



2016 Capitalization Rate Study

Revised 4/14/2016

Liquid Pipelines

MONTANA DEPARTMENT OF REVENUE

**Yield Capitalization Rate Study
Industry: Liquid Pipelines
2016 Assessment Year**

Equity Measures

Capital Asset Pricing Model	8.55%	<i>Page L-4</i>
Dividend Growth Model (g = Dividend Growth)	11.00%	<i>Page L-10</i>
Dividend Growth Model (g = Earnings Growth)	12.00%	<i>Page L-10</i>
Dividend Growth Model (g = b x ROE)		<i>Page L-10</i>

Estimated Cost of Equity

9.75%

Estimated Cost of Debt

6.00%

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Capital Structure

Equity	65.00%	<i>Page L-7</i>
Debt	35.00%	<i>Page L-7</i>

Liquid Pipelines - 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	65.00%	9.75%		9.75%	6.34%
Debt	35.00%	6.00%	38.00%	3.72%	1.30%
WACC	100.00%				7.64%
WACC (Rounded)					7.70%

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**Direct Capitalization Rate Study
Industry: Liquid Pipelines
2016 Assessment Year**

Estimated Cost of Equity		
NOI After-tax	5.60%	<i>Page L-9</i>
GCF	7.80%	<i>Page L-9</i>
Estimated Cost of Debt		
	6.00%	<i>Page L-18</i>
Capital Structure		
Equity	65.00%	<i>Page L-7</i>
Debt	35.00%	<i>Page L-7</i>

Liquid Pipelines - NOI After-tax Direct Capitalization Rate

Source of Capital	Capital Structure	Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	65.00%	5.60%		5.60%	3.64%
Debt	35.00%	6.00%	38.00%	3.72%	1.30%
Total	100.00%				4.94%
Total (Rounded)					5.00%

Liquid Pipelines - GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	65.00%	7.80%		7.80%	5.07%
Debt	35.00%	6.00%	38.00%	3.72%	1.30%
WACC	100.00%				6.37%
Total (Rounded)					6.40%

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**Capital Asset Pricing Model (CAPM)
Industry: Liquid Pipelines
2016 Assessment Year**

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

		Liquid PL
$k_e =$	Cost of Equity	8.55%
$R_f =$	Risk Free Rate	2.67%
$\beta =$	Beta	0.98
$ERP =$	Equity Risk Premium ($R_m - R_f$)	6.00%
$R_m =$	Market Rate of Return	8.67%

Risk Free Rate Measures (R_f):

The Value Line Investment Survey: Selection & Opinion¹

January 8, 2016

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Selected Yields on Taxable U.S. Treasury Securities

10-year	2.31%
30-year	3.04%

Federal Reserve Statistical Release² and U.S. Department of the Treasury, Daily Treasury Yield Curve Rates³

January 4, 2016

Page 1

U.S. government securities, Treasury constant maturities, Nominal, December 31, 2015

10-year	2.27%
20-year	2.67%
30-year	3.01%

Risk Free Rate Selected

2.67%

¹ "Value Line Selection & Opinion", Value Line (January 8, 2016)

² <http://www.federalreserve.gov/releases/h15/20160104/>

³ <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2015>

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**Capital Asset Pricing Model (CAPM)
Industry: Liquid Pipelines
2016 Assessment Year**

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

Equity Risk Premium Measures (ERP = Rm - Rf)

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

	<u>R_m⁴</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP - <i>Ex Ante</i>	8.22%	8.22%	2.67%	5.55%

2015 ERP estimates from the Duff & Phelps, 2015 Valuation Handbook and 2016 information represents updated 2016 Valuation Handbook Info from the 2016 Petroleum (Liquid) Pipelines 2016 Cost of Capital Study prepared by D&P)

		<u>R_m⁴</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
2016 ERP "Historical" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	9.57%	9.58%	2.68%	6.90%
2016 ERP "Supply-side" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	8.70%	8.71%	2.68%	6.03%
2015 ERP "Adj. Supply-side" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	7.77%	7.78%	2.68%	5.10%
2016 ERP "Conditional" - <i>Ex Ante</i>			9.50%	4.00%	5.50%

Damodaran's Implied ERP (Jan 1, 2016)

		<u>R_m⁴</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
Implied Premium (FCFE) - <i>Ex Ante</i>		8.79%	8.39%	2.27%	6.12%
Implied Premium (FCFE with sustainable payout) - <i>Ex Ante</i>		7.83%	7.43%	2.27%	5.16%

		<u>R_m⁴</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
<u>Average</u>		8.48%	8.52%		5.77%
<u>Median</u>		8.46%	8.39%		5.55%
<u>High</u>		9.57%	9.58%		6.90%
<u>Low</u>		7.77%	7.43%		5.10%

Equity Risk Premium Selected

8.67%	2.67%	6.00%
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⁴ R_m estimated using selected Risk Free Rate (R_f)

MONTANA DEPARTMENT OF REVENUE

**Capital Asset Pricing Model (CAPM)
Industry: Liquid Pipelines
2016 Assessment Year**

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

Inflation and Growth Estimates⁵

	<u>Inflation</u> (CPI)	<u>Real Growth</u> (GDP)	<u>Nominal</u> <u>Growth</u>	<u>Nominal Growth</u>	
				<u>Low</u>	<u>High</u>
Livingston Survey	2.25%	2.25%	4.50%		
Survey of Professional Forecasters	2.12%	2.25%	4.37%		
Congressional Budget Office	2.28%	2.56%	4.84%		
Office of Budget and Management	2.22%	2.00%	4.22%		
OASDI Trustee Report	2.90%	2.80%	5.70%		
Average	2.35%	2.37%	4.73%		
Median	2.25%	2.25%	4.50%		
High	2.90%	2.80%	5.70%		
Low	2.12%	2.00%	4.12%		
Say	2.25%	2.25%	4.50%	4.12%	5.70%
Rounded					6.00%

⁵ Real Growth Sources: "The Livingston Survey", Federal Reserve Bank of Philadelphia (December 10, 2015); "Survey of Professional Forecasters", Federal Reserve Bank of Philadelphia (February 12, 2016); "Congressional Budget Office", An Update to the Budget and Economic Outlook: 2015 to 2025 (August 2015); "Office of Budget and Management", FY 2016 Mid-Session Review (July 14, 2015); "OASDI Trustee Report", Board of Trustees of the Federal Old-Age Survivors Insurance and Federal Disability Insurance Trust Funds (July 22, 2015)

