



**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 <sup>[1]</sup>**

Equity	<b>55.00%</b>
Debt	<b>45.00%</b>

**Equity Cost of Capital**

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

**Debt Cost of Capital**

		<b>Weighting</b>
A - Mergent's - Avg. YTM of A Rated Corporate Bonds <sup>[4]</sup>	2.72%	0%
Baa - Mergent's - Avg. YTM of Baa Rated Corporate Bonds <sup>[4]</sup>	3.16%	0%
Ba - MTDOR - Avg. YTM of Ba Rated Corporate Bonds <sup>[5]</sup>	6.54%	100%
Weighted Average	6.54%	100%
Selected Cost of Debt	<b>6.54%</b>	

**Weighted Average Cost of Capital (WACC)**

<b>Source of Capital</b>	<b>Capital Structure</b>	<b>Cost of Capital</b>	<b>Marginal Tax Rate</b>	<b>After-tax Cost of Capital</b>	<b>Weighted Cost</b>
Equity	55.00%	13.05%		13.05%	7.18%
Debt	45.00%	6.54%	24.00%	4.97%	2.24%
<b>WACC</b>	<b>100.00%</b>				<b>9.41%</b>
<b>WACC (Rounded)</b>					<b>9.45%</b>

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

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**MONTANA DEPARTMENT OF REVENUE**

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**Direct Capitalization Rate Conclusion  
Industry: Pipelines - Liquid  
2021 Assessment Year**

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**Capital Structure** <sup>[1]</sup>

Equity	55.00%
Debt	45.00%

**Equity Capitalization Rate** <sup>[2]</sup>

NOI After-tax	12.10%
GCF	18.90%

**Debt Capitalization Rate** <sup>[3]</sup>

Calculated Current Yield	3.90%
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**NOI After-tax Direct Capitalization Rate**

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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%
<b>Total</b>	<b>100.00%</b>				<b>7.99%</b>
<b>Total (Rounded)</b>					<b>8.00%</b>

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**GCF Direct Capitalization Rate**

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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%
<b>WACC</b>	<b>100.00%</b>				<b>11.73%</b>
<b>Total (Rounded)</b>					<b>11.75%</b>

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.

<b>Company Ticker</b>	<b>Transportation etc. of petroleum liquids</b>	<b>Actively traded on an American Exchange</b>	<b>Incorporated as LP</b>	<b>Operates in North / West Region</b>	<b>Consider as Potential Guideline Company</b>	<b>Not Engaged in Material M&amp;A Activity</b>	<b>Use as Guideline Company</b>	<b>Note</b>
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.

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1. Primarily engaged in the transportation, storage, and terminaling of crude oil, refined products, and liquified petroleum gas.
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<b>Company Ticker</b>	<b>Transportation etc. of petroleum liquids</b>	<b>Actively traded on an American Exchange</b>	<b>Incorporated as LP</b>	<b>Operates in North / West Region</b>	<b>Consider as Potential Guideline Company</b>	<b>Not Engaged in Material M&amp;A Activity</b>	<b>Use as Guideline Company</b>	<b>Note</b>
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%
<b>All Companies</b>											<b>46%</b>	<b>4%</b>	<b>50%</b>
<b>Average</b>											<b>45%</b>	<b>4%</b>	<b>51%</b>
<b>Median</b>											<b>49%</b>	<b>0%</b>	<b>51%</b>
<b>Trimmed Average</b>											<b>46%</b>	<b>4%</b>	<b>51%</b>
High											61%	12%	63%
Low											25%	0%	39%
<b>Selected</b>											<b>55%</b>		<b>45%</b>

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	<b>10.51%</b>	<b>8.51%</b>
$R_f =$	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 <sup>[1]</sup>

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 <sup>[2]</sup> and U.S. Department of the Treasury, Daily Treasury Yield Curve Rates <sup>[3]</sup>

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

		$R_m$ <sup>[4]</sup>	$R_m$	$R_f$	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%
<b>Ex Post Equity Risk Premium Selected</b>		<b>8.70%</b>		<b>1.45%</b>	<b>7.25%</b>

**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<sub>m</sub><sup>[4]</sup></u>	<u>R<sub>m</sub></u>	<u>R<sub>f</sub></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<sub>m</sub><sup>[4]</sup></u>	<u>R<sub>m</sub></u>	<u>R<sub>f</sub></u>	<u>ERP</u>
ERP "Conditional" - <i>Ex Ante</i>		8.00%	2.50%	5.50%

Damodaran Implied ERP (Jan 5, 2021)

