	380	7,858	7,959	8,290	7,855	8,074	4.71%	1.06
All Companies		4,648			112,621	101,991	109,622	4.24%	1.10
Average								4.71%	1.05
Median								4.71%	1.05
Trimmed Average								4.65%	1.05
High								5.79%	1.17
Low								3.94%	0.92
Selected								4.70%	1.05

MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Pipelines - Gas

2021 Assessment Year

(\$ In Millions)

¹ A	² B	C	³ D	⁴ E	⁵ F	⁶ G	⁷ H	⁸ I	⁹ J	¹⁰ K	¹¹ L
Ticker	Company	Inflation	PP&E, Gross Current Year	PP&E, Gross Previous Year	Average PP&E (D+E)/2	Depreciation Expense 10-K (CF)	Average Life of Assets F/G			Replacement Cost (RC) Note [1] G*I/(1-J)	RC as % of Depreciation K/G
		MTDOR (CPI)	10-K, Notes	10-K, Notes				Note [1] C*H	Note [1] 1/(1+C)^H		
DCP	DCP Midstream LP	2.00%	13,420	14,504	13,962	376	37	0.74	0.48	536	142.64%
ENBL	Enable Midstream Part.	2.00%	13,220	13,161	13,191	420	31	0.63	0.54	570	135.64%
EPD	Enterprise Products	2.00%	57,498	55,285	56,391	2,072	27	0.54	0.58	2,707	130.65%
ET	Energy Transfer LP	2.00%	94,115	89,790	91,953	3,678	25	0.50	0.61	4,710	128.05%
HESM	Hess Midstream Partners LP	2.00%	4,163	3,905	4,034	157	26	0.51	0.60	202	128.88%
SMLP	Summit Midstream Partners LP	2.00%	2,346	2,326	2,336	119	20	0.39	0.68	145	121.88%
WES	Western Midstream Part.	2.00%	12,642	12,356	12,499	491	25	0.51	0.60	631	128.58%
Average											130.90%
Median											128.88%
Trimmed Average											130.36%
High											142.64%
Low											121.88%
Selected											130.00%

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.



**2021 Capitalization Rate Study
Pipelines - Incorporated**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Pipelines - Incorporated

2021 Assessment Year

Capital Structure ^[1]

Equity	52.00%
Debt	48.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	11.60%	35%
Capital Asset Pricing Model - Ex Ante ^[2]	9.36%	35%
3 Stage Dividend Discount Model - Dividends ^[3]	14.00%	15%
3 Stage Dividend Discount Model - Earnings ^[3]	20.00%	15%
Weighted Average	12.44%	100%
Selected Cost of Equity	12.44%	

Debt Cost of Capital

		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%	40%
Ba - MTDOR - Avg. YTM of Ba Rated Corporate Bonds ^[5]	6.54%	60%
Weighted Average	5.19%	100%
Selected Cost of Debt	5.19%	

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	52.00%	12.44%		12.44%	6.47%
Debt	48.00%	5.19%	24.00%	3.94%	1.89%
WACC	100.00%				8.36%
WACC (Rounded)					8.40%

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: Pipelines - Incorporated

2021 Assessment Year

Capital Structure ^[1]

Equity	52.00%
Debt	48.00%

Equity Capitalization Rate ^[2]

NOI After-tax	6.95%
GCF	14.15%

Debt Capitalization Rate ^[3]

Calculated Current Yield	4.60%
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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	52.00%	6.95%		6.95%	3.61%
Debt	48.00%	4.60%	24.00%	3.50%	1.68%
Total	100.00%				5.29%
Total (Rounded)					5.30%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	52.00%	14.15%		14.15%	7.36%
Debt	48.00%	4.60%	24.00%	3.50%	1.68%
WACC	100.00%				9.04%
Total (Rounded)					9.05%

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies

Industry: Pipelines - Incorporated

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Oil-Gas Distribution industry.

Companies were then selected using the following screening criteria:

1. Engaged primarily in providing midstream transportation services.
2. Incorporated as a corporation (not a partnership).
3. Actively traded on an American exchange.
4. Headquartered / incorporated in the United States
5. No significant merger & acquisition activity during the year.

Company Ticker	Midstream transportation	Not a partnership	Actively traded on an American exchange	Incorporated in U.S.	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
ALTM	Yes	Yes	Yes	Yes	Yes	No	Yes	
AM	Yes	Yes	Yes	Yes	Yes	No	Yes	
CLNE	No							
ENB.TO			No					
ENLC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
INT	No							
KMI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
LNG	No							
OKE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
PPL.TO			No					
TRP				No				
WMB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure
Industry: Pipelines - Incorporated
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 Symbol	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>					
ALTM	Altus Midstream	OILGAS	C++	16	46.22	751	0	624	0	1,375	55%	0%	45%
AM	Antero Midstream Corp.	OILGAS	C++	484	7.41	3,588	0	3,078	0	6,665	54%	0%	46%
ENLC	EnLink Midstream LLC	OILGAS	C+	489	3.62	1,774	0	4,318	88	6,179	29%	0%	71%
KMI	Kinder Morgan Inc.	OILGAS	B	2,264	13.43	30,398	0	39,622	303	70,323	43%	0%	57%
OKE	ONEOK Inc.	OILGAS	B+	445	37.53	16,695	0	16,300	101	33,096	50%	0%	50%
WMB	Williams Cos.	OILGAS	B	1,214	19.69	23,902	35	27,043	189	51,169	47%	0%	53%
All Companies						77,108	35	90,985	681	168,808	46%	0%	54%
Average											46%	0%	54%
Median											49%	0%	51%
Trimmed Average											49%	0%	51%
High											55%	0%	71%
Low											29%	0%	45%
Say											52%		48%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - Added ALTM, AM

		<u>Median</u>	
Current Year	49%	0%	51%
Prior Year	54%	0%	46%
2 Years Prior	51%	0%	48%
3 Year Average	51%	0%	48%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Pipelines - Incorporated

2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	11.60%	9.36%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	1.40	1.40
$ERP =$	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/>

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

Duff & Phelps, 2021 Cost of Capital Navigator

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

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Pipelines - Incorporated

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

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM**Industry: Pipelines - Incorporated****2021 Assessment Year**

A	B	C	D	E
Ticker Symbol	Company	Industry Group	Financial Strength	Beta
		<i>Value Line</i>	<i>Value Line</i>	<i>Value Line</i>
ALTM	Altus Midstream	OILGAS	C++	1.50
AM	Antero Midstream Corp.	OILGAS	C++	1.10
ENLC	EnLink Midstream LLC	OILGAS	C+	1.65
KMI	Kinder Morgan Inc.	OILGAS	B	1.20
OKE	ONEOK Inc.	OILGAS	B+	1.50
WMB	Williams Cos.	OILGAS	B	1.30
Average				1.38
Median				1.40
Trimmed Average				1.38
High				1.65
Low				1.10
Say				1.40

MONTANA DEPARTMENT OF REVENUE

Inflation & Real Growth
Industry: Pipelines - Incorporated
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)

Industry: Pipelines - Incorporated

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
ALTM	Altus Midstream	46.22	0.00	0.00%	0.73%	21.59%	0.73%	21.59%
AM	Antero Midstream Corp.	7.41	1.23	16.59%	0.82%	11.16%	17.41%	27.76%
ENLC	EnLink Midstream LLC	3.62	0.38	10.48%	1.03%	10.65%	11.52%	11.52%
KMI	Kinder Morgan Inc.	13.43	1.07	7.97%	7.74%	10.65%	15.71%	18.62%
OKE	ONEOK Inc.	37.53	3.85	10.26%	4.54%	11.26%	14.80%	21.52%
WMB	Williams Cos.	19.69	1.64	8.33%	4.93%	8.65%	13.26%	16.98%
Average							12.24%	19.66%
Median							14.03%	20.07%
Timmed Average							13.82%	19.68%
High							17.41%	27.76%
Low							0.73%	11.52%
Selected							14.00%	20.00%

Notes:

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Pipelines - Incorporated

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>
ALTM	Altus Midstream	46.22	6.00	12.98%	6.00	0.00%
AM	Antero Midstream Corp.	7.41	1.23	16.59%	1.25	0.40%
ENLC	EnLink Midstream LLC	3.62	0.38	10.48%	0.38	0.00%
KMI	Kinder Morgan Inc.	13.43	1.07	7.97%	1.50	8.81%
OKE	ONEOK Inc.	37.53	3.85	10.26%	4.60	4.55%
WMB	Williams Cos.	19.69	1.64	8.33%	2.00	5.09%

A	B	C	D	E
Ticker	Company	Earnings per share 2021 Est	Earnings per share 3-5 years Est	Short-Term Growth Rate
		<i>Value Line</i>	<i>Value Line</i>	<i>Note [1]</i>
ALTM	Altus Midstream	2.15	5.05	23.80%
AM	Antero Midstream Corp.	0.80	1.25	11.80%
ENLC	EnLink Midstream LLC	(0.10)	0.40	
KMI	Kinder Morgan Inc.	1.00	1.60	12.47%
OKE	ONEOK Inc.	2.95	4.75	12.65%
WMB	Williams Cos.	1.20	1.75	9.89%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Industry: Pipelines - Incorporated

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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
ALTM	Altus Midstream	46.22	0.00%	4.50%	12.98%	13.71%	0.73%	(46.22)	6.00	6.00	6.00	6.00	6.00
AM	Antero Midstream Corp.	7.41	0.40%	4.50%	16.59%	17.41%	0.82%	(7.41)	1.23	1.23	1.24	1.24	1.25
ENLC	EnLink Midstream LLC	3.62	0.00%	4.50%	10.48%	11.52%	1.03%	(3.62)	0.38	0.38	0.38	0.38	0.38
KMI	Kinder Morgan Inc.	13.43	8.81%	4.50%	7.97%	15.71%	7.74%	(13.43)	1.07	1.16	1.27	1.38	1.50
OKE	ONEOK Inc.	37.53	4.55%	4.50%	10.26%	14.80%	4.54%	(37.53)	3.85	4.03	4.21	4.40	4.60
WMB	Williams Cos.	19.69	5.09%	4.50%	8.33%	13.26%	4.93%	(19.69)	1.64	1.72	1.81	1.90	2.00

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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
ALTM	Altus Midstream	46.22	23.80%	4.50%	12.98%	34.57%	21.59%	(46.22)	6.00	7.43	9.20	11.38	14.09
AM	Antero Midstream Corp.	7.41	11.80%	4.50%	16.59%	27.76%	11.16%	(7.41)	1.23	1.38	1.54	1.72	1.92
ENLC	EnLink Midstream LLC	3.62	0.00%	4.50%	10.48%	11.52%	1.03%	(3.62)	0.38	0.38	0.38	0.38	0.38
KMI	Kinder Morgan Inc.	13.43	12.47%	4.50%	7.97%	18.62%	10.65%	(13.43)	1.07	1.20	1.35	1.52	1.71
OKE	ONEOK Inc.	37.53	12.65%	4.50%	10.26%	21.52%	11.26%	(37.53)	3.85	4.34	4.89	5.50	6.20
WMB	Williams Cos.	19.69	9.89%	4.50%	8.33%	16.98%	8.65%	(19.69)	1.64	1.80	1.98	2.18	2.39

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

Industry: Pipelines - Incorporated

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
ALTM	6.02	6.04	6.05	6.07	6.09	6.11	6.13	6.15	6.16	6.18	6.20	6.22	6.24	6.26	6.28	6.56	6.85	9,407,726,005
AM	1.26	1.27	1.28	1.28	1.29	1.30	1.31	1.32	1.33	1.34	1.35	1.36	1.36	1.37	1.38	1.45	1.51	2,073,436,150
ENLC	0.38	0.38	0.38	0.38	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.40	0.40	0.40	0.42	0.43	595,822,647
KMI	1.63	1.77	1.92	2.08	2.26	2.45	2.66	2.89	3.13	3.40	3.69	4.00	4.34	4.72	5.12	5.35	5.59	7,670,623,498
OKE	4.81	5.03	5.26	5.50	5.75	6.01	6.28	6.57	6.86	7.18	7.50	7.84	8.20	8.57	8.96	9.37	9.79	13,434,869,146
WMB	2.10	2.21	2.32	2.44	2.56	2.69	2.82	2.97	3.12	3.27	3.44	3.61	3.79	3.98	4.19	4.37	4.57	6,275,141,936