MONTANA DEPARTMENT OF REVENUE

**Support for Capital Structure
Industry: Liquid Pipelines
2016 Assessment Year**

A	B	C	D	E	F	G	H	I	J	K	L	M
Company	Ticker Symbol	Industry Group	Financial Strength	Shares Outstanding	Avg. 4Q Stock Price	MV Common Stock	MV Preferred Stock*	MV Long Term Debt*	Total Common, Preferred, & LT Debt	% Common	% Preferred	% Debt
									G+H+I			
		Value Line	Value Line	Value Line	Yahoo	ExF	Value Line	Value Line				
Holly Energy Part. LP	HEP	PIPEMLP	B+	58,700	31.79	1,866,171	0	867,600	2,733,771	68%	0%	32%
Enbridge Energy Partners LP	EEP	PIPEMLP	B++	330,300	25.31	8,359,342	1,838,900	6,675,200	16,873,442	50%	11%	40%
Magellan Midstream Partners LP	MMP	PIPEMLP	B++	226,700	64.31	14,577,944	0	2,982,900	17,560,844	83%	0%	17%
Sunoco Logistics Partners L.P.	SXL	PIPEMLP	B+	226,100	28.01	6,333,815	0	4,260,000	10,593,815	60%	0%	40%
HollyFrontier Corporation	HFC	OILINTEG	B++	196,100	47.55	9,324,228	0	1,054,900	10,379,128	90%	0%	10%
Nustar Energy LP	NS	PIPEMLP	B+	77,900	43.32	3,374,758	0	2,749,500	6,124,258	55%	0%	45%
Buckeye	BPL	PIPEMLP	B+	127,000	64.44	8,184,303	0	3,389,000	11,573,303	71%	0%	29%
Enterprise Products	EPD	PIPEMLP	B+	1,937,300	25.67	49,727,262	0	19,157,400	68,884,662	72%	0%	28%
Phillips 66 Partners	PSXP	PIPEMLP	B+	39,800	57.28	2,279,810	0	429,600	2,709,410	84%	0%	16%
Plains All American PL LP	PAA	PIPEMLP	B+	375,100	27.15	10,185,215	0	8,762,000	18,947,215	54%	0%	46%
Tesoro Logistics LP	TLLP	PIPEMLP	B+	80,100	50.21	4,021,421	0	2,593,000	6,614,421	61%	0%	39%
Kinder Morgan Inc.	KMI	OILGAS	B	2,125,100	24.61	52,305,795	0	40,246,000	92,551,795	57%	0%	43%
Plains GP Holdings, L.P.	PAGP	PIPEMLP	B	206,900	13.61	2,815,564	0	9,298,000	12,113,564	23%	0%	77%
NuStar GP Holdings, LLC	NSH	PIPEMLP		42,900	24.89	1,067,709	0	0	1,067,709	100%	0%	0%
Valero Energy Partners LP	VLP	PIPEMLP		57,600	47.34	2,726,880	0	1,500	2,728,380	100%	0%	0%
All Companies						177,150,218	1,838,900	102,466,600	281,455,718	63%	1%	36%
Average										68%	1%	31%
Median										68%	0%	32%
High										100%	11%	77%
Low										23%	0%	0%
Say										65%	0%	35%

*Market value assumed to equal book value

Notes/Rational for Changes to Guideline Companies

The Guideline Companies were reviewed and some additional companies were added to be more comparable with companies in Montana

2016 Added the following companies:

- Holly Energy (HEP)
- Plains GP Holding (PAGP)
- Nustar GP Holdings LLC (NSH)
- Tesoro Logistics LP (TLLP)
- Valero Energy Partners (VLP)

MONTANA DEPARTMENT OF REVENUE

**Support for Beta Selection in CAPM
Industry: Liquid Pipelines
2016 Assessment Year**

A	B	C	D	E
Company	Ticker Symbol	Industry Group	Financial Strength	Beta
		<i>Value Line</i>	<i>Value Line</i>	<i>Value Line</i>
Holly Energy Part. LP	HEP	PIPEMLP	B+	0.75
Enbridge Energy Partners LP	EEP	PIPEMLP	B++	0.90
Magellan Midstream Partners LP	MMP	PIPEMLP	B++	0.90
Sunoco Logistics Partners L.P.	SXL	PIPEMLP	B+	1.05
HollyFrontier Corporation	HFC	OILINTEG	B++	1.20
Nustar Energy LP	NS	PIPEMLP	B+	0.85
Buckeye	BPL	PIPEMLP	B+	0.85
Enterprise Products	EPD	PIPEMLP	B+	1.00
Phillips 66 Partners	PSXP	PIPEMLP	B+	1.20
Plains All American PL LP	PAA	PIPEMLP	B+	0.95
Tesoro Logistics LP	TLLP	PIPEMLP	B+	0.95
Kinder Morgan Inc.	KMI	OILGAS	B	1.00
Plains GP Holdings, L.P.	PAGP	PIPEMLP	B	1.25
NuStar GP Holdings, LLC	NSH	PIPEMLP		0.90
Valero Energy Partners LP	VLP	PIPEMLP		
Average				0.98
Median				0.95
High				1.25
Low				0.75
Say				0.98

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization Cost of Equity (k_e)

Industry: Liquid Pipelines

2016 Assessment Year

A	B	C	D	E	F	G	H	I	J	K	L	
Company	Ticker Symbol	Avg. 4Q 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)	Cash Flow Per Share	P/CF Ratio	Ke Estimate - Cash Flow	
		<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>C/J</i>	<i>1/K</i>	
Holly Energy Part. LP	HEP	31.79	0.00	1.45		21.93		4.56%				
Enbridge Energy Partners LP	EEP	25.31	0.00	0.39		64.89		1.54%				
Magellan Midstream Partners LP	MMP	64.31	3.56	3.80	18.06	16.92	5.54%	5.91%	4.10	15.68	6.38%	
Sunoco Logistics Partners L.P.	SXL	28.01	0.92	(0.07)	30.45		3.28%		2.35	11.92	8.39%	
HollyFrontier Corporation	HFC	47.55	4.69	2.91	10.14	16.34	9.86%	6.12%	7.25	6.56	15.25%	
Nustar Energy LP	NS	43.32	0.00	3.23		13.41		7.46%				
Buckeye	BPL	64.44	3.51	2.81	18.36	22.93	5.45%	4.36%	5.00	12.89	7.76%	
Enterprise Products	EPD	25.67	1.45	1.26	17.70	20.37	5.65%	4.91%	1.50	17.11	5.84%	
Phillips 66 Partners	PSXP	57.28	0.00	1.71		33.50		2.99%				
Plains All American PL LP	PAA	27.15	1.66	1.19	16.36	22.82	6.11%	4.38%	2.10	12.93	7.73%	
Tesoro Logistics LP	TLLP	50.21	0.00	1.59		31.58		3.17%				
Kinder Morgan Inc.	KMI	24.61	0.60	0.14	41.02	175.81	2.44%	0.57%	1.45	16.97	5.89%	
Plains GP Holdings, L.P.	PAGP	13.61	0.00	0.50		27.22		3.67%				
NuStar GP Holdings, LLC	NSH	24.89	0.00	1.72		14.47		6.91%				
Valero Energy Partners LP	VLP	47.34	0.00	1.82		26.01		3.84%				
Average						21.73	36.30	5.48%	4.31%		13.44	8.18%
Median						18.06	22.88	5.54%	4.37%		12.93	7.73%
High						41.02	175.81	9.86%	7.46%	17.11	15.25%	
Low						10.14	13.41	2.44%	0.57%	6.56	5.84%	
Say								5.60%			7.80%	