	<u>R<sub>m</sub><sup>[4]</sup></u>	<u>R<sub>m</sub></u>	<u>R<sub>f</sub></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<sub>m</sub><sup>[4]</sup></u>	<u>R<sub>m</sub></u>	<u>R<sub>f</sub></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**

<b>7.10%</b>	<b>1.45%</b>	<b>5.65%</b>
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Notes

[4] R<sub>m</sub> estimated using selected Risk Free Rate (R<sub>f</sub>)



**MONTANA DEPARTMENT OF REVENUE**

Support for Beta Selection in CAPM

Industry: Pipelines - Liquid

2021 Assessment Year

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<b>Ticker Symbol</b>	<b>Company</b>	<b>Industry Group</b>	<b>Financial Strength</b>	<b>Beta</b>
		<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
<b>Average</b>				<b>1.24</b>
<b>Median</b>				<b>1.20</b>
<b>Trimmed Average</b>				<b>1.23</b>
High				1.60
Low				0.95
<b>Selected</b>				<b>1.25</b>

**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 <sup>[1]</sup>	2.19%	2.21%	4.40%		
Survey of Professional Forecasters <sup>[2]</sup>	2.24%	2.27%	4.51%		
Congressional Budget Office <sup>[3]</sup>	1.90%	3.70%	5.60%		
<b>Average</b>	<b>2.11%</b>	<b>2.73%</b>	<b>4.84%</b>		
<b>Median</b>	<b>2.19%</b>	<b>2.27%</b>	<b>4.46%</b>		
High	2.24%	3.70%	5.94%		
Low	1.90%	2.21%	4.11%		
<b>Selected</b>	<b>2.00%</b>	<b>2.50%</b>	<b>4.50%</b>	<b>4.11%</b>	<b>5.94%</b>

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 <sup>[1]</sup>	Sustainable Long-Term Growth Rate <sup>[1]</sup>	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%
<b>Average</b>							<b>22.10%</b>	<b>21.85%</b>
<b>Median</b>							<b>20.31%</b>	<b>22.72%</b>
<b>Trimmed Average</b>							<b>20.26%</b>	<b>22.33%</b>
High							40.36%	27.03%
Low							11.19%	14.73%
<b>Selected</b>							<b>20.25%</b>	<b>22.35%</b>

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**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>Ticker</b>	<b>Company</b>	<b>End of Year Closing Stock Price</b>	<b>Div'ds Decl'd per sh 2021 Est</b>	<b>Expected Dividend Yield</b>	<b>Div'ds Decl'd per sh 2024-2026 Est</b>	<b>Short-Term Growth Rate</b>
		<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%

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<b>Ticker</b>	<b>Company</b>	<b>Earnings per share 2021 Est</b>	<b>Earnings per share 2024-2026 Est</b>	<b>Short-Term Growth Rate</b>
		<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 <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
		<i>Yahoo</i>	<i>Note [1]</i>	<i>Note [2]</i>	$D_1/P_0$	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
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 <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
		<i>Yahoo</i>	<i>Note [1]</i>	<i>Note [2]</i>	$D_1/P_0$	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
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 <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>	D <sub>12</sub>	D <sub>13</sub>	D <sub>14</sub>	D <sub>15</sub>	D <sub>16</sub>	D <sub>17</sub>	D <sub>18</sub>	D <sub>19</sub>	D <sub>20</sub>	D <sub>21</sub>	D <sub>22</sub>	D <sub>500</sub>
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 <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>	D <sub>12</sub>	D <sub>13</sub>	D <sub>14</sub>	D <sub>15</sub>	D <sub>16</sub>	D <sub>17</sub>	D <sub>18</sub>	D <sub>19</sub>	D <sub>20</sub>	D <sub>21</sub>	D <sub>22</sub>	D <sub>500</sub>
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
<b>Average</b>					<b>11</b>
<b>Median</b>					<b>11</b>
<b>Trimmed Average</b>					<b>11</b>
High					13
Low					8
<b>Selected</b>				<b>Ba1</b>	<b>11</b>

**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
<b>Average</b>					<b>3.58</b>	<b>8.95</b>	<b>11.17%</b>	<b>11.96%</b>			<b>4.88</b>	<b>5.46</b>	<b>24.59%</b>	<b>20.89%</b>			<b>1.88</b>
<b>Median</b>					<b>7.92</b>	<b>8.08</b>	<b>11.60%</b>	<b>12.38%</b>			<b>5.10</b>	<b>5.45</b>	<b>19.63%</b>	<b>18.42%</b>			<b>1.34</b>
<b>Trimmed Average</b>					<b>4.35</b>	<b>8.48</b>	<b>11.60%</b>	<b>12.17%</b>			<b>4.88</b>	<b>5.38</b>	<b>22.97%</b>	<b>18.84%</b>			<b>1.77</b>
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
<b>Selected</b>							<b>12.10%</b>						<b>18.90%</b>				<b>1.34</b>