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
ALTM	17.27	21.15	25.91	31.75	38.89	47.65	58.38	71.52	87.62	107.34	131.51	161.11	197.38	241.81	296.24	309.58	323.51	444,087,986,989
AM	2.14	2.38	2.65	2.95	3.28	3.66	4.07	4.53	5.04	5.61	6.25	6.96	7.74	8.62	9.60	10.03	10.48	14,385,932,671
ENLC	0.38	0.38	0.38	0.38	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.40	0.40	0.40	0.42	0.43	595,822,647
KMI	1.92	2.15	2.40	2.69	3.01	3.37	3.77	4.22	4.72	5.29	5.92	6.63	7.42	8.30	9.29	9.71	10.15	13,929,350,965
OKE	6.95	7.79	8.73	9.79	10.98	12.30	13.79	15.46	17.33	19.43	21.78	24.42	27.38	30.69	34.40	35.95	37.57	51,574,646,867
WMB	2.62	2.87	3.14	3.44	3.77	4.13	4.52	4.95	5.43	5.94	6.51	7.13	7.81	8.56	9.37	9.79	10.23	14,048,847,221

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Industry: Pipelines - Incorporated

2021 Assessment Year

A	B	C	D	E	F
Ticker Symbol	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moodys.com</i>	
ALTM	Altus Midstream	OILGAS	C++		
AM	Antero Midstream Corp.	OILGAS	C++	B1	14
ENLC	EnLink Midstream LLC	OILGAS	C+	Ba2	12
KMI	Kinder Morgan Inc.	OILGAS	B	Baa2	9
OKE	ONEOK Inc.	OILGAS	B+	Baa3	10
WMB	Williams Cos.	OILGAS	B	Baa3	10
All Companies					
Average					11
Median					10
Trimmed Average					11
High					14
Low					9
Say				Baa3 to Ba1	10-11

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Equity Capitalization Rates

Industry: Pipelines - Incorporated

2021 Assessment Year

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Ticker Symbol	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
ALTM	Altus Midstream	46.22	(1.80)	2.15	(25.68)	21.50		4.65%	2.18	0.20	21.20	231.08	4.72%		751	(353)	
AM	Antero Midstream Corp.	7.41	(0.25)	0.80	(29.65)	9.27		10.79%	1.04	1.35	7.13	5.49	14.03%	18.21%	3,588	3,143	1.14
ENLC	EnLink Midstream LLC	3.62	(0.91)	(0.10)	(3.98)	(36.24)			(1.03)	0.85	(3.52)	4.26		23.45%	1,774	2,125	0.83
KMI	Kinder Morgan Inc.	13.43	0.05	1.00	268.51	13.43		7.45%	1.01	2.15	13.29	6.24	7.52%	16.01%	30,398	31,436	0.97
OKE	ONEOK Inc.	37.53	2.54	2.95	14.77	12.72	6.77%	7.86%	4.25	3.75	8.83	10.01	11.32%	9.99%	16,695	6,226	2.68
WMB	Williams Cos.	19.69	1.09	1.20	18.07	16.41	5.54%	6.09%	2.41	2.55	8.17	7.72	12.24%	12.95%	23,902	13,363	1.79
Average					40.34	6.18	6.15%	7.37%			9.18	44.14	9.97%	16.12%			1.48
Median					5.40	13.07	6.15%	7.45%			8.50	6.98	11.32%	16.01%			1.14
Trimmed Average					0.80	12.96		7.13%			9.36	7.37	10.36%	15.72%			1.30
High					268.51	21.50	6.77%	10.79%			21.20	231.08	14.03%	23.45%			2.68
Low					(29.65)	(36.24)	5.54%	4.65%			(3.52)	4.26	4.72%	9.99%			0.83
Say							6.95%						14.15%				1.15

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Industry: Pipelines - Incorporated

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>Source</i>	<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>
ALTM	Altus Midstream	10	406	406	624	624	515	1.90%	1.00
AM	Antero Midstream Corp.	147	2,702	2,892	3,078	3,092	2,890	5.09%	1.00
ENLC	EnLink Midstream LLC	223	4,444	4,764	4,318	4,594	4,381	5.10%	0.94
KMI	Kinder Morgan Inc.	1,595	38,016	34,392	39,622	34,689	38,819	4.11%	1.14
OKE	ONEOK Inc.	713	13,800	12,487	16,300	14,236	15,050	4.74%	1.14
WMB	Williams Cos.	1,192	25,319	22,288	27,043	22,344	26,181	4.55%	1.21
	All Companies	3,880			90,985	79,578	87,836	4.42%	1.14
	Average							4.25%	1.07
	Median							4.64%	1.07
	Trimmed Average							4.62%	1.07
	High							5.10%	1.21
	Low							1.90%	0.94
	Say							4.60%	1.07

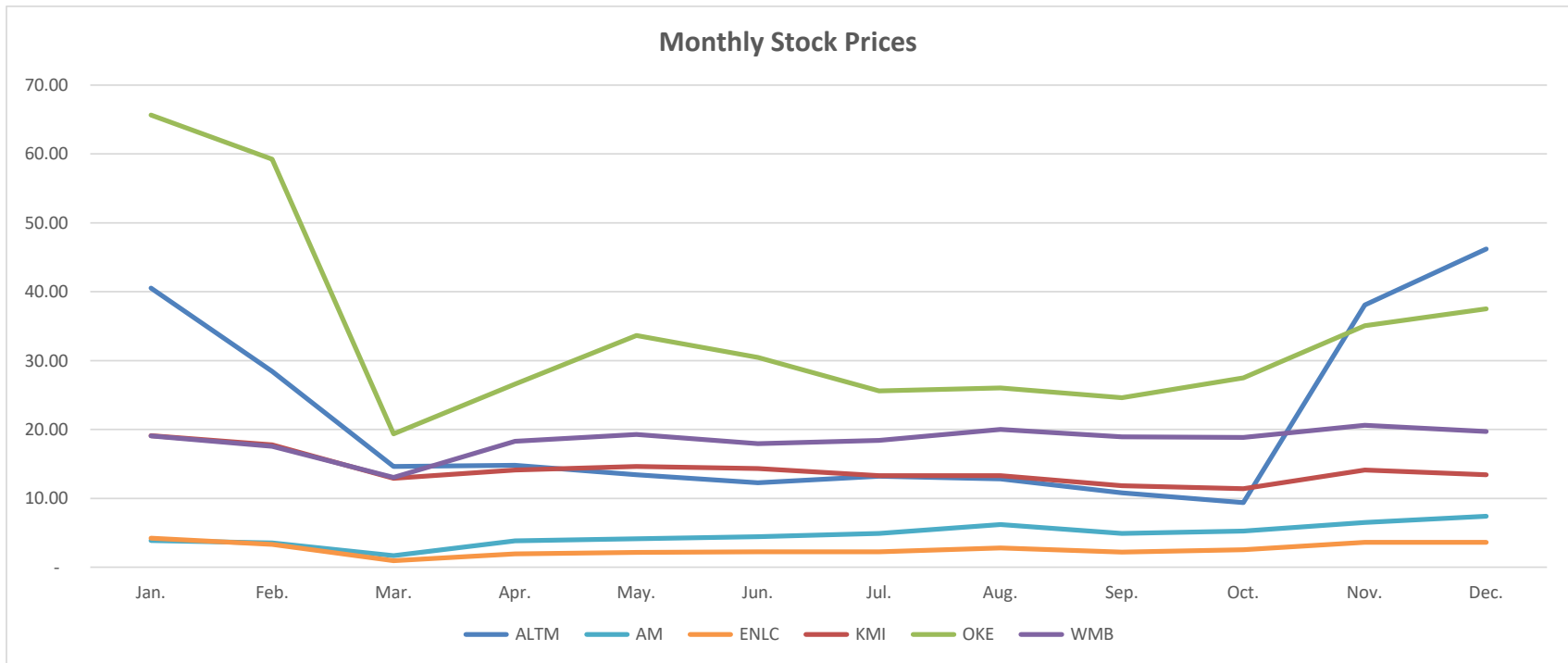
MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Pipelines - Incorporated

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.
ALTM	Altus Midstream	40.51	28.43	14.61	14.80	13.44	12.27	13.20	12.82	10.82	9.40	38.10	46.22
AM	Antero Midstream Corp.	3.86	3.53	1.70	3.84	4.14	4.42	4.91	6.19	4.91	5.24	6.48	7.41
ENLC	EnLink Midstream LLC	4.22	3.31	0.96	1.93	2.14	2.22	2.23	2.82	2.21	2.55	3.61	3.62
KMI	Kinder Morgan Inc.	19.12	17.77	12.90	14.11	14.64	14.31	13.30	13.28	11.85	11.43	14.12	13.43
OKE	ONEOK Inc.	65.66	59.24	19.36	26.57	33.65	30.47	25.60	26.04	24.62	27.48	35.07	37.53
WMB	Williams Cos.	19.05	17.54	13.03	18.29	19.29	17.96	18.43	20.00	18.93	18.85	20.61	19.69



MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Pipelines - Incorporated

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 (D+E)/2	Depreciation Expense 10-K (CF)	Average Life of Assets F/G	Note [1] C*H	Note [1] 1/(1+C)^H	Replacement Cost (RC) Note [1] G*/(1-J)	RC as % of Depreciation K/G
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*/(1-J)	K/G
ALTM	Altus Midstream	2.00%	209	207	208	16	13	0.26	0.77	18	114.61%
AM	Antero Midstream Corp.	2.00%	3,412	3,361	3,386	109	31	0.62	0.54	147	135.30%
ENLC	EnLink Midstream LLC	2.00%	10,515	10,500	10,508	639	16	0.33	0.72	756	118.34%
KMI	Kinder Morgan Inc.	2.00%	53,654	53,369	53,512	2,164	25	0.49	0.61	2,764	127.73%
OKE	ONEOK Inc.	2.00%	23,073	22,051	22,562	579	39	0.78	0.46	839	144.96%
WMB	Williams Cos.	2.00%	42,489	41,510	42,000	1,721	24	0.49	0.62	2,192	127.36%
Average											128.05%
Median											127.55%
Trimmed Average											127.18%
High											144.96%
Low											114.61%
Selected											127.50%

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.



**2021 Capitalization Rate Study
Pipelines - Liquid**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Pipelines - Liquid

2021 Assessment Year

Capital Structure ^[1]

Equity	55.00%
Debt	45.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	10.51%	35%
Capital Asset Pricing Model - Ex Ante ^[2]	8.51%	35%
3 Stage Dividend Discount Model - Dividends ^[3]	22.35%	15%
3 Stage Dividend Discount Model - Earnings ^[3]	20.25%	15%
Weighted Average	13.05%	100%
Selected Cost of Equity	13.05%	

Debt Cost of Capital

		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%	100%
Weighted Average	6.54%	100%
Selected Cost of Debt	6.54%	

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	55.00%	13.05%		13.05%	7.18%
Debt	45.00%	6.54%	24.00%	4.97%	2.24%
WACC	100.00%				9.41%
WACC (Rounded)					9.45%

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: Pipelines - Liquid
2021 Assessment Year**

Capital Structure ^[1]

Equity	55.00%
Debt	45.00%

Equity Capitalization Rate ^[2]

NOI After-tax	12.10%
GCF	18.90%

Debt Capitalization Rate ^[3]

Calculated Current Yield	3.90%
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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	55.00%	12.10%		12.10%	6.66%
Debt	45.00%	3.90%	24.00%	2.96%	1.33%
Total	100.00%				7.99%
Total (Rounded)					8.00%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	55.00%	18.90%		18.90%	10.40%
Debt	45.00%	3.90%	24.00%	2.96%	1.33%
WACC	100.00%				11.73%
Total (Rounded)					11.75%

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: Pipelines - Liquid

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Pipeline MLPs industry.

Companies were then selected using the following screening criteria:

1. Primarily engaged in the transportation, storage, and terminaling of crude oil, refined products, and liquified petroleum gas.
2. Actively traded on an American exchange.
3. Incorporated as a limited partnership.
4. Operate in the North / central regions of the West and Midwest
5. No significant merger & acquisition activity during the year.

Company Ticker	Transportation etc. of petroleum liquids	Actively traded on an American Exchange	Incorporated as LP	Operates in North / West Region	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
BKEP	No							
BPMP	No							
CAPL	No							
CEQP	No							
CQP	No							
DCP	No							
DKL	Yes	Yes	Yes	No				
ENBL	No							
EPD	No							
ET	No							
GEL	Yes	Yes	Yes	No				
GLP	No							
GPP	No							
HEP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
HESM	No							
MMLP	No							
MMP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
MPLX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
NBLX	Yes	Yes	Yes	Yes	Yes	No		[1]

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies

Industry: Pipelines - Liquid

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Pipeline MLPs industry.

Companies were then selected using the following screening criteria:

1. Primarily engaged in the transportation, storage, and terminaling of crude oil, refined products, and liquified petroleum gas.
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3. Incorporated as a limited partnership.
4. Operate in the North / central regions of the West and Midwest
5. No significant merger & acquisition activity during the year.