MONTANA DEPARTMENT OF REVENUE

**Support for Yield Capitalization Cost of Equity Component - Based on Dividend Growth Model
Industry: Liquid Pipelines
2016 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 Growth
 b = Retention Ratio (1 - Payout Ratio)
 ROE = Return on Equity

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Company Name	Ticker	Avg. 4Q Stock Price P_0	2016 Expected Dividend D_1	Taxable Entity?	2016 Expected Dividend Adj for Tax If taxable = "No" $D_1 \times (1-.38)$	Dividend Yield D_1/P_0	Payout Ratio	Retention Ratio $b = 1 - \text{Payout Ratio}$	Return on Equity ROE	Expected Dividend Growth $g = \text{Dividend } g$	Expected Earnings Growth $g = \text{Earnings } g$	Sustainable Growth* $g = b \times \text{ROE}$	Cost of Equity K_e $g = \text{Dividend } g$	Cost of Equity K_e $g = \text{Earnings } g$	Cost of Equity K_e $g = b \times \text{ROE}$
		<i>Yahoo</i>	<i>Value Line</i>			<i>F/C</i>	<i>Value Line</i>	<i>1-H</i>	<i>Value Line</i>	<i>Value Line</i>	<i>Value Line</i>	<i>I*J</i>	<i>G+K</i>	<i>G+L</i>	<i>G+M</i>
Holly Energy Part. LP	HEP	31.79	2.26	No	1.40	4.41%				5.50%	3.50%		9.91%	7.91%	
Enbridge Energy Partners LP	EEP	25.31	2.33	No	1.45	5.71%	NMF		8.90%	2.50%			8.21%		
Magellan Midstream Partners LP	MMP	64.31	3.21	No	1.99	3.09%	81.00%	19.00%	40.50%	12.00%	9.00%	7.70%	15.09%	12.09%	10.79%
Sunoco Logistics Partners L.P.	SXL	28.01	2.07	No	1.28	4.58%	NMF		1.50%	20.50%	7.00%		25.08%	11.58%	
HollyFrontier Corporation	HFC	47.55	1.40	Yes	1.40	2.94%	27.00%	73.00%	16.80%	10.00%	3.50%	12.26%	12.94%	6.44%	15.21%
Nustar Energy LP	NS	43.32	4.38	No	2.72	6.27%				1.50%			7.77%		
Buckeye	BPL	64.44	4.83	No	2.99	4.65%			11.50%	5.00%	8.50%		9.65%	13.15%	
Enterprise Products	EPD	25.67	1.60	No	0.99	3.86%	120.00%	-20.00%	10.00%	7.50%	8.00%		11.36%	11.86%	
Phillips 66 Partners	PSXP	57.28	1.83	No	1.14	1.98%	51.00%	49.00%	49.80%						
Plains All American PL LP	PAA	27.15	2.80	No	1.74	6.39%			3.90%	6.50%	7.00%		12.89%	13.39%	
Tesoro Logistics LP	TLLP	50.21	3.12	No	1.93	3.85%									
Kinder Morgan Inc.	KMI	24.61	0.50	Yes	0.50	2.03%	NMF		0.60%		13.00%			15.03%	
Plains GP Holdings, L.P.	PAGP	13.61	0.92	Yes	0.92	6.79%									
NuStar GP Holdings, LLC	NSH	24.89		No											
Valero Energy Partners LP	VLP	47.34	1.28	No	0.79	1.68%									
Average						4.16%	69.75%	30.25%	15.94%	7.89%	7.44%	9.98%	12.55%	11.43%	13.00%
Median						4.14%	66.00%	34.00%	10.00%	6.50%	7.50%	9.98%	11.36%	11.98%	13.00%
Average (With Sustainable Growth)										3.63%	3.50%		8.88%	7.18%	
High						6.79%	120.00%	73.00%	49.80%	20.50%	13.00%	12.26%	25.08%	15.03%	15.21%
Low						1.68%	27.00%	-20.00%	0.60%	1.50%	3.50%	7.70%	7.77%	6.44%	10.79%
Say													11.00%	12.00%	

*Highlighted cells have growth rates higher than the sustainable long term growth rate (Inflation + Real Growth) see the CAPM page
 Conditional Formatting highlights cells with growth rates greater than = 6.0%

MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Liquid Pipelines

2016 Assessment Year

Ticker	Company														End of	4th Qtr	Annual
			Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Year Closing	Average	Average
BPL	Buckeye	high	\$ 77.67	\$ 77.83	\$ 78.30	\$ 81.93	\$ 82.98	\$ 79.42	\$ 76.56	\$ 75.16	\$ 71.26	\$ 72.43	\$ 70.23	\$ 68.50	\$ 65.96	\$64.44	\$71.01
		low	\$ 69.52	\$ 70.66	\$ 73.44	\$ 74.43	\$ 77.28	\$ 73.93	\$ 69.39	\$ 52.91	\$ 54.85	\$ 59.26	\$ 64.20	\$ 52.04			
COP	ConocoPhillips Inc	high	\$ 69.48	\$ 70.11	\$ 65.36	\$ 69.72	\$ 68.36	\$ 64.47	\$ 61.51	\$ 51.88	\$ 50.91	\$ 56.69	\$ 57.24	\$ 54.75	\$ 46.69	\$51.97	\$57.99
		low	\$ 60.64	\$ 63.41	\$ 60.57	\$ 62.57	\$ 63.11	\$ 60.86	\$ 50.25	\$ 41.10	\$ 45.72	\$ 47.54	\$ 51.03	\$ 44.56			
CVX	ChevronTexaco Corp	high	\$ 113.00	\$ 112.93	\$ 107.69	\$ 112.20	\$ 110.80	\$ 103.75	\$ 96.67	\$ 87.33	\$ 80.47	\$ 91.98	\$ 98.64	\$ 94.00	\$ 89.96	\$89.00	\$95.66
		low	\$ 98.88	\$ 102.97	\$ 100.66	\$ 104.08	\$ 102.38	\$ 96.22	\$ 88.01	\$ 69.58	\$ 74.31	\$ 77.31	\$ 87.79	\$ 84.25			
EEP	Enbridge Energy Partners LP	high	\$ 41.06	\$ 41.39	\$ 39.38	\$ 38.38	\$ 38.53	\$ 37.32	\$ 34.49	\$ 31.35	\$ 28.04	\$ 28.22	\$ 29.99	\$ 25.07	\$ 23.07	\$25.31	\$32.20
		low	\$ 36.90	\$ 38.01	\$ 35.07	\$ 35.64	\$ 36.19	\$ 32.93	\$ 29.54	\$ 24.21	\$ 22.40	\$ 24.78	\$ 24.48	\$ 19.31			
EPD	Enterprise Products	high	\$ 36.98	\$ 36.00	\$ 33.45	\$ 34.49	\$ 34.73	\$ 32.60	\$ 31.17	\$ 29.92	\$ 28.24	\$ 29.02	\$ 28.65	\$ 26.17	\$ 25.58	\$25.67	\$29.74
		low	\$ 31.03	\$ 32.55	\$ 30.71	\$ 32.41	\$ 32.42	\$ 29.53	\$ 26.91	\$ 24.62	\$ 22.01	\$ 25.09	\$ 24.32	\$ 20.76			
HEP	Holly Energy Part. LP	high	\$ 35.10	\$ 35.00	\$ 33.35	\$ 34.46	\$ 34.53	\$ 36.40	\$ 35.34	\$ 35.11	\$ 34.34	\$ 34.94	\$ 35.51	\$ 33.49	\$ 31.14	\$31.79	\$32.26
		low	\$ 29.76	\$ 31.88	\$ 29.57	\$ 30.00	\$ 31.05	\$ 32.55	\$ 30.60	\$ 28.32	\$ 26.25	\$ 28.02	\$ 32.04	\$ 26.75			
HFC	HollyFrontier Corporation	high	\$ 38.49	\$ 45.05	\$ 43.76	\$ 40.95	\$ 43.71	\$ 42.78	\$ 49.54	\$ 54.73	\$ 51.43	\$ 51.61	\$ 52.30	\$ 50.44	\$ 39.89	\$47.55	\$43.55
		low	\$ 30.15	\$ 36.14	\$ 37.58	\$ 35.89	\$ 38.67	\$ 39.83	\$ 42.68	\$ 43.56	\$ 44.90	\$ 44.78	\$ 47.16	\$ 39.00			
KMI	Kinder Morgan Inc.	high	\$ 42.93	\$ 42.33	\$ 42.30	\$ 44.71	\$ 43.34	\$ 41.47	\$ 38.58	\$ 34.81	\$ 32.09	\$ 32.89	\$ 27.78	\$ 23.62	\$ 14.92	\$24.61	\$34.99
		low	\$ 39.95	\$ 40.34	\$ 39.45	\$ 41.56	\$ 41.42	\$ 38.33	\$ 34.12	\$ 28.50	\$ 25.81	\$ 26.60	\$ 22.57	\$ 14.22			
MMP	Magellan Midstream Partners LP	high	\$ 85.85	\$ 85.09	\$ 82.65	\$ 84.99	\$ 85.49	\$ 80.29	\$ 76.04	\$ 72.91	\$ 71.75	\$ 70.26	\$ 69.87	\$ 70.01	\$ 67.92	\$64.31	\$72.85
		low	\$ 72.90	\$ 76.63	\$ 75.51	\$ 76.57	\$ 79.61	\$ 73.36	\$ 66.55	\$ 61.37	\$ 55.05	\$ 59.67	\$ 61.51	\$ 54.51			
NS	Nustar Energy LP	high	\$ 61.92	\$ 63.78	\$ 63.78	\$ 68.10	\$ 67.68	\$ 63.02	\$ 60.48	\$ 56.43	\$ 53.50	\$ 52.24	\$ 51.61	\$ 40.80	\$ 40.10	\$43.32	\$54.83
		low	\$ 54.58	\$ 60.32	\$ 58.54	\$ 60.49	\$ 62.25	\$ 58.81	\$ 54.43	\$ 45.98	\$ 42.00	\$ 44.06	\$ 40.02	\$ 31.20			
NSH	NuStar GP Holdings, LLC	high	\$ 37.71	\$ 39.53	\$ 37.87	\$ 39.66	\$ 39.44	\$ 39.94	\$ 38.40	\$ 34.99	\$ 33.74	\$ 31.55	\$ 29.72	\$ 24.99	\$ 21.15	\$24.89	\$32.74
		low	\$ 30.77	\$ 35.93	\$ 33.73	\$ 34.03	\$ 36.95	\$ 37.18	\$ 32.29	\$ 29.74	\$ 24.46	\$ 25.89	\$ 22.12	\$ 15.06			
PAA	Plains All American PL LP	high	\$ 52.64	\$ 52.70	\$ 52.25	\$ 51.71	\$ 50.63	\$ 47.98	\$ 44.29	\$ 41.65	\$ 35.97	\$ 34.98	\$ 33.00	\$ 24.76	\$ 23.10	\$27.15	\$40.25
		low	\$ 45.84	\$ 48.71	\$ 45.81	\$ 48.56	\$ 46.12	\$ 43.00	\$ 38.56	\$ 30.06	\$ 26.71	\$ 29.24	\$ 23.11	\$ 17.83			
PAGP	Plains GP Holdings, L.P.	high	\$ 28.20	\$ 28.81	\$ 28.96	\$ 29.87	\$ 29.79	\$ 28.39	\$ 26.64	\$ 25.67	\$ 20.02	\$ 19.49	\$ 16.26	\$ 12.80	\$ 9.45	\$13.61	\$22.60
		low	\$ 24.01	\$ 26.24	\$ 27.06	\$ 27.26	\$ 27.57	\$ 25.81	\$ 23.52	\$ 16.59	\$ 16.28	\$ 15.51	\$ 10.41	\$ 7.18			

MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Liquid Pipelines

2016 Assessment Year

Ticker	Company														End of Year Closing	4th Qtr Average	Annual Average
			Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15			
PSXP	Phillips 66 Partners	high	\$ 81.63	\$ 79.81	\$ 74.99	\$ 76.94	\$ 76.95	\$ 75.20	\$ 72.25	\$ 63.49	\$ 61.91	\$ 61.73	\$ 66.75	\$ 62.99	\$ 61.40	\$57.28	\$64.60
		low	\$ 61.50	\$ 69.60	\$ 66.84	\$ 67.46	\$ 70.12	\$ 69.21	\$ 56.10	\$ 40.00	\$ 42.83	\$ 48.58	\$ 57.44	\$ 46.20			
SXL	Sunoco Logistics Partners L.P.	high	\$ 43.49	\$ 46.72	\$ 44.40	\$ 44.74	\$ 44.90	\$ 40.12	\$ 38.65	\$ 37.50	\$ 34.06	\$ 32.89	\$ 32.18	\$ 28.21	\$ 25.70	\$28.01	\$36.06
		low	\$ 36.62	\$ 41.15	\$ 39.79	\$ 40.77	\$ 39.02	\$ 37.10	\$ 33.63	\$ 29.17	\$ 25.44	\$ 26.63	\$ 26.76	\$ 21.41			
TLLP	Tesoro Logistics LP	high	\$ 59.80	\$ 60.19	\$ 57.70	\$ 61.74	\$ 59.92	\$ 60.37	\$ 57.90	\$ 55.83	\$ 53.72	\$ 56.85	\$ 56.92	\$ 51.83	\$ 50.32	\$50.21	\$53.50
		low	\$ 49.33	\$ 54.00	\$ 50.78	\$ 53.01	\$ 55.60	\$ 55.34	\$ 50.84	\$ 46.52	\$ 40.14	\$ 44.44	\$ 49.95	\$ 41.24			
VLP	Valero Energy Partners LP	high	\$ 50.69	\$ 54.92	\$ 55.00	\$ 53.64	\$ 52.56	\$ 54.87	\$ 52.44	\$ 52.09	\$ 54.50	\$ 51.23	\$ 52.49	\$ 53.25	\$ 51.61	\$47.34	\$48.55
		low	\$ 38.53	\$ 47.77	\$ 48.40	\$ 48.13	\$ 48.54	\$ 49.45	\$ 41.02	\$ 40.74	\$ 37.96	\$ 41.94	\$ 44.50	\$ 40.64			
WMB	Williams Cos	high	\$ 45.57	\$ 50.69	\$ 51.15	\$ 52.88	\$ 54.49	\$ 61.38	\$ 58.77	\$ 55.42	\$ 48.47	\$ 44.51	\$ 40.76	\$ 36.97	\$ 25.70	\$35.54	\$45.63
		low	\$ 40.07	\$ 43.61	\$ 45.70	\$ 49.64	\$ 48.41	\$ 46.28	\$ 51.34	\$ 43.33	\$ 34.64	\$ 36.60	\$ 33.48	\$ 20.95			
XOM	Exxon Mobil	high	\$ 93.05	\$ 93.45	\$ 88.52	\$ 88.67	\$ 90.09	\$ 85.97	\$ 83.53	\$ 79.29	\$ 75.47	\$ 83.88	\$ 87.44	\$ 82.13	\$ 77.95	\$79.70	\$82.53
		low	\$ 86.03	\$ 87.50	\$ 82.68	\$ 83.81	\$ 84.77	\$ 82.80	\$ 78.93	\$ 66.55	\$ 71.51	\$ 73.03	\$ 77.91	\$ 73.79			