**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
	<b>All Companies</b>	1,921,394			49,966,105	44,764,959	47,771,514	<b>4.02%</b>	<b>1.12</b>
	<b>Average</b>							<b>4.02%</b>	<b>1.08</b>
	<b>Median</b>							<b>3.89%</b>	<b>1.08</b>
	<b>Trimmed Average</b>							<b>3.81%</b>	<b>1.08</b>
	High							6.22%	1.18
	Low							2.81%	1.00
	<b>Selected</b>							<b>3.90%</b>	<b>1.08</b>

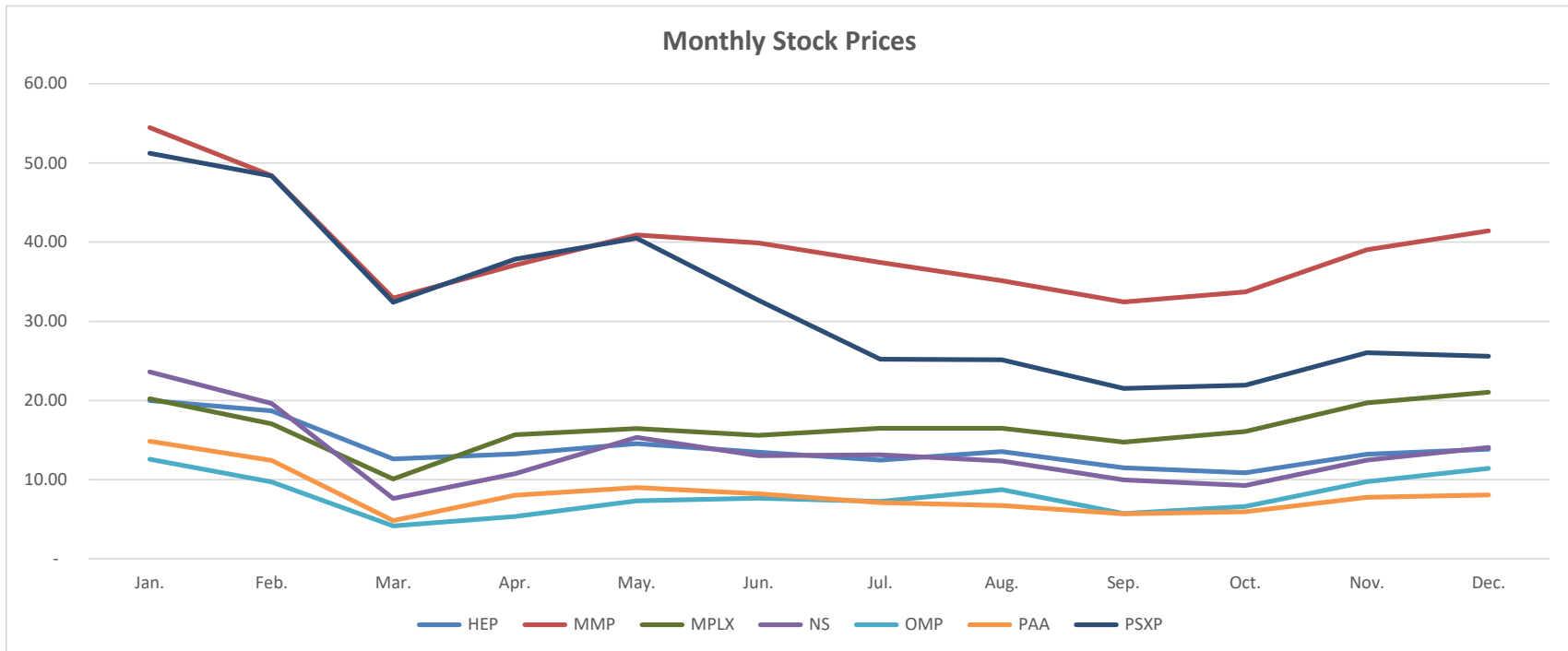
**MONTANA DEPARTMENT OF REVENUE**

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%
<b>Average</b>											130.08%
<b>Median</b>											132.45%
<b>Trimmed Average</b>											129.95%
High											139.02%
Low											121.76%
<b>Selected</b>											<b>130.00%</b>

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.