Company Ticker	Transportation etc. of petroleum liquids	Actively traded on an American Exchange	Incorporated as LP	Operates in North / West Region	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
NGL	No							
NS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
OMP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
PAA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
PAGP	No							
PBFX	Yes	Yes	Yes	No				
PSXP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
RTLX	Yes	Yes	Yes	No				
SHLX	Yes	Yes	Yes	No				
SMLP	No							
SPH	No							
SRLP	No							
TCP	No							
WES	No							

[1] NBLX's GP was acquired by Chevron on Oct. 5, 2020

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure

Industry: Pipelines - Liquid

2021 Assessment Year

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

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Ticker Symbol	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>					
HEP	Holly Energy Part.	PIPEMLP	C+	105,440	13.86	1,461,259	0	1,491,800	3,351	2,956,410	49%	0%	51%
MMP	Magellan Midstream	PIPEMLP	B+	228,403	41.41	9,458,293	0	5,880,850	165,016	15,504,159	61%	0%	39%
MPLX	MPLX LP	PIPEMLP	B+	1,058,400	21.03	22,259,935	1,579	23,056,000	537,000	45,854,514	49%	0%	51%
NS	NuStar Energy L.P.	PIPEMLP	B	109,468	14.06	1,539,608	756,301	3,857,455	85,789	6,239,153	25%	12%	63%
OMP	Oasis Midstream Partners LP	PIPEMLP	C+	33,811	11.43	386,380	0	450,000	1,678	838,058	46%	0%	54%
PAA	Plains All Amer. Pipe.	PIPEMLP	B	722,380	8.07	5,827,829	2,292,000	11,013,000	395,000	19,527,829	30%	12%	58%
PSXP	Phillips 66 Partners	PIPEMLP	B++	228,340	25.57	5,839,349	749,000	4,217,000	43,000	10,848,349	54%	7%	39%
All Companies											46%	4%	50%
Average											45%	4%	51%
Median											49%	0%	51%
Trimmed Average											46%	4%	51%
High											61%	12%	63%
Low											25%	0%	39%
Selected											55%		45%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - Removed NGL due to lack of comparability in business operations.

		<u>Median</u>	
Current Year	49%	0%	51%
Prior Year	56%	0%	40%
2 Years Prior	59%	4%	36%
3 Year Average	54%	1%	42%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Pipelines - Liquid

2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	10.51%	8.51%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	1.25	1.25
$ERP =$	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 1.45%

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/>

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

Duff & Phelps, 2021 Cost of Capital Navigator

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

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Pipelines - Liquid

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

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM

Industry: Pipelines - Liquid

2021 Assessment Year

A	B	C	D	E
Ticker Symbol	Company	Industry Group	Financial Strength	Beta
		<i>Value Line</i>	<i>Value Line</i>	<i>Value Line</i>
HEP	Holly Energy Part.	PIPEMLP	C+	0.95
MMP	Magellan Midstream	PIPEMLP	B+	1.20
MPLX	MPLX LP	PIPEMLP	B+	1.10
NS	NuStar Energy L.P.	PIPEMLP	B	1.30
OMP	Oasis Midstream Partners LP	PIPEMLP	C+	1.60
PAA	Plains All Amer. Pipe.	PIPEMLP	B	1.55
PSXP	Phillips 66 Partners	PIPEMLP	B++	1.00
Average				1.24
Median				1.20
Trimmed Average				1.23
High				1.60
Low				0.95
Selected				1.25

MONTANA DEPARTMENT OF REVENUE

Inflation & Real Growth
Industry: Pipelines - Liquid
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)

Industry: Pipelines - Liquid

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
HEP	Holly Energy Part.	13.86	1.40	10.10%	1.09%	4.63%	11.19%	14.73%
MMP	Magellan Midstream	41.41	4.11	9.93%	8.53%	10.65%	18.45%	20.58%
MPLX	MPLX LP	21.03	2.75	13.08%	0.72%	4.57%	13.79%	17.64%
NS	NuStar Energy L.P.	14.06	1.60	11.38%	15.24%	15.65%	26.62%	27.03%
OMP	Oasis Midstream Partners LP	11.43	0.00	0.00%	0.00%	0.00%		
PAA	Plains All Amer. Pipe.	8.07	0.72	8.92%	31.43%	17.32%	40.36%	26.25%
PSXP	Phillips 66 Partners	25.57	3.60	14.08%	8.09%	10.78%	22.16%	24.86%
Average							22.10%	21.85%
Median							20.31%	22.72%
Trimmed Average							20.26%	22.33%
High							40.36%	27.03%
Low							11.19%	14.73%
Selected							20.25%	22.35%

Notes:

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Pipelines - Liquid

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>
HEP	Holly Energy Part.	13.86	1.40	10.10%	1.40	0.00%
MMP	Magellan Midstream	41.41	4.11	9.93%	5.90	9.46%
MPLX	MPLX LP	21.03	2.75	13.08%	2.75	0.00%
NS	NuStar Energy L.P.	14.06	1.60	11.38%	3.00	17.02%
OMP	Oasis Midstream Partners LP	11.43	0.00	0.00%		
PAA	Plains All Amer. Pipe.	8.07	0.72	8.92%	2.50	36.51%
PSXP	Phillips 66 Partners	25.57	3.60	14.08%	5.00	8.56%

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>
HEP	Holly Energy Part.	1.75	2.10	4.66%
MMP	Magellan Midstream	3.75	5.90	12.00%
MPLX	MPLX LP	2.55	3.05	4.58%
NS	NuStar Energy L.P.	1.05	2.00	17.48%
OMP	Oasis Midstream Partners LP	0.00		
PAA	Plains All Amer. Pipe.	1.20	2.50	20.14%
PSXP	Phillips 66 Partners	4.00	6.20	11.58%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Industry: Pipelines - Liquid

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	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
HEP	Holly Energy Part.	13.86	0.00%	4.50%	10.10%	11.19%	1.09%	(13.86)	1.40	1.40	1.40	1.40	1.40
MMP	Magellan Midstream	41.41	9.46%	4.50%	9.93%	18.45%	8.53%	(41.41)	4.11	4.50	4.92	5.39	5.90
MPLX	MPLX LP	21.03	0.00%	4.50%	13.08%	13.79%	0.72%	(21.03)	2.75	2.75	2.75	2.75	2.75
NS	NuStar Energy L.P.	14.06	17.02%	4.50%	11.38%	26.62%	15.24%	(14.06)	1.60	1.87	2.19	2.56	3.00
OMP	Oasis Midstream Partners LP	11.43	0.00%	4.50%	0.00%			(11.43)	0.00	0.00	0.00	0.00	0.00
PAA	Plains All Amer. Pipe.	8.07	36.51%	4.50%	8.92%	40.36%	31.43%	(8.07)	0.72	0.98	1.34	1.83	2.50
PSXP	Phillips 66 Partners	25.57	8.56%	4.50%	14.08%	22.16%	8.09%	(25.57)	3.60	3.91	4.24	4.61	5.00

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	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
HEP	Holly Energy Part.	13.86	4.66%	4.50%	10.10%	14.73%	4.63%	(13.86)	1.40	1.47	1.53	1.61	1.68
MMP	Magellan Midstream	41.41	12.00%	4.50%	9.93%	20.58%	10.65%	(41.41)	4.11	4.60	5.16	5.77	6.47
MPLX	MPLX LP	21.03	4.58%	4.50%	13.08%	17.64%	4.57%	(21.03)	2.75	2.88	3.01	3.15	3.29
NS	NuStar Energy L.P.	14.06	17.48%	4.50%	11.38%	27.03%	15.65%	(14.06)	1.60	1.88	2.21	2.59	3.05
OMP	Oasis Midstream Partners LP	11.43	0.00%	4.50%	0.00%			(11.43)	0.00	0.00	0.00	0.00	0.00
PAA	Plains All Amer. Pipe.	8.07	20.14%	4.50%	8.92%	26.25%	17.32%	(8.07)	0.72	0.87	1.04	1.25	1.50
PSXP	Phillips 66 Partners	25.57	11.58%	4.50%	14.08%	24.86%	10.78%	(25.57)	3.60	4.02	4.48	5.00	5.58

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

Industry: Pipelines - Liquid

2021 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
HEP	1.40	1.41	1.41	1.42	1.42	1.43	1.43	1.43	1.44	1.44	1.45	1.45	1.46	1.46	1.46	1.53	1.60	2,195,136,068
MMP	6.44	7.03	7.67	8.37	9.13	9.97	10.87	11.87	12.95	14.13	15.42	16.83	18.37	20.04	21.87	22.86	23.89	32,790,896,177
MPLX	2.76	2.77	2.77	2.78	2.79	2.80	2.81	2.82	2.83	2.83	2.84	2.85	2.86	2.87	2.88	3.01	3.14	4,311,874,419
NS	3.49	4.05	4.70	5.47	6.35	7.38	8.57	9.96	11.57	13.44	15.62	18.15	21.08	24.50	28.46	29.74	31.08	42,665,068,793
OMP	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
PAA	3.36	4.51	6.07	8.15	10.95	14.72	19.77	26.57	35.70	47.98	64.47	86.63	116.40	156.41	210.18	219.64	229.52	315,069,252,292
PSXP	5.41	5.86	6.35	6.88	7.45	8.06	8.73	9.45	10.24	11.09	12.01	13.00	14.08	15.25	16.51	17.25	18.03	24,747,600,329

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
HEP	1.76	1.84	1.93	2.02	2.11	2.21	2.31	2.42	2.53	2.65	2.77	2.90	3.03	3.18	3.32	3.47	3.63	4,981,726,068
MMP	7.21	8.04	8.96	9.99	11.14	12.42	13.85	15.44	17.22	19.20	21.41	23.87	26.61	29.67	33.08	34.57	36.13	49,593,467,178
MPLX	3.44	3.60	3.76	3.93	4.11	4.30	4.50	4.70	4.92	5.14	5.38	5.62	5.88	6.15	6.43	6.72	7.02	9,642,440,696
NS	3.55	4.14	4.83	5.64	6.57	7.66	8.94	10.42	12.15	14.17	16.53	19.27	22.48	26.21	30.56	31.94	33.38	45,816,787,981
OMP	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
PAA	1.79	2.13	2.53	3.02	3.59	4.28	5.10	6.07	7.23	8.61	10.26	12.22	14.55	17.33	20.64	21.57	22.54	30,936,442,493
PSXP	6.20	6.89	7.65	8.50	9.45	10.50	11.66	12.96	14.40	16.00	17.77	19.75	21.94	24.38	27.09	28.31	29.58	40,605,541,470

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Industry: Pipelines - Liquid

2021 Assessment Year

A	B	C	D	E	F
Ticker Symbol	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moodys.com</i>	
HEP	Holly Energy Part.	PIPEMLP	C+	Ba2	12
MMP	Magellan Midstream	PIPEMLP	B+	Baa1	8
MPLX	MPLX LP	PIPEMLP	B+	Baa2	9
NS	NuStar Energy L.P.	PIPEMLP	B	Ba3	13
OMP	Oasis Midstream Partners LP	PIPEMLP	C+		
PAA	Plains All Amer. Pipe.	PIPEMLP	B	Ba1	11
PSXP	Phillips 66 Partners	PIPEMLP	B++	Baa3	10
Average					11
Median					11
Trimmed Average					11
High					13
Low					8
Selected				Ba1	11

MONTANA DEPARTMENT OF REVENUE
Support for Direct Capitalization - Equity Capitalization Rates
Industry: Pipelines - Liquid
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
HEP	Holly Energy Part.	13.86	1.64	1.75	8.45	7.92	11.83%	12.63%	2.72	2.70	5.10	5.13	19.63%	19.48%	1,461,259	381,100	3.83
MMP	Magellan Midstream	41.41	3.66	3.75	11.31	11.04	8.84%	9.06%	5.55	4.80	7.46	8.63	13.40%	11.59%	9,458,293	2,715,000	3.48
MPLX	MPLX LP	21.03	2.39	2.55	8.80	8.25	11.36%	12.12%	3.10	3.65	6.78	5.76	14.74%	17.35%	22,259,935	16,613,000	1.34
NS	NuStar Energy L.P.	14.06	(1.75)	1.05	(8.04)	13.39		7.47%	3.38	5.40	4.16	2.60	24.03%	38.39%	1,539,608	2,358,100	0.65
OMP	Oasis Midstream Partners LP	11.43	(11.51)	0.00	(0.99)				4.48	0.00	2.55		39.20%		386,380	292,400	1.32
PAA	Plains All Amer. Pipe.	8.07	(3.33)	1.20	(2.42)	6.72		14.87%	3.54	1.80	2.28	4.48	43.88%	22.31%	5,827,829	13,062,000	0.45
PSXP	Phillips 66 Partners	25.57	3.23	4.00	7.92	6.39	12.63%	15.64%	4.41	4.15	5.80	6.16	17.24%	16.23%	5,839,349	2,834,000	2.06
Average					3.58	8.95	11.17%	11.96%			4.88	5.46	24.59%	20.89%			1.88
Median					7.92	8.08	11.60%	12.38%			5.10	5.45	19.63%	18.42%			1.34
Trimmed Average					4.35	8.48	11.60%	12.17%			4.88	5.38	22.97%	18.84%			1.77
High					11.31	13.39	12.63%	15.64%			7.46	8.63	43.88%	38.39%			3.83
Low					(8.04)	6.39	8.84%	7.47%			2.28	2.60	13.40%	11.59%			0.45
Selected							12.10%						18.90%				1.34