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Cost of Debt Component - Yield to Maturity From Standard & Poor's Bond Guide
Industry: Liquid Pipelines
2016 Assessment Year

Company Name	Coupon	CUSIP	Issue	Maturity Date	Years to Maturity	S&P Bond Rating	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Avg Full Year	Avg 4th QTR
XTO Energy Inc.	5.3	98385XAG1	Sr Nts	06/30/2015	0	AAA	0.39	0.55	0.38	0.43	0.73								0.50%	
XTO Energy Inc.	5.65	98385XAH9	Sr Nts	04/01/2016	1	AAA	0.41	0.50	0.50	0.47	0.53	0.50	0.58	0.63	0.39	0.23	0.63	1.05	0.54%	0.64%
XTO Energy Inc.	6.1	98385XAJ5	Sr Nts	04/01/2036	21	AAA	3.12	3.38	3.41	3.49	3.72	4.09	3.86	3.85	3.85	3.96	4.00	3.99	3.73%	3.98%
XTO Energy Inc.	6.25	98385XAL0	Sr Nts	08/01/2017	2	AAA	1.12	1.04	1.06	0.95	1.01	1.20	1.19	1.12	1.06	1.06	1.24	1.20	1.10%	1.17%
XTO Energy Inc.	6.75	98385XAM8	Sr Nts	08/01/2037	22	AAA	3.25	3.26	3.35	3.49	3.71	4.14	3.91	3.91	3.95	4.07	4.04	4.04	3.76%	4.05%
XTO Energy Inc.	5.5	98385XAP1	Sr Nts	06/15/2018	3	AAA	1.45	1.35	1.33	1.27	1.36	1.42	1.38	1.50	1.42	1.45	1.51	1.73	1.43%	1.56%
XTO Energy Inc.	6.38	98385XAQ9	Sr Nts	06/15/2038	23	AAA	3.29	3.55	3.53	3.61	3.84	4.19	3.99	4.09	4.09	4.16	4.14	4.15	3.89%	4.15%
Texaco Capital	9.75	881685AN1	GtdDeb	03/15/2020	5	AA	3.05	3.24	3.17	3.13	3.28	3.48	3.34	3.21	3.07	3.22	3.36	3.40	3.25%	3.33%
Texaco Capital	8.875	881685AV3	GtdDeb	09/01/2021	6	AA	2.74	2.95	2.91	2.89	3.05	3.33	3.14	3.00	2.87	3.01	3.15	3.20	3.02%	3.12%
Texaco Capital	8.625	881685AX9	GtdDeb	11/15/2031	16	AA	3.20	3.39	3.38	3.61	3.81	4.19	3.92	4.08	4.03	4.14	4.18	4.12	3.84%	4.15%
Texaco Capital	8.625	881685AY7	GtdDeb	04/01/2032	17	AA	3.29	3.45	3.43	3.54	3.87	4.24	3.98	3.90	3.85	3.97	4.00	3.95	3.79%	3.97%
Texaco Capital	8	881685BB6	GtdDeb	08/01/2032	17	AA	3.36	3.62	3.60	3.71	3.96	4.34	4.07	4.23	4.18	4.29	4.33	4.27	4.00%	4.30%
ANR Pipeline	7.38	001814AQ5	Deb	2/15/2024	9	A-	3.80	3.92	3.91	3.87	3.95	4.33	4.32	4.42	4.46	4.61	4.64	4.70	4.24%	4.65%
ANR Pipeline	9.62	001814AR3	Deb	11/1/2021	6	A-	3.56	3.73	3.61	3.33	3.43	4.03	3.81	3.60	3.53	3.62	3.34	3.88	3.62%	3.61%
EOG Resources, Inc.	5.88	26875PAA9	Sr Nts	09/15/2017	2	A-	1.53	1.53	1.36	1.23	1.29	1.40	1.26	1.55	1.49	1.49	1.51	1.87	1.46%	1.62%
Enron Oil & Gas	6.65	293562AD6	Nts	04/01/2028	13	A-	3.51	3.74	3.72	3.74	3.91	4.25	4.22	4.38	3.98	3.99	4.08	4.40	3.99%	4.16%
Atlantic Richfield	9	048825AW3	Deb	04/01/2021	6	A	3.52	3.58	3.80	3.76	3.67	3.87	3.73	3.77	3.82	3.96	3.86	3.34	3.72%	3.72%
Atlantic Richfield	9	048825AY9	Deb	05/01/2031	16	A	4.41	4.56	4.55	5.00	5.14	5.01	5.43	5.29	5.24	5.35	5.35	5.39	5.06%	5.36%
Atlantic Richfield	9.125	048825AZ6	Deb	08/01/2031	16	A	4.41	4.67	4.65	4.76	5.08	5.51	5.25	5.18	5.12	5.01	5.05	5.60	5.02%	5.22%
Atlantic Richfield	8.25	048825BA0	Deb	02/01/2022	7	A	3.54	3.55	3.43	3.50	3.44	3.97	4.19	4.77	4.41	3.98	3.82	4.98	3.97%	4.26%
Atlantic Richfield	8.75	048825BB8	Deb	03/01/2032	17	A	4.96	5.22	5.10	5.04	4.90	5.28	5.01	5.34	5.03	5.14	5.32	5.79	5.18%	5.42%
Burlington Resources Inc.	9.125	122014AE3	Deb	10/01/2021	6	A	3.15	3.33	2.90	2.86	3.01	3.38	3.27	3.34	3.20	3.30	3.44	3.66	3.24%	3.47%
Burlington Resources Inc.	8.2	122014AH6	Deb	03/15/2025	10	A	3.79	3.77	3.84	3.82	4.18	4.58	4.37	4.52	4.39	4.18	4.37	5.46	4.27%	4.67%
Burlington Resources Inc.	6.875	122014AJ2	Deb	02/15/2026	11	A	4.08	4.07	4.14	4.12	4.48	4.21	4.30	4.32	4.30	4.37	4.44	5.67	4.38%	4.83%
Burlington Resources Inc.	7.375	122014AL7	Deb	03/01/2029	14	A	4.08	4.07	4.14	4.12	4.48	4.87	5.07	5.09	5.07	5.14	5.17	5.80	4.76%	5.37%
Burlington Resources Fin	7.2	12201PAB2	Gtd Nt	8/15/2031	16	A	3.74	4.11	3.80	3.97	4.44	4.64	4.52	4.74	4.69	4.75	4.91	5.55	4.49%	5.07%
Conoco Inc	6.95	208251AE8	Nts	04/15/2029	14	A	3.58	3.57	3.64	3.62	3.98	4.37	4.25	4.45	4.43	4.46	4.67	5.50	4.21%	4.88%
ConocoPhillips	5.9	20825CAF1	Nts	10/15/2032	17	A	3.64	3.80	3.85	3.96	4.18	4.70	4.55	4.65	4.76	4.70	4.88	5.59	4.44%	5.06%
Conoco Funding	7.25	20825UAC8	Sr Nt	10/15/2031	16	A	3.68	4.05	3.95	3.96	4.32	4.60	4.50	4.56	4.67	4.84	4.88	5.58	4.47%	5.10%
Diamond Offshore Drilling, Inc.	4.88	25271CAJ1	Sr Nts	07/01/2015	0	A	1.15	1.27	0.51	1.04	2.31								1.26%	
Louisiana Land/Exp	7.65	546268AG8	Deb	12/01/2023	8	A	3.28	3.30	3.46	3.25	3.50	3.96	4.00	4.18	4.00	3.79	4.04	4.59	3.78%	4.14%
Occidental Petroleum Corp.	9.25	674599BE4	Sr Deb	08/01/2019	4	A	2.61	2.80	2.72	2.58	2.73	2.93	2.82	2.74	2.60	2.75	2.88	3.02	2.77%	2.88%
Occidental Petroleum Corp.	7.2	674599BM6	Sr Deb	4/1/2028	13	A	4.09	4.31	4.30	4.31	4.48	4.82	4.65	4.70	4.54	4.58	4.63	4.93	4.53%	4.71%
Occidental Petroleum Corp.	8.45	674599BT1	Sr Nts	02/15/2029	14	A	4.00	4.22	4.21	4.23	4.40	4.77	4.60	4.54	4.50	4.62	4.69	4.78	4.46%	4.70%
Occidental Pete Corp Med Terr	8.75	67461FED5	MTN Tranche # Tr 00100	1/15/2023	8	A	3.39	3.61	3.60	3.44	3.61	3.95	3.78	3.72	4.12	4.24	4.32	4.40	3.85%	4.32%
Phillips Petroleum	6.65	718507BH8	Deb	07/15/2018	3	A	1.80	1.94	1.63	1.49	1.60	1.81	1.79	1.83	1.75	1.76	1.92	2.03	1.78%	1.90%
Phillips Petroleum	7	718507BK1	Deb	03/30/2029	14	A	3.98	3.97	4.04	4.02	4.23	4.62	4.50	4.70	4.63	4.73	4.94	5.77	4.51%	5.15%
Apache Corp.	7.7	037411AJ4	Nts	03/15/2026	11	BBB+	4.05	4.27	4.31	4.32	4.49	4.83	4.73	4.75	4.66	4.63	4.60	5.12	4.56%	4.78%
Apache Corp.	7.95	037411AK1	Nts	04/15/2026	11	BBB+	5.01	5.13	4.80	4.01	4.18	4.52	4.37	4.34	4.35	4.42	4.39	4.92	4.54%	4.58%
Apache Corp.	7.625	037411AL9	Deb	11/01/2096	81	BBB+	5.76	5.40	5.69	5.81	6.03	6.41	6.21	6.28	6.25	6.37	6.30	6.94	6.12%	6.54%
Apache Corp.	7.38	037411AM7	Deb	08/15/2047	32	BBB+	5.16	4.81	5.05	5.11	5.33	5.76	5.60	5.70	5.54	5.40	5.23	6.24	5.41%	5.62%
Apache Corp.	7	037411AN5	Sr Nts	02/01/2018	3	BBB+	2.68	2.58	2.54	2.36	2.40	2.63	2.67	2.79	2.47	2.49	2.64	3.40	2.64%	2.84%
Apache Corp.	7.62	037411AP0	Sr Nts	07/01/2019	4	BBB+	2.67	2.86	2.79	2.68	2.83	3.03	2.89	2.76	2.62	2.77	2.83	3.12	2.82%	2.91%
Apache Corp.	6	037411AR6	Nts	01/15/2037	22	BBB+	4.83	4.61	4.59	4.59	4.97	5.47	5.72	5.69	5.44	5.39	5.34	6.41	5.25%	5.71%
Apache Corp.	5.62	037411AS4	Nts	01/15/2017	2	BBB+	1.39	1.46	1.21	1.32	1.37	1.56	1.62	0.70	0.00	0.00	0.00	0.00	0.89%	0.00%
Canadian Natural Resources Li	6.45	136385AE1	Nt	6/30/2033	18	BBB+	5.06	5.16	5.05	5.03	4.94	5.27	5.40	5.95	6.10	5.95	5.78	6.75	5.54%	6.16%
Devon Fin Corp	7.95	251799AA0	Sr Deb	04/15/2032	17	BBB+	4.58	4.29	4.72	4.61	4.93	5.35	5.36	5.67	5.70	5.80	5.84	7.50	5.36%	6.38%
ENSCO International Inc.	7.2	26874QAB6	Deb	11/15/2027	12	BBB+	5.20	4.99	5.22	5.02	5.07	5.61	6.09	7.31	7.54	9.20	9.03	10.00	6.69%	9.41%
Enterprise Products Oper	6.65	293791AP4	Sr Nts' B'	10/15/2034	19	BBB+	4.14	4.19	4.35	4.36	4.59	5.03	5.13	5.50	5.59	5.50	5.64	6.41	5.04%	5.85%
Enterprise Products Oper	5	293791AR0	Sr Nts' B'	03/01/2015	0	BBB+	1.19												1.19%	
Enterprise Products Oper	5.75	293791AT6	Sr Nts' B'	03/01/2035	20	BBB+	4.17	4.23	4.33	4.48	4.88	5.26	5.23	5.53	5.59	5.59	5.75	6.37	5.12%	5.90%
OceanEnergy	8.25	674812AK8	Sr Nts' B'	07/01/2018	3	BBB+	2.63	2.77	2.72	2.66	2.75	2.87	2.89	2.77	2.90	2.94	3.19	6.20	3.11%	4.11%
Amerada Hess Corp.	7.875	023551AF1	Nts	10/01/2029	14	BBB	4.75	4.76	4.94	4.80	4.97	5.37	5.39	5.74	5.85	5.84	5.94	6.77	5.43%	6.18%
Amerada Hess Corp.	7.3	023551AJ3	Nts	08/15/2031	16	BBB	5.06	4.96	5.23	4.97	5.25	5.86	5.85	6.12	5.95	5.91	5.97	7.29	5.70%	6.39%
Diamond Shamrock	8.75	25274AD2	Deb	06/15/2015	0	BBB	2.74	2.95	0.64	0.87									1.80%	
Diamond Shamrock	7.65	25274AF7	Deb	07/01/2026	11	BBB	4.20	4.42	4.41	4.42	4.59	4.93	4.78	4.74	4.75	4.79	4.86	5.07	4.66%	4.91%
Enbridge Energy Partners, L.P.	5.95	29250RAD8	Sr Nts' B'	06/01/2033	18	BBB	4.47	4.82	4.85	5.06	5.33	5.80	5.67	6.00	5.90	6.21	6.22	7.19	5.63%	6.54%
Enbridge Energy Partners, L.P.	5.88	29250RAH9	Nt	12/15/2016	1	BBB	1.56	1.74	1.66	1.60	1.74	1.87	2.12	2.10	2.03	2.63	2.68	3.18	2.08%	2.83%