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Industry: Pipelines - Liquid

2021 Assessment Year

(\$ in Thousands)

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>
HEP	Holly Energy Part.	59,424	1,561,244	1,535,730	1,491,800	1,477,363	1,526,522	3.89%	1.01
MMP	Magellan Midstream	234,133	5,192,685	4,706,075	5,880,850	4,978,691	5,536,768	4.23%	1.18
MPLX	MPLX LP	829,000	21,141,000	19,713,000	23,056,000	20,139,000	22,098,500	3.75%	1.14
NS	NuStar Energy L.P.	229,054	3,507,493	3,397,331	3,857,455	3,597,335	3,682,474	6.22%	1.07
OMP	Oasis Midstream Partners LP	12,783	458,500	459,057	450,000	450,570	454,250	2.81%	1.00
PAA	Plains All Amer. Pipe.	436,000	9,991,000	9,691,000	11,013,000	10,213,000	10,502,000	4.15%	1.08
PSXP	Phillips 66 Partners	121,000	3,725,000	3,516,000	4,217,000	3,909,000	3,971,000	3.05%	1.08
	All Companies	1,921,394			49,966,105	44,764,959	47,771,514	4.02%	1.12
	Average							4.02%	1.08
	Median							3.89%	1.08
	Trimmed Average							3.81%	1.08
	High							6.22%	1.18
	Low							2.81%	1.00
	Selected							3.90%	1.08

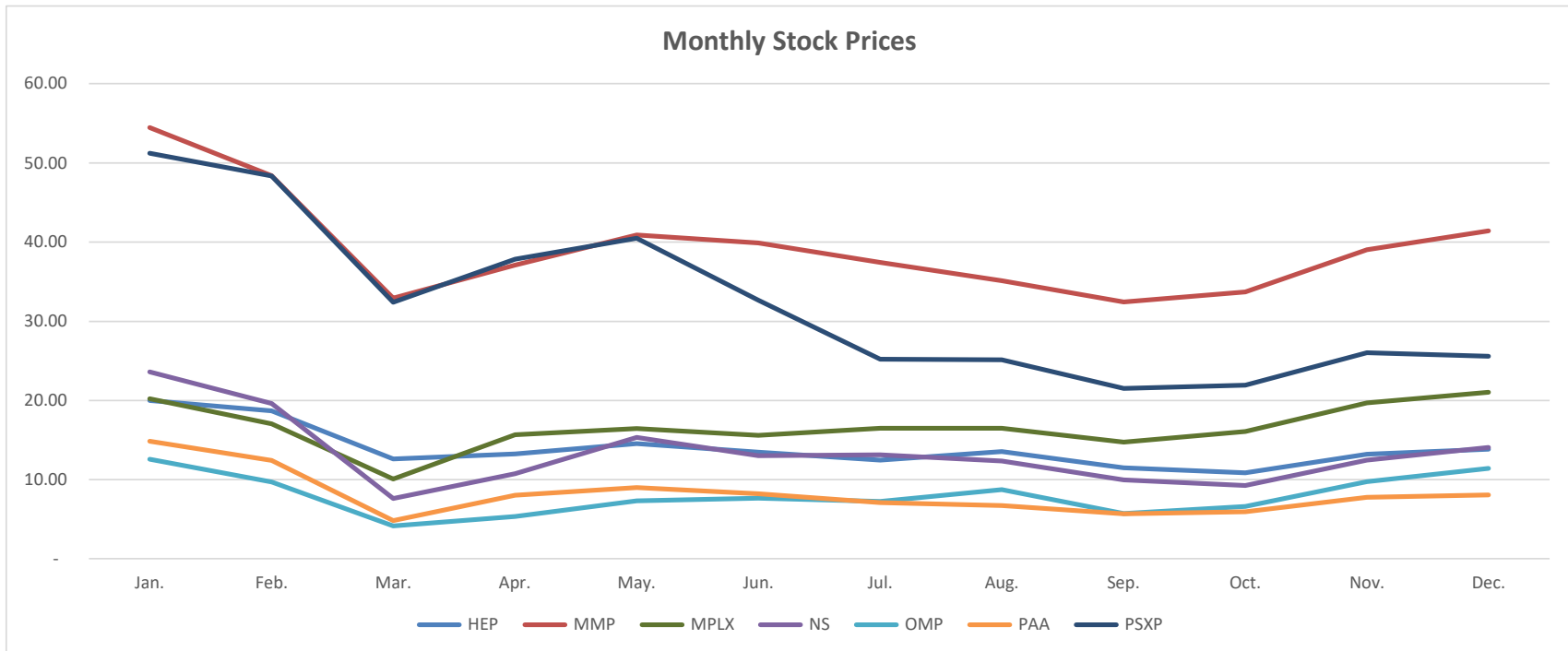
MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Pipelines - Liquid

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.
HEP	Holly Energy Part.	19.98	18.68	12.63	13.26	14.55	13.46	12.46	13.54	11.49	10.86	13.21	13.86
MMP	Magellan Midstream	54.44	48.38	32.92	37.11	40.91	39.91	37.43	35.14	32.44	33.71	39.03	41.41
MPLX	MPLX LP	20.23	17.06	10.06	15.67	16.44	15.59	16.48	16.48	14.72	16.10	19.68	21.03
NS	NuStar Energy L.P.	23.61	19.63	7.59	10.76	15.35	13.04	13.13	12.37	9.96	9.27	12.46	14.06
OMP	Oasis Midstream Partners LP	12.58	9.72	4.15	5.36	7.33	7.64	7.26	8.72	5.72	6.62	9.75	11.43
PAA	Plains All Amer. Pipe.	14.84	12.44	4.81	8.04	9.01	8.21	7.10	6.73	5.68	5.94	7.77	8.07
PSXP	Phillips 66 Partners	51.19	48.35	32.40	37.84	40.50	32.67	25.20	25.14	21.52	21.92	26.03	25.57



MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Pipelines - Liquid

2021 Assessment Year

(\$ In Thousands)

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	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year			Note [1]	Note [1]	Note [1]		
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*I/(1-J)	K/G
HEP	Holly Energy Part.	2.00%	2,116,441	2,061,554	2,088,998	99,578	21	0.42	0.66	122,903	123.42%
MMP	Magellan Midstream	2.00%	8,352,825	8,431,227	8,392,026	258,676	32	0.65	0.53	354,099	136.89%
MPLX	MPLX LP	2.00%	26,875,000	26,867,000	26,871,000	1,377,000	20	0.39	0.68	1,676,698	121.76%
NS	NuStar Energy L.P.	2.00%	6,164,742	6,187,144	6,175,943	285,101	22	0.43	0.65	354,104	124.20%
OMP	Oasis Midstream Partners LP	2.00%	1,180,819	1,155,503	1,168,161	40,237	29	0.58	0.56	53,433	132.80%
PAA	Plains All Amer. Pipe.	2.00%	18,585,000	18,948,000	18,766,500	653,000	29	0.57	0.57	864,878	132.45%
PSXP	Phillips 66 Partners	2.00%	4,825,000	4,408,000	4,616,500	135,000	34	0.68	0.51	187,681	139.02%
Average											130.08%
Median											132.45%
Trimmed Average											129.95%
High											139.02%
Low											121.76%
Selected											130.00%

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.



**2021 Capitalization Rate Study
Railroads**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Railroads

2021 Assessment Year

Capital Structure ^[1]

Equity	80.00%
Debt	20.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	9.43%	35%
Capital Asset Pricing Model - Ex Ante ^[2]	7.67%	35%
3 Stage Dividend Discount Model - Dividends ^[3]	6.35%	15%
3 Stage Dividend Discount Model - Earnings ^[3]	7.60%	15%
Weighted Average	8.07%	100%
Selected Cost of Equity	8.07%	

Debt Cost of Capital

		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%	100%
Ba - MTDOR - Avg. YTM of Ba Rated Corporate Bonds ^[5]	6.54%	0%
Weighted Average	3.16%	100%
Selected Cost of Debt	3.16%	

Weighted Average Cost of Capital (WACC)

Source of Capital	Capital Structure	Capital Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	80.00%	8.07%		8.07%	6.46%
Debt	20.00%	3.16%	24.00%	2.40%	0.48%
WACC	100.00%				6.94%
WACC (Rounded)					6.95%

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: Railroads

2021 Assessment Year

Capital Structure ^[1]

Equity	80.00%
Debt	20.00%

Equity Capitalization Rate ^[2]

NOI After-tax	4.35%
GCF	6.10%

Debt Capitalization Rate ^[3]

Calculated Current Yield	3.85%
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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	80.00%	4.35%		4.35%	3.48%
Debt	20.00%	3.85%	24.00%	2.93%	0.59%
Total	100.00%				4.07%
Total (Rounded)					4.10%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	80.00%	6.10%		6.10%	4.88%
Debt	20.00%	3.85%	24.00%	2.93%	0.59%
WACC	100.00%				5.47%
Total (Rounded)					5.50%

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: Railroads

2021 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Railroad industry.

Companies were then selected using the following screening criteria:

1. Primarily provides rail, intermodal transportation, and rail-to-truck transload services.
2. Actively traded on an American exchange.
3. Headquartered / incorporated in the United States
4. No significant merger & acquisition activity during the year.

Company Ticker	Primarily provide rail services	Actively Traded on an American Exchange	Headquartered/Incorporated in the U.S.	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity	Use as Guideline Company	Note
CNI			No				
CP			No				
CSX	Yes	Yes	Yes	Yes	Yes	Yes	
GATX	No						
GBX	No						
KSU	Yes	Yes	Yes	Yes	Yes	Yes	
NSC	Yes	Yes	Yes	Yes	Yes	Yes	
RAIL	No						
TRN	No						
UNP	Yes	Yes	Yes	Yes	Yes	Yes	
USDP	No						
WAB	No						

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure

Industry: Railroads

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>					
CSX	CSX Corp.	RAILROAD	B++	763	90.48	68,990	0	21,076	500	90,566	76%	0%	24%
KSU	Kansas City South'n	RAILROAD	A	91	203.13	18,495	5	4,369	70	22,939	81%	0%	19%
NSC	Norfolk Southern	RAILROAD	A+	252	236.65	59,659	0	16,664	433	76,756	78%	0%	22%
UNP	Union Pacific	RAILROAD	A++	671	207.26	139,147	0	31,829	1,604	172,580	81%	0%	19%
All Companies						286,291	5	73,938	2,607	362,841	79%	0%	21%
Average											79%	0%	21%
Median											79%	0%	21%
High											81%	0%	24%
Low											76%	0%	19%
Selected											80%		20%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - No changes to guideline companies.