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Cost of Debt Component - Yield to Maturity From Standard & Poor's Bond Guide
Industry: Liquid Pipelines
2016 Assessment Year

Company Name	Coupon	CUSIP	Issue	Maturity Date	Years to Maturity	S&P Bond Rating	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Avg Full Year	Avg 4th QTR
Lakehead Pipe Line Co	7	511546AA1	Sr Nt	10/1/2018	3	BBB	2.60	2.75	2.71	2.64	2.70	2.73	2.74	2.98	3.27	3.82	3.98	4.42	3.11%	4.07%
Lakehead Pipe Line Co	7.12	511546AB9	Sr Nt	10/1/2028	13	BBB	0.00	0.00	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.63	0.77%	1.54%
Marathon Oil Corp.	6.8	565849AB2	Nts	03/15/2032	17	BBB	4.71	4.86	4.82	4.88	5.03	5.29	5.50	6.07	6.35	6.35	6.37	7.79	5.67%	6.84%
Murphy Oil Corp.	7.05	626717AA0	Nts	05/01/2029	14	BBB	5.35	5.51	5.50	5.37	5.54	5.88	5.87	6.21	6.60	7.22	7.29	7.92	6.19%	7.48%
ONEOK Partners, L.P.	6.15	68268NAB9	Gtd Sr Nt	10/1/2016	1	BBB	2.04	2.23	1.52	1.81	1.51	1.61	2.20	2.02	2.93	2.85	2.83	2.93	2.21%	2.87%
ONEOK Partners, L.P.	6.65	68268NAC7	Gtd Sr Nt	10/1/2036	21	BBB	5.71	5.96	6.14	5.93	6.09	6.39	6.43	6.69	6.64	7.52	7.75	8.34	6.63%	7.87%
Plains All Amern Pipeline L P	5.88	72650RAF9	Sr Nt	08/15/2016	1	BBB	1.38	1.46	1.38	1.34	1.52	1.53	1.52	1.45	1.36	1.46	1.65	2.76	1.57%	1.96%
Plains All Amer/PAA Fin	5.25	72650RAJ1	Sr Nts	06/15/2015	0	BBB	0.62	0.68	0.46	0.59									0.59%	
Plains All Amern Pipeline L P	6.7	72650RAM4	Sr Nt	5/15/2036	21	BBB	4.52	4.46	4.75	4.86	5.16	5.54	5.35	6.13	5.81	6.11	6.81	7.69	5.60%	6.87%
Talisman Energy Inc.	7.25	87425EAE3	Deb	10/15/2027	12	BBB	5.40	5.23	5.12	5.14	5.37	5.57	5.84	6.31	6.46	6.92	6.83	6.78	5.91%	6.84%
USX Corp.	9.375	902905AL2	Deb	05/15/2022	7	BBB	3.67	3.89	3.88	3.89	4.09	4.38	4.43	5.10	5.75	5.61	5.57	6.68	4.75%	5.95%
USX Corp.	8.5	902905AN8	Deb	03/01/2023	8	BBB	4.13	4.35	4.34	4.35	4.52	4.86	4.74	4.96	5.77	5.86	5.98	6.97	5.07%	6.27%
USX Corp.	8.125	902905AQ1	Deb	07/15/2023	8	BBB	4.11	4.33	4.31	4.33	4.50	4.84	4.72	4.98	5.81	5.34	5.47	6.87	4.97%	5.89%
Valero Energy Corp. (New)	8.75	91913YAB6	Nts	06/15/2030	15	BBB	4.81	5.07	5.05	5.16	5.39	5.80	5.72	5.68	5.64	5.68	5.75	6.09	5.49%	5.84%
Valero Energy Corp. (New)	7.5	91913YAE0	Nts	04/15/2032	17	BBB	5.05	4.86	4.90	4.99	5.19	5.62	5.56	5.85	5.72	5.68	5.82	6.39	5.47%	5.96%
Valero Energy Corp. (New)	6.62	91913YAL4	Nts	06/15/2037	22	BBB	5.16	4.72	4.92	4.85	5.16	5.68	5.55	5.83	5.79	5.79	5.94	6.49	5.49%	6.07%
Valero Energy Corp. (New)	6.12	91913YAM2	Nts	06/15/2017	2	BBB	1.80	1.55	1.49	1.44	1.50	1.64	1.78	1.70	1.77	1.90	1.90	2.37	1.74%	2.06%
Williams Ptns L P	7.25	96950HAD2	Sr Nt	2/1/2017	2	BBB	2.08	1.82	1.76	1.71	1.74	1.82	2.12	2.21	2.51	2.66	2.82	5.32	2.38%	3.60%
Anadarko Petroleum Corp.	7.25	032511AH0	Deb	03/15/2025	10	BBB	5.50	5.19	5.21	5.01	5.27	5.71	5.82	6.11	6.05	6.04	6.09	7.25	5.77%	6.46%
Anadarko Petroleum Corp.	7.73	032511AJ6	Deb	09/15/2096	81	BBB	5.76	6.01	6.05	6.21	6.07	6.45	6.33	6.36	6.45	6.48	7.00	8.00	6.43%	7.16%
Anadarko Petroleum Corp.	7.25	032511AK3	Deb	11/15/2096	81	BBB	5.47	5.73	5.77	5.87	6.10	6.47	6.36	6.38	6.43	6.47	7.00	8.29	6.36%	7.25%
Anadarko Petroleum Corp.	7	032511AL1	Deb	11/15/2027	12	BBB	5.40	5.08	5.11	4.91	5.17	5.61	5.72	6.01	5.95	5.97	6.02	7.42	5.70%	6.47%
Anadarko Petroleum Corp.	6.62	032511AM9	Deb	01/15/2028	13	BBB	5.35	5.03	5.06	4.86	5.12	5.56	5.67	5.96	5.90	5.89	5.94	7.42	5.65%	6.42%
Anadarko Petroleum Corp.	7.2	032511AN7	Deb	03/15/2029	14	BBB	4.70	4.38	4.56	4.36	4.62	5.06	5.22	5.51	5.45	5.44	5.49	6.97	5.15%	5.97%