		<u>Median</u>	
Current Year	79%	0%	21%
Prior Year	78%	0%	22%
2 Years Prior	77%	0%	23%
3 Year Average	78%	0%	22%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Railroads

2021 Assessment Year

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	9.43%	7.67%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	1.10	1.10
$ERP =$	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/>

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

Duff & Phelps, 2021 Cost of Capital Navigator

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

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Railroads

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

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM**Industry: Railroads****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>
CSX	CSX Corp.	RAILROAD	B++	1.05
KSU	Kansas City South'n	RAILROAD	A	1.05
NSC	Norfolk Southern	RAILROAD	A+	1.10
UNP	Union Pacific	RAILROAD	A++	1.10
Average				1.08
Median				1.08
High				1.10
Low				1.05
Selected				1.10

MONTANA DEPARTMENT OF REVENUE

**Inflation & Real Growth
Industry: Railroads
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)

Industry: Railroads

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
CSX	CSX Corp.	90.48	1.20	1.33%	4.77%	5.42%	6.09%	6.75%
KSU	Kansas City South'n	203.13	2.06	1.01%	5.19%	6.14%	6.20%	7.16%
NSC	Norfolk Southern	236.65	3.96	1.67%	4.90%	6.11%	6.58%	7.78%
UNP	Union Pacific	207.26	4.20	2.03%	4.49%	6.78%	6.51%	8.81%
Average							6.35%	7.62%
Median							6.36%	7.47%
High							6.58%	8.81%
Low							6.09%	6.75%
Selected							6.35%	7.60%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Railroads

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>
CSX	CSX Corp.	90.48	1.20	1.33%	1.50	5.74%
KSU	Kansas City South'n	203.13	2.06	1.01%	2.80	7.97%
NSC	Norfolk Southern	236.65	3.96	1.67%	5.00	6.00%
UNP	Union Pacific	207.26	4.20	2.03%	5.00	4.46%

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>
CSX	CSX Corp.	4.45	6.10	8.20%
KSU	Kansas City South'n	9.10	14.00	11.37%
NSC	Norfolk Southern	11.35	16.35	9.55%
UNP	Union Pacific	9.65	14.40	10.52%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Industry: Railroads

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	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
CSX	CSX Corp.	90.48	5.74%	4.50%	1.33%	6.09%	4.77%	(90.48)	1.20	1.27	1.34	1.42	1.50
KSU	Kansas City South'n	203.13	7.97%	4.50%	1.01%	6.20%	5.19%	(203.13)	2.06	2.22	2.40	2.59	2.80
NSC	Norfolk Southern	236.65	6.00%	4.50%	1.67%	6.58%	4.90%	(236.65)	3.96	4.20	4.45	4.72	5.00
UNP	Union Pacific	207.26	4.46%	4.50%	2.03%	6.51%	4.49%	(207.26)	4.20	4.39	4.58	4.79	5.00

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	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
CSX	CSX Corp.	90.48	8.20%	4.50%	1.33%	6.75%	5.42%	(90.48)	1.20	1.30	1.40	1.52	1.64
KSU	Kansas City South'n	203.13	11.37%	4.50%	1.01%	7.16%	6.14%	(203.13)	2.06	2.29	2.56	2.85	3.17
NSC	Norfolk Southern	236.65	9.55%	4.50%	1.67%	7.78%	6.11%	(236.65)	3.96	4.34	4.75	5.21	5.70
UNP	Union Pacific	207.26	10.52%	4.50%	2.03%	8.81%	6.78%	(207.26)	4.20	4.64	5.13	5.67	6.27

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

Industry: Railroads

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
CSX	1.58	1.67	1.77	1.87	1.97	2.09	2.20	2.33	2.46	2.60	2.75	2.90	3.07	3.24	3.42	3.58	3.74	5,131,448,637
KSU	3.02	3.25	3.50	3.77	4.07	4.38	4.72	5.08	5.48	5.90	6.36	6.85	7.38	7.95	8.57	8.96	9.36	12,847,730,067
NSC	5.30	5.61	5.94	6.29	6.66	7.05	7.47	7.91	8.38	8.87	9.40	9.95	10.54	11.16	11.82	12.35	12.91	17,717,757,007
UNP	5.22	5.46	5.70	5.95	6.22	6.50	6.79	7.09	7.40	7.73	8.08	8.44	8.82	9.21	9.62	10.05	10.50	14,418,771,033

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
CSX	1.78	1.92	2.07	2.23	2.41	2.60	2.81	3.03	3.28	3.54	3.82	4.12	4.45	4.80	5.19	5.42	5.66	7,775,432,520
KSU	3.52	3.90	4.32	4.80	5.32	5.90	6.54	7.26	8.05	8.93	9.90	10.98	12.18	13.51	14.99	15.66	16.36	22,464,652,461
NSC	6.23	6.80	7.43	8.12	8.87	9.68	10.57	11.55	12.61	13.78	15.05	16.43	17.95	19.60	21.41	22.37	23.38	32,094,122,269
UNP	6.90	7.60	8.37	9.22	10.15	11.18	12.31	13.56	14.93	16.44	18.10	19.94	21.95	24.18	26.62	27.82	29.07	39,908,905,763

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Industry: Railroads

2021 Assessment Year

A	B	C	D	E	F
Ticker	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moodys.com</i>	
CSX	CSX Corp.	RAILROAD	B++	Baa1	8
KSU	Kansas City South'n	RAILROAD	A	Baa2	9
NSC	Norfolk Southern	RAILROAD	A+	Baa1	8
UNP	Union Pacific	RAILROAD	A++	Baa1	8
Average					8
Median					8
High					9
Low					8
Selected				Baa1	8

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Equity Capitalization Rates

Industry: Railroads

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
CSX	CSX Corp.	90.48	3.60	4.45	25.13	20.33	3.98%	4.92%	6.05	5.45	14.96	16.60	6.69%	6.02%	68,990	11,848	5.82
KSU	Kansas City South'n	203.13	6.96	9.10	29.19	22.32	3.43%	4.48%	11.09	13.35	18.32	15.22	5.46%	6.57%	18,495	4,057	4.56
NSC	Norfolk Southern	236.65	9.25	11.35	25.58	20.85	3.91%	4.80%	14.97	14.00	15.81	16.90	6.33%	5.92%	59,659	15,184	3.93
UNP	Union Pacific	207.26	8.12	9.65	25.53	21.48	3.92%	4.66%	11.49	13.10	18.04	15.82	5.54%	6.32%	139,147	16,958	8.21
Average					26.36	21.25	3.81%	4.71%			16.78	16.14	6.00%	6.21%			5.63
Median					25.55	21.16	3.91%	4.73%			16.92	16.21	5.93%	6.17%			3.93
High					29.19	22.32	3.98%	4.92%			18.32	16.90	6.69%	6.57%			5.82
Low					25.13	20.33	3.43%	4.48%			14.96	15.22	5.46%	5.92%			3.93
Selected							4.35%						6.10%				5.60

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Industry: Railroads

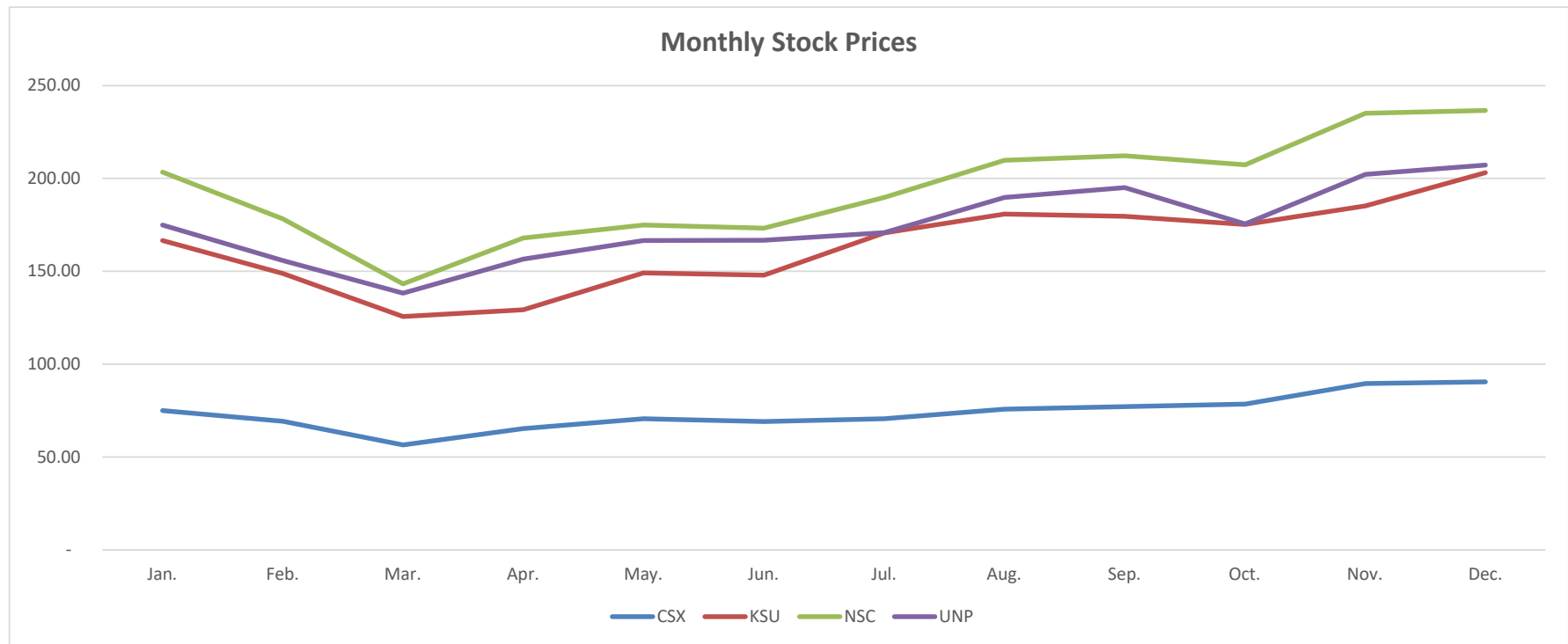
2021 Assessment Year

(\$ 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>Source</i>	<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>
CSX	CSX Corp.	754	18,503	16,238	21,076	16,705	19,790	3.81%	1.26
KSU	Kansas City South'n	151	3,536	3,246	4,369	3,771	3,952	3.82%	1.16
NSC	Norfolk Southern	625	14,806	12,196	16,664	12,681	15,735	3.97%	1.31
UNP	Union Pacific	1,141	27,200	25,200	31,829	26,729	29,515	3.87%	1.19
All Companies		2,671			73,938	59,886	68,991	3.87%	1.23
Average								3.87%	1.23
Median								3.84%	1.23
High								3.97%	1.31
Low								3.81%	1.16
Selected								3.85%	1.23

MONTANA DEPARTMENT OF REVENUE
Support of Stock Price - From YAHOO Finance
Industry: Railroads
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.
CSX	CSX Corp.	75.11	69.32	56.57	65.39	70.67	69.10	70.68	75.76	77.22	78.48	89.53	90.48
KSU	Kansas City South'n	166.64	148.85	125.63	129.30	149.08	147.86	170.64	180.76	179.56	175.28	185.26	203.13
NSC	Norfolk Southern	203.44	178.17	143.28	167.92	174.97	173.27	189.69	209.75	212.22	207.39	235.06	236.65
UNP	Union Pacific	174.86	155.75	138.26	156.64	166.51	166.67	170.89	189.71	195.05	175.55	202.19	207.26



MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Railroads

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	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year				Note [1]	Note [1]	Note [1]	
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*I/(1-J)	K/G
CSX	CSX Corp.	2.00%	45,530	45,100	45,315	1,383	32.77	0.66	0.52	1,899	137.28%
KSU	Kansas City South'n	2.00%	11,902	11,496	11,699	358	33	0.65	0.52	491	137.19%
NSC	Norfolk Southern	2.00%	43,330	43,596	43,463	1,154	38	0.75	0.47	1,654	143.30%
UNP	Union Pacific	2.00%	75,420	74,246	74,833	2,210	34	0.68	0.51	3,063	138.61%
Average											139.10%
Median											137.95%
High											143.30%
Low											137.19%
Selected											139.00%

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.



**2021 Capitalization Rate Study
Telecommunications - Large**

FINAL

Completed: April 16, 2021

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Telecommunications - Large

2021 Assessment Year

Capital Structure ^[1]

Equity	60.00%
Debt	40.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	7.25%	25%
Capital Asset Pricing Model - Ex Ante ^[2]	5.97%	25%
3 Stage Dividend Discount Model - Dividends ^[3]	8.95%	25%
3 Stage Dividend Discount Model - Earnings ^[3]	10.85%	<u>25%</u>
Weighted Average	<u>8.26%</u>	100%
Selected Cost of Equity	<u>8.26%</u>	

Debt Cost of Capital

		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%	100%
Ba - MTDOR - Avg. YTM of Ba Rated Corporate Bonds ^[5]	6.54%	<u>0%</u>
Weighted Average	<u>3.16%</u>	100%
Selected Cost of Debt	<u>3.16%</u>	

Weighted Average Cost of Capital (WACC)

Source of Capital	Capital Structure	Capital Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	60.00%	8.26%		8.26%	4.96%
Debt	40.00%	3.16%	24.00%	2.40%	0.96%
WACC	100.00%				5.92%
WACC (Rounded)					5.95%

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 - Large
2021 Assessment Year**

Capital Structure ^[1]

Equity	60.00%
Debt	40.00%

Equity Capitalization Rate ^[2]

NOI After-tax	5.60%
GCF	12.95%

Debt Capitalization Rate ^[3]

Calculated Current Yield	4.10%
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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	60.00%	5.60%		5.60%	3.36%
Debt	40.00%	4.10%	24.00%	3.12%	1.25%
Total	100.00%				4.61%
Total (Rounded)					4.65%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	60.00%	12.95%		12.95%	7.77%
Debt	40.00%	4.10%	24.00%	3.12%	1.25%
WACC	100.00%				9.02%
Total (Rounded)					9.05%

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 - Large

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. Market value of equity above 100 billion USD.
2. Incorporated in the United States of America.
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. No significant merger & acquisition activity during the year.

The Value Line industry groups listed above were analyzed to determine which companies had a market capitalization over 100 billion U.S. dollars at December 31, 2020. Initial analysis revealed six companies that met this criteria: Charter Communications (CHTR), Comcast Corp. (CMCSA), AT&T Inc. (T), T-Mobile US, Inc. (TMUS), Verizon Communications (VZ), and Zoom Video Communications, Inc. (ZM). All six companies were then verified as incorporated in the United States. (ZM) was removed because their primary business is not consistent with other guideline public companies in this study. Lastly, the remaining five companies were analyzed for significant merger and acquisition activity during the previous year. Finding none, the remaining five companies were selected for use as guideline public companies in estimating the cost of capital in this study (CHTR, CMCSA, T, TMUS, VZ).

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure

Industry: Telecommunications - Large

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 Symbol	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>					
CHTR	Charter Communic.	CABLETV	B++	194	661.55	128,163	0	94,226	1,345	223,734	57%	0%	43%
CMCSA	Comcast Corp.	CABLETV	A+	4,581	52.16	238,933	0	125,600	4,458	368,991	65%	0%	35%
T	AT&T Inc.	TELESERV	A++	7,126	28.26	201,379	0	189,260	25,739	416,378	48%	0%	52%
TMUS	T-Mobile US	TELESERV	B+	1,242	134.85	167,458	0	75,064	30,587	273,109	61%	0%	39%
VZ	Verizon Communic.	TELESERV	A++	4,291	58.13	249,451	0	158,036	21,485	428,972	58%	0%	42%
All Companies						985,383	0	642,186	83,614	1,711,183	58%	0%	42%
Average											58%	0%	42%
Median											58%	0%	42%
High											65%	0%	52%
Low											48%	0%	35%
Selected											60%		40%

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

MCA 15-1-210, rationale for changes to guideline companies:

2021 - T-Mobile added due to M&A activity being completed compared to the prior year

		<u>Median</u>	
Current Year	58%	0%	42%
Prior Year	60%	0%	40%
2 Years Prior	54%	0%	46%
3 Year Average	58%	0%	42%

MONTANA DEPARTMENT OF REVENUE

**Capital Asset Pricing Model (CAPM)
Industry: Telecommunications - Large
2021 Assessment Year**

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	7.25%	5.97%
$R_f =$	Risk Free Rate	1.45%	1.45%
$\beta =$	Beta	0.80	0.80
$ERP =$	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)
Industry: Telecommunications - Large
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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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)

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM
 Industry: Telecommunications - Large
 2021 Assessment Year

A	B	C	D	E
Ticker Symbol	Company	Industry Group	Financial Strength	Beta
		<i>Value Line</i>	<i>Value Line</i>	<i>Value Line</i>
CHTR	Charter Communic.	CABLETV	B++	0.90
CMCSA	Comcast Corp.	CABLETV	A+	0.80
T	AT&T Inc.	TELESERV	A++	0.85
TMUS	T-Mobile US	TELESERV	B+	0.80
VZ	Verizon Communic.	TELESERV	A++	0.65
Average				0.80
Median				0.80
High				0.90
Low				0.65
Selected				0.80

MONTANA DEPARTMENT OF REVENUE

Inflation & Real Growth

**Industry: Telecommunications - Large
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)

Industry: Telecommunications - Large

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
CHTR	Charter Communic.	661.55	0.00	0.00%	0.00%	0.00%		
CMCSA	Comcast Corp.	52.16	0.98	1.88%	6.15%	10.03%	8.03%	11.91%
T	AT&T Inc.	28.26	2.08	7.36%	3.91%	5.37%	11.27%	12.73%
TMUS	T-Mobile US	134.85	0.00	0.00%	0.00%	0.00%		
VZ	Verizon Communic.	58.13	2.52	4.34%	3.21%	3.58%	7.54%	7.92%
Average							8.95%	10.85%
Median							8.03%	11.91%
High							11.27%	12.73%
Low							7.54%	7.92%
Selected							8.95%	10.85%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Telecommunications - Large

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^[1]	Expected Dividend Yield	Div'ds Decl'd per sh 2024-2026 Est^[1]	Short Term Growth Rate
		<i>Yahoo</i>	<i>Value Line</i>	<i>D / C</i>	<i>Value Line</i>	<i>Note [2]</i>
CHTR	Charter Communic.	661.55	0.00	0.00%		
CMCSA	Comcast Corp.	52.16	0.98	1.88%	1.40	9.33%
T	AT&T Inc.	28.26	2.08	7.36%	2.40	3.64%
TMUS	T-Mobile US	134.85	0.00	0.00%		
VZ	Verizon Communic.	58.13	2.52	4.34%	2.70	1.74%

A	B	C	D	E
Ticker	Company	Earnings per share 2021 Est^[1]	Earnings per share 2024-2026 Est^[1]	Short Term Growth Rate
		<i>Value Line</i>	<i>Value Line</i>	<i>Note [2]</i>
CHTR	Charter Communic.	20.50	37.90	16.61%
CMCSA	Comcast Corp.	2.80	5.25	17.02%
T	AT&T Inc.	3.20	4.00	5.74%
TMUS	T-Mobile US	3.95	6.05	11.25%
VZ	Verizon Communic.	5.10	5.65	2.59%

Notes

[1] From Value Line Tissue

[2] 5 year compound annual growth rate (CAGR) - 4 periods

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Industry: Telecommunications - Large

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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
CHTR	Charter Communic.	661.55	0.00%	4.50%				(661.55)	0.00	0.00	0.00	0.00	0.00
CMCSA	Comcast Corp.	52.16	9.33%	4.50%	1.88%	8.03%	6.15%	(52.16)	0.98	1.07	1.17	1.28	1.40
T	AT&T Inc.	28.26	3.64%	4.50%	7.36%	11.27%	3.91%	(28.26)	2.08	2.16	2.23	2.32	2.40
TMUS	T-Mobile US	134.85	0.00%	4.50%				(134.85)	0.00	0.00	0.00	0.00	0.00
VZ	Verizon Communic.	58.13	1.74%	4.50%	4.34%	7.54%	3.21%	(58.13)	2.52	2.56	2.61	2.65	2.70

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	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
CHTR	Charter Communic.	661.55	16.61%	4.50%				(661.55)	0.00	0.00	0.00	0.00	0.00
CMCSA	Comcast Corp.	52.16	17.02%	4.50%	1.88%	11.91%	10.03%	(52.16)	0.98	1.15	1.34	1.57	1.84
T	AT&T Inc.	28.26	5.74%	4.50%	7.36%	12.73%	5.37%	(28.26)	2.08	2.20	2.33	2.46	2.60
TMUS	T-Mobile US	134.85	11.25%	4.50%				(134.85)	0.00	0.00	0.00	0.00	0.00
VZ	Verizon Communic.	58.13	2.59%	4.50%	4.34%	7.92%	3.58%	(58.13)	2.52	2.59	2.65	2.72	2.79

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

Industry: Telecommunications - Large

2021 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
CHTR	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
CMCSA	1.53	1.66	1.81	1.98	2.15	2.35	2.56	2.79	3.04	3.32	3.61	3.94	4.29	4.68	5.10	5.33	5.57	7,649,418,781
T	2.49	2.58	2.68	2.78	2.88	2.98	3.09	3.21	3.33	3.45	3.58	3.71	3.85	3.99	4.14	4.32	4.52	6,204,094,719
TMUS	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
VZ	2.75	2.80	2.86	2.91	2.97	3.03	3.09	3.14	3.21	3.27	3.33	3.39	3.46	3.53	3.59	3.76	3.92	5,386,629,505

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
CHTR	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
CMCSA	2.13	2.48	2.88	3.35	3.89	4.52	5.25	6.10	7.09	8.23	9.57	11.12	12.91	15.00	17.43	18.22	19.04	26,132,354,636
T	2.75	2.90	3.07	3.24	3.42	3.62	3.82	4.04	4.27	4.51	4.76	5.03	5.32	5.62	5.93	6.20	6.48	8,894,510,970
TMUS	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
VZ	2.87	2.95	3.03	3.11	3.19	3.28	3.37	3.46	3.55	3.65	3.75	3.85	3.96	4.07	4.18	4.36	4.56	6,259,758,081

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Industry: Telecommunications - Large

2021 Assessment Year

A	B	C	D	E	F
Ticker Symbol	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moodys.com</i>	
CHTR	Charter Communic.	CABLETV	B++	Ba2	12
CMCSA	Comcast Corp.	CABLETV	A+	A3	7
T	AT&T Inc.	TELESERV	A++	Baa2	9
TMUS	T-Mobile US	TELESERV	B+		
VZ	Verizon Communic.	TELESERV	A++	Baa1	8
All Companies					
Average					9
Median					9
High					12
Low					7
Selected				Baa2	9

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Equity Capitalization Rates

Industry: Telecommunications - Large

2021 Assessment Year

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Ticker Symbol	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
		<i>Yahoo</i>	<i>Value Line</i>	<i>Value Line</i>	<i>C/D</i>	<i>C/E</i>	<i>1/F</i>	<i>1/G</i>	<i>Value Line</i>	<i>Value Line</i>	<i>C/J</i>	<i>C/K</i>	<i>1/L</i>	<i>1/M</i>	<i>Price x Shrs</i>	<i>10-K</i>	<i>P/Q</i>
CHTR	Charter Communic.	661.55	15.44	20.50	42.85	32.27	2.33%	3.10%	66.72	73.35	9.92	9.02	10.09%	11.09%	128,163	23,805	5.38
CMCSA	Comcast Corp.	52.16	2.61	2.80	19.99	18.63	5.00%	5.37%	5.09	5.35	10.25	9.75	9.76%	10.26%	238,933	90,323	2.65
T	AT&T Inc.	28.26	3.18	3.20	8.89	8.83	11.25%	11.32%	7.52	7.25	3.76	3.90	26.61%	25.65%	201,379	184,221	1.09
TMUS	T-Mobile US	134.85	3.72	3.95	36.25	34.14	2.76%	2.93%	14.80	18.75	9.11	7.19	10.98%	13.90%	167,458	65,344	2.56
VZ	Verizon Communic.	58.13	4.90	5.10	11.86	11.40	8.43%	8.77%	8.85	9.00	6.57	6.46	15.23%	15.48%	249,451	61,395	4.06
Average					23.97	21.05	5.96%	6.30%			7.92	7.26	14.53%	15.28%			3.15
Median					19.99	18.63	5.00%	5.37%			9.11	7.19	10.98%	13.90%			2.65
Trimmed Average					22.70	20.77	5.40%	5.75%			8.53	7.56	12.10%	13.49%			2.07
High					42.85	34.14	11.25%	11.32%			10.25	9.75	26.61%	25.65%			5.38
Low					8.89	8.83	2.33%	2.93%			3.76	3.90	9.76%	10.26%			1.09
Selected							5.60%						12.95%				2.10

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization Cost of Debt Component - Calculated Current Yield

Industry: Telecommunications - Large

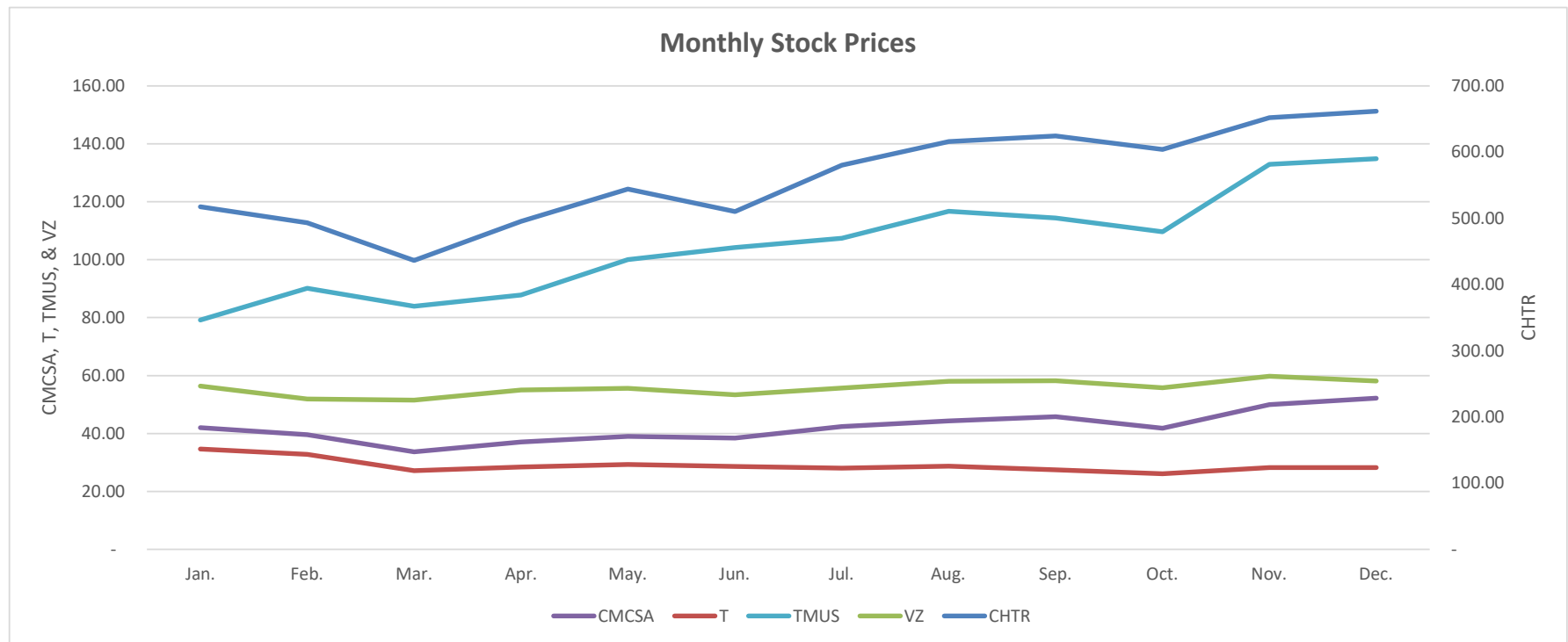
2021 Assessment Year

(\$ 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>
CHTR	Charter Communic.	3,848	85,386	79,078	94,226	82,752	89,806	4.28%	1.14
CMCSA	Comcast Corp.	4,588	115,800	102,217	125,600	103,760	120,700	3.80%	1.21
T	AT&T Inc.	7,925	184,162	163,147	189,260	157,245	186,711	4.24%	1.20
TMUS	T-Mobile US	2,483	27,191	26,315	75,064	72,569	51,128	4.86%	1.03
VZ	Verizon Communic.	4,247	130,316	111,489	158,036	129,062	144,176	2.95%	1.22
All Companies		23,091			642,186	545,388	592,521	3.90%	1.18
Average								4.03%	1.16
Median								4.24%	1.20
Trimmed Average								4.11%	1.18
High								4.86%	1.22
Low								2.95%	1.03
Selected								4.10%	1.18

MONTANA DEPARTMENT OF REVENUE
Support of Stock Price - From YAHOO Finance
Industry: Telecommunications - Large
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.
CHTR	Charter Communic.	517.46	493.17	436.31	495.23	544.00	510.04	580.00	615.61	624.34	603.82	651.99	661.55
CMCSA	Comcast Corp.	42.05	39.55	33.63	37.05	38.99	38.38	42.39	44.38	45.82	41.84	50.01	52.16
T	AT&T Inc.	34.60	32.83	27.17	28.40	29.27	28.67	28.05	28.76	27.51	26.07	28.25	28.26
TMUS	T-Mobile US	79.19	90.16	83.90	87.80	100.04	104.15	107.38	116.68	114.36	109.57	132.94	134.85
VZ	Verizon Communic.	56.35	51.88	51.46	55.03	55.55	53.37	55.65	58.02	58.24	55.79	59.77	58.13



MONTANA DEPARTMENT OF REVENUE

Maintenance Capital Expenditures Estimate Based on Guideline Companies

Industry: Telecommunications - Large

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	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year					Note [1]	Note [1]	Note [1]
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*I/(1-J)	K/G
CHTR	Charter Communic.	2.00%	65,996	62,247	64,122	6,704	10	0.19	0.83	7,432	110.86%
CMCSA	Comcast Corp.	2.00%	106,383	101,561	103,972	13,100	8	0.16	0.85	14,298	109.14%
T	AT&T Inc.	2.00%	327,751	333,538	330,645	28,516	12	0.23	0.79	32,233	113.04%
TMUS	T-Mobile US	2.00%	83,570	55,102	69,336	14,151	5	0.10	0.91	14,997	105.98%
VZ	Verizon Communic.	2.00%	279,737	265,734	272,736	16,720	16	0.33	0.72	19,761	118.19%
Average											111.44%
Median											110.86%
Trimmed Average											111.01%
High											118.19%
Low											105.98%
Selected											110.90%

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.



**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:

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
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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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^[4]</u>	<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

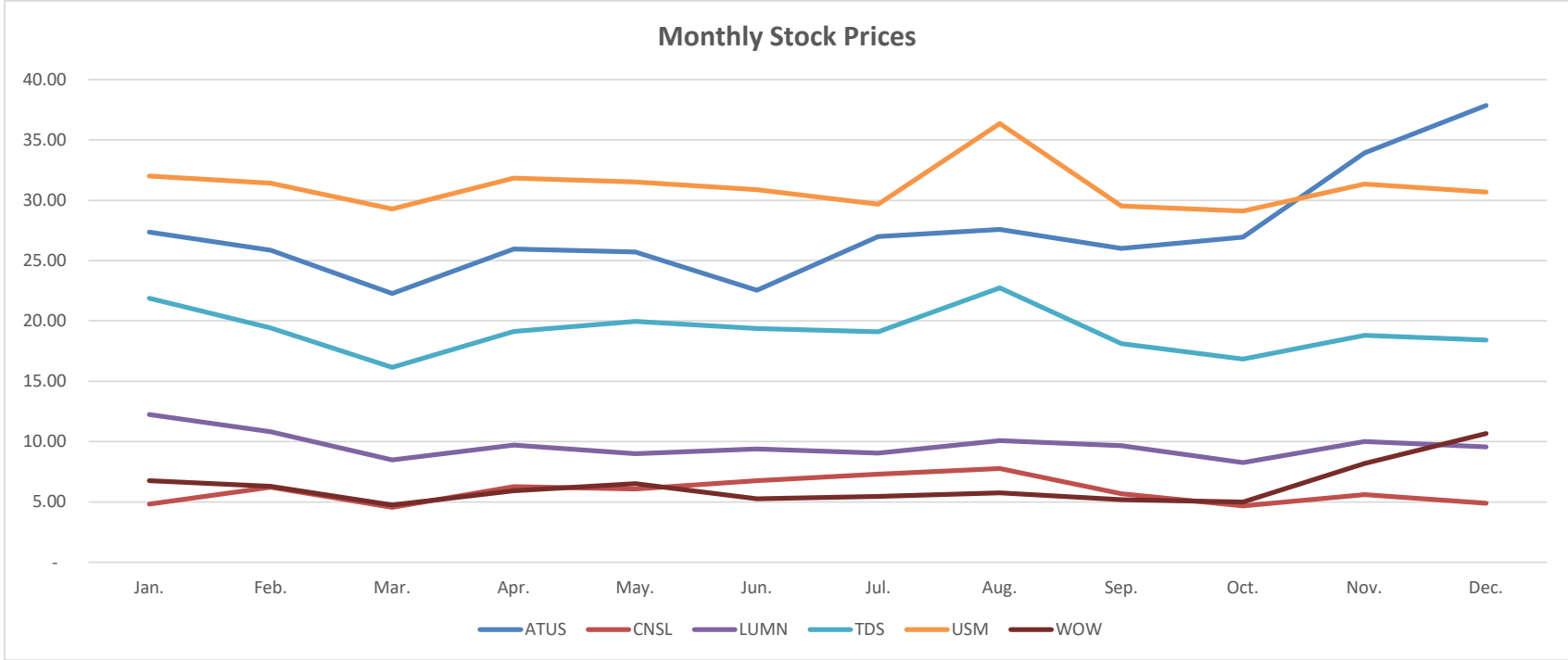
(\$ in Millions)

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	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year					Note [1]	Note [1]	Note [1]
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	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%

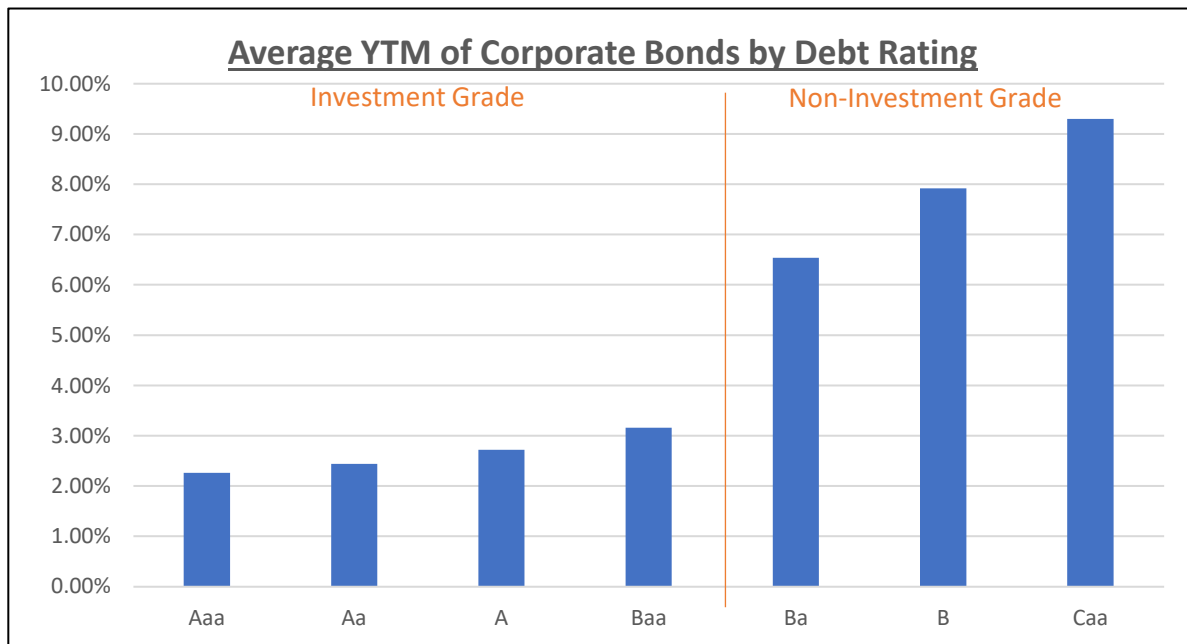
Notes

[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.

MONTANA DEPARTMENT OF REVENUE

High Yield Debt Study
Yield to Maturity of Debt by Rating
Based on Corporate Bond Yields
For Tax Year 2021

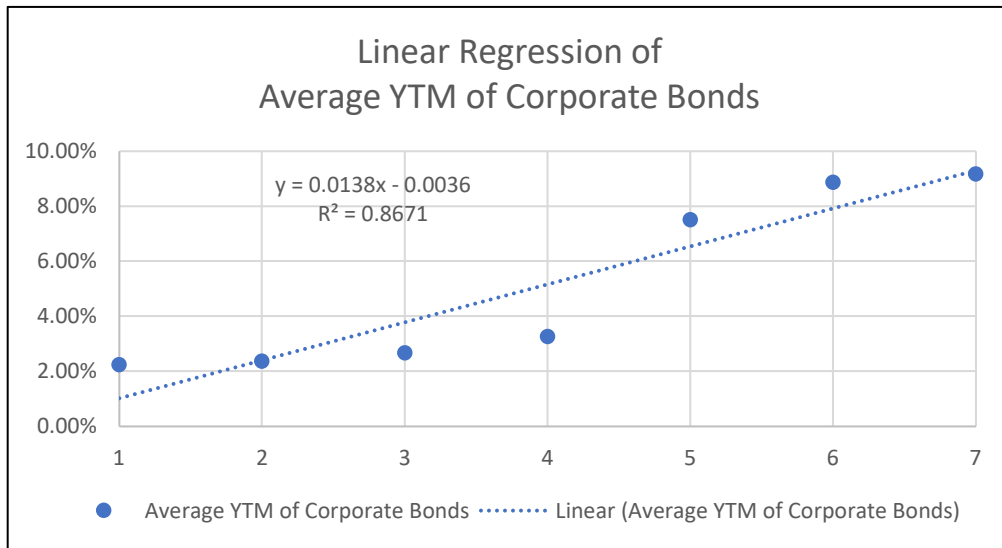
Rating	Average YTM of Corporate Bonds	Risk Free Rate (R_f)	Spread Over R_f	Source Note
Aaa	2.26%	1.45%	0.81%	Mergent Bond Record, January 2021
Aa	2.44%	1.45%	0.99%	Mergent Bond Record, January 2021
A	2.72%	1.45%	1.27%	Mergent Bond Record, January 2021
Baa	3.16%	1.45%	1.71%	Mergent Bond Record, January 2021
Ba	6.54%	1.45%	5.09%	Mergent, Moodys.com, & Linear Regression
B	7.92%	1.45%	6.47%	Mergent, Moodys.com, & Linear Regression
Caa	9.30%	1.45%	7.85%	Mergent, Moodys.com, & Linear Regression



MONTANA DEPARTMENT OF REVENUE

High Yield Debt Study
Linear Regression of Yield to Maturity by Combined Debt Rating
Based on Corporate Bond Yields
For Tax Year 2021

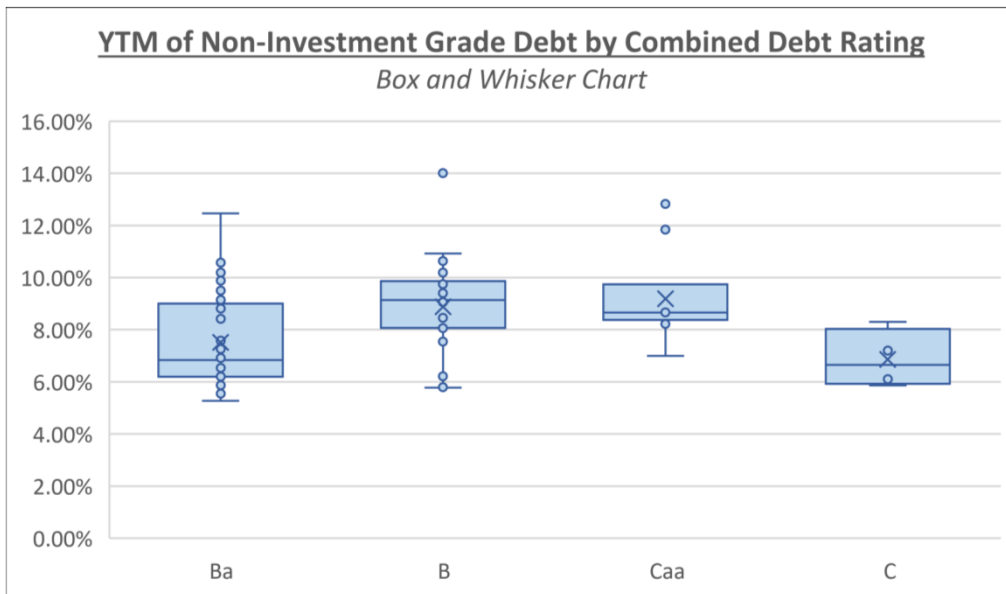
	<i>X-Axis</i>	<i>Y-Axis</i>				
Rating	Combined Numeric Rating	Average YTM of Corporate Bonds	Risk Free Rate (R_f)	Spread Over R_f	YTM Using Linear Regression	Selected YTM
Aaa	1	2.25%	1.45%	0.80%		2.25%
Aa	2	2.37%	1.45%	0.92%		2.37%
A	3	2.68%	1.45%	1.23%		2.68%
Baa	4	3.27%	1.45%	1.82%		3.27%
Ba	5	7.51%	1.45%	6.06%	6.54%	6.54%
B	6	8.88%	1.45%	7.43%	7.92%	7.92%
Caa	7	9.19%	1.45%	7.74%	9.30%	9.30%



MONTANA DEPARTMENT OF REVENUE

High Yield Debt Study
Average and Median Yield to Maturity by Combined Rating
Based on Corporate Bond Yields
For Tax Year 2021

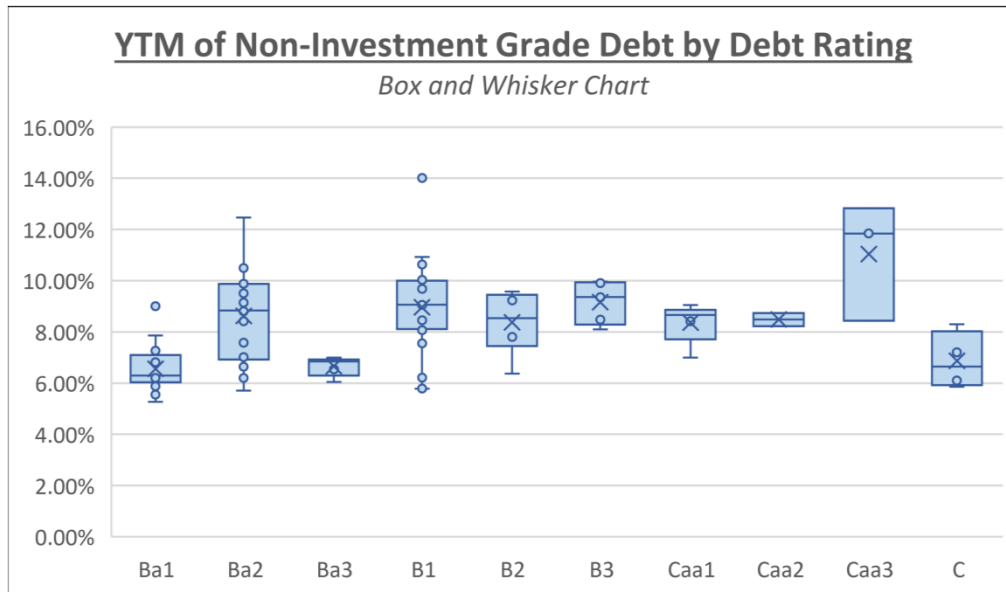
Rating	Average YTM	Median YTM	# of Securities
Ba	7.51%	8.10%	59
B	8.88%	9.15%	32
Caa	9.19%	8.67%	10
Ca			
C	6.87%	6.65%	4



MONTANA DEPARTMENT OF REVENUE

High Yield Debt Study
Average and Median Yield to Maturity by Debt Rating
Based on Corporate Bond Yields
For Tax Year 2021

Rating	Average YTM	Median YTM	# of Securities
Ba1	6.56%	8.10%	27
Ba2	8.62%	8.84%	27
Ba3	6.65%	6.84%	5
B1	8.96%	9.06%	21
B2	8.37%	8.53%	6
B3	9.16%	9.36%	5
Caa1	8.36%	8.66%	5
Caa2	8.48%	8.48%	2
Caa3	11.03%	11.84%	3
Ca			
C	6.87%	6.65%	4



S&P 500, 3 Stage Dividend Growth Model

Developed by the Montana Department of Revenue
To Be Used in Conjunction with the 2021 Capitalization Rate Studies

Determines The Implied Risk Premium Using Macroeconomic Data
This type of calculation can also be found in Chapter 9 of Ibbotson's (MorningStar) SBI, Supply Side Model

3 Stage Dividend Growth Model

Assumptions:

Stages	Years	Growth	Model 1
1st Stage	1-5 years	Constant @:	13.25%
2nd Stage	6-15 years	Linear from:	12.45% to 4.45%
			Real Growth
3rd Stage	15 years -perpetuity	GDP Growth: Real and Inflation	1.70% to 2.50%
		GDP Growth*: Real + Inflation	4.45%

OR

Model 2
16.31%
15.12% to 3.19%
Inflation
1.49% to 1.95%
3.19%

+
TO

S & P Dow Jones Indices Index Earnings, S&P 500 Earnings Estimate Report, February 11, 2021
Linear from 1st Stage to 3rd Stage

Inflation Range = Federal Reserve, Treasuries Inflation - Indexed

*GDP Growth = Real growth + Inflation
First Quarter 2021 Survey of Professional Forecasters - Philadelphia Federal Reserve Release Date 2/12/2021

Model 1

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Starting Industry	Start Price	Expected Dividends	1st Stage Growth Rates					2nd Stage Growth Rates										
S & P 500	\$ (3,732.04)	\$ 57.39	13.250%	13.250%	13.250%	13.250%	13.250%	12.45%	11.650%	10.850%	10.050%	9.250%	8.450%	7.650%	6.850%	6.050%	5.250%	4.450%
Implied Market Return =		7.46%																

Model 2

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Starting Industry	Start Price	Expected Dividends	1st Stage Growth Rates					2nd Stage Growth Rates										
S & P 500	\$ (3,732.04)	\$ 57.39	16.310%	16.310%	16.310%	16.310%	16.310%	15.12%	13.925%	12.732%	11.539%	10.346%	9.154%	7.961%	6.768%	5.575%	4.383%	3.190%
Implied Market Return =		7.41%																

Conclusions:

Implied Market Rate Range = 7.41% to 7.46%

Mean 7.44%
Market Rate Selected 7.44%

2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%
\$ 271.74	\$ 283.84	\$ 296.47	\$ 309.66	\$ 323.44	\$ 337.83	\$ 352.87	\$ 368.57	\$ 384.97	\$ 402.10	\$ 420.00	\$ 438.69	\$ 458.21	\$ 478.60	\$ 499.89	\$ 522.14	\$ 545.38	\$ 569.64

2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%
\$ 328.19	\$ 338.66	\$ 349.46	\$ 360.61	\$ 372.11	\$ 383.98	\$ 396.23	\$ 408.87	\$ 421.92	\$ 435.37	\$ 449.26	\$ 463.59	\$ 478.38	\$ 493.64	\$ 509.39	\$ 525.64	\$ 542.41	\$ 559.71

2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073
4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%
\$ 594.99	\$ 621.47	\$ 649.13	\$ 678.01	\$ 708.18	\$ 739.70	\$ 772.61	\$ 807.00	\$ 842.91	\$ 880.42	\$ 919.60	\$ 960.52	\$ 1,003.26	\$ 1,047.91	\$ 1,094.54	\$ 1,143.24	\$ 1,194.12	\$ 1,247.26

2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073
3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%
\$ 577.57	\$ 595.99	\$ 615.00	\$ 634.62	\$ 654.87	\$ 675.76	\$ 697.31	\$ 719.56	\$ 742.51	\$ 766.20	\$ 790.64	\$ 815.86	\$ 841.88	\$ 868.74	\$ 896.45	\$ 925.05	\$ 954.56	\$ 985.01

2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091
3rd Stage Growth Rates																	
4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%
\$ 1,302.76	\$ 1,360.73	\$ 1,421.29	\$ 1,484.53	\$ 1,550.59	\$ 1,619.60	\$ 1,691.67	\$ 1,766.95	\$ 1,845.58	\$ 1,927.70	\$ 2,013.49	\$ 2,103.09	\$ 2,196.67	\$ 2,294.43	\$ 2,396.53	\$ 2,503.17	\$ 2,614.57	\$ 2,730.91

2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091
3rd Stage Growth Rates																	
3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%
\$ 1,016.43	\$ 1,048.86	\$ 1,082.31	\$ 1,116.84	\$ 1,152.47	\$ 1,189.23	\$ 1,227.17	\$ 1,266.31	\$ 1,306.71	\$ 1,348.39	\$ 1,391.41	\$ 1,435.79	\$ 1,481.60	\$ 1,528.86	\$ 1,577.63	\$ 1,627.96	\$ 1,679.89	\$ 1,733.48

2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109
4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%
\$ 2,852.44	\$ 2,979.37	\$ 3,111.96	\$ 3,250.44	\$ 3,395.08	\$ 3,546.16	\$ 3,703.97	\$ 3,868.79	\$ 4,040.95	\$ 4,220.78	\$ 4,408.60	\$ 4,604.78	\$ 4,809.70	\$ 5,023.73	\$ 5,247.28	\$ 5,480.79	\$ 5,724.68	\$ 5,979.43

2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109
3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%
\$ 1,788.77	\$ 1,845.84	\$ 1,904.72	\$ 1,965.48	\$ 2,028.18	\$ 2,092.88	\$ 2,159.64	\$ 2,228.53	\$ 2,299.62	\$ 2,372.98	\$ 2,448.68	\$ 2,526.79	\$ 2,607.39	\$ 2,690.57	\$ 2,776.40	\$ 2,864.97	\$ 2,956.36	\$ 3,050.67

2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125
4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%
\$ 6,245.52	\$ 6,523.44	\$ 6,813.74	\$ 7,116.95	\$ 7,433.65	\$ 7,764.45	\$ 8,109.97	\$ 8,470.86	\$ 8,847.81	\$ 9,241.54	\$ 9,652.79	\$ 10,082.34	\$ 10,531.00	\$ 10,999.63	\$ 11,489.12	\$ 12,000.38

2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125
3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%
\$ 3,147.98	\$ 3,248.40	\$ 3,352.03	\$ 3,458.96	\$ 3,569.30	\$ 3,683.16	\$ 3,800.65	\$ 3,921.89	\$ 4,047.00	\$ 4,176.10	\$ 4,309.32	\$ 4,446.79	\$ 4,588.64	\$ 4,735.02	\$ 4,886.06	\$ 5,041.93

2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137
4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%	4.450%
\$ 12,534.40	\$ 13,092.18	\$ 13,674.78	\$ 14,283.31	\$ 14,918.92	\$ 15,582.81	\$ 16,276.24	\$ 17,000.54	\$ 17,757.06	\$ 18,547.25	\$ 19,372.60	\$ 20,234.68

2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137
3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%	3.190%
\$ 5,202.77	\$ 5,368.73	\$ 5,540.00	\$ 5,716.72	\$ 5,899.09	\$ 6,087.27	\$ 6,281.45	\$ 6,481.83	\$ 6,688.60	\$ 6,901.97	\$ 7,122.14	\$ 7,349.33