Anadarko Petroleum Corp.	5.95	032511AX5	Sr Nts	09/15/2016	1	BBB	1.64	1.51	1.30	1.23	1.26	1.36	1.59	1.63	1.79	1.65	1.62	2.42	1.58%	1.90%
Anadarko Petroleum Corp.	6.45	032511AY3	Sr Nts	09/15/2036	21	BBB	4.54	4.36	4.69	4.54	4.96	5.35	5.50	5.55	5.46	5.47	5.68	6.79	5.24%	5.98%
Buckeye Partners, L.P.	5.12	118230AE1	Fixed Rt Nts	07/01/2017	2	BBB-	2.66	2.73	2.68	2.68	2.70	2.71	2.70	2.68	2.63	2.72	2.90	3.51	2.77%	3.04%
Energen Corp MTN BE	7.32	29265AAP1	MTN Tranche # Tr 00014	7/28/2022	7	BBB-	6.00	6.22	6.20	6.22	6.39	6.73	6.53	6.36	6.21	6.36	6.46	6.50	6.35%	6.44%
Energy Transfer Partners, L.P.	6.12	29273RAE9	Sr Nt	2/15/2017	2	BBB-	2.06	1.87	1.78	1.74	1.82	1.79	2.35	2.28	2.31	2.54	3.20	4.11	2.32%	3.28%
Energy Transfer Partners, L.P.	6.62	29273RAF6	Sr Nt	10/15/2036	21	BBB-	5.21	5.07	5.17	5.34	5.59	6.26	6.43	6.74	6.97	7.10	7.32	7.86	6.26%	7.43%
Enterprise Prods Oper L P	8.38	293791AV1	Jr Sub Nt Fixed/ftg Rate	08/01/2066	51	BBB-	7.91	7.92	7.93	7.87	7.92	7.93	8.08	8.53	8.51	8.52	8.54	9.31	8.25%	8.79%
Kerr-McGee Corp.	7.125	492386AK3	Deb	10/15/2027	12	BBB-	4.40	4.09	4.11	4.01	4.37	4.81	4.82	5.11	5.05	5.04	5.09	6.57	4.79%	5.57%
Kerr-McGee Corp.	7.875	492386AT4	Nts	09/15/2031	16	BBB-	4.41	4.46	4.70	4.59	4.81	5.36	5.10	5.24	5.54	5.58	5.64	6.94	5.20%	6.05%
Kerr-McGee Corp.	6.95	492386AU1	Nts	07/01/2024	9	BBB-	4.00	3.69	3.71	3.51	3.77	4.22	4.32	4.61	4.55	4.54	4.59	6.07	4.30%	5.07%
Sunoco Logistics Ptns Operatio	6.12	86765BAE9	Sr Nt	05/15/2016	1	BBB-	2.67	2.75	2.67	1.36	1.42	1.42	1.42	1.41	1.33	1.47	2.07	2.09	1.84%	1.88%
Union Pacific Resources Group	7.5	907834AB1	Deb	10/15/2026	11	BBB-	4.75	4.44	4.46	4.26	4.52	4.96	5.07	5.36	5.30	5.44	5.49	6.97	5.09%	5.97%
Union Pacific Resources Group	7.5	907834AC9	Deb	11/01/2096	-115	BBB-	5.31	5.56	5.60	5.76	5.98	6.36	6.24	6.27	6.32	6.35	7.00	8.29	6.25%	7.21%
Union Pacific Resources Group	7.05	907834AF2	Deb	05/15/2018	3	BBB-	3.48	3.62	3.63	3.57	3.66	3.71	3.69	3.69	3.63	3.20	3.40	3.61	3.57%	3.40%
Union Pacific Resources Group	7.15	907834AG0	Deb	05/15/2028	13	BBB-	4.75	3.94	4.21	4.01	4.27	4.86	5.22	5.51	5.45	5.59	5.64	6.97	5.04%	6.07%
Williams Companies, Inc. (The)	7.625	969457AW0	Nts	07/15/2019	4	BBB-	3.77	3.96	5.00	4.96	4.41	5.16	5.31	6.28	8.27	6.70	6.82	6.82	5.61%	6.74%
Williams Companies, Inc. (The)	7.5	969457BB5	Deb	01/15/2031	16	BBB-	6.71	6.30	6.35	6.58	5.89	6.66	6.85	7.08	8.80	8.61	8.35	11.14	7.44%	9.37%
Williams Companies, Inc. (The)	7.75	969457BD1	Nts	06/15/2031	16	BBB-	6.59	6.34	6.30	6.62	5.92	6.70	6.80	7.13	8.80	8.61	8.60	11.14	7.46%	9.45%
Williams Companies, Inc. (The)	7.875	969457BG4	Nts	09/01/2021	6	BBB-	5.45	5.43	4.96	4.96	3.88	4.65	4.80	5.78	7.52	7.44	7.51	10.20	6.05%	8.38%
Williams Companies, Inc. (The)	8.75	969457BM1	Nts	03/15/2032	17	BBB-	7.01	6.92	6.79	6.56	6.05	6.76	6.92	7.13	9.00	8.90	8.98	12.65	7.81%	10.18%
Boardwalk Pipelines Llc	5.5	096629AA8	Nt	2/1/2017	2	BB+	2.62	2.70	2.97	2.91	2.96	2.78	3.11	3.09	3.22	3.52	4.04	4.21	3.18%	3.92%
Boardwalk Pipelines Lp	5.88	096630AA6	Sr Nt	11/15/2016	1	BB+	2.36	2.43	2.72	2.71	3.12	3.13	2.84	2.82	2.76	2.90	4.29	5.47	3.13%	4.22%
Pioneer Natural Resources Co.	6.88	723787AF4	Sr Nts	05/01/2018	3	BB+	2.69	2.65	2.40	2.32	2.26	2.43	2.69	3.05	2.93	3.17	3.29	4.02	2.83%	3.49%
Pioneer Natural Resources Co.	6.65	723787AG2	Sr Nts	03/15/2017	2	BB+	2.18	2.17	2.10	1.54	1.65	1.82	1.81	2.65	2.47	2.56	2.86	3.82	2.30%	3.08%
KN Energy	6.67	482620AS0	Deb	11/01/2027	12	BB	7.26	7.26	7.27	7.27	7.27	7.27	7.28	7.28	7.28	7.29	7.29	7.29	7.28%	7.29%
KN Energy	7.25	482620AW1	Sr Deb	03/01/2028	13	BB	6.95	6.95	6.95	6.95	6.95	6.95	6.95	6.94	6.94	6.94	6.94	8.69	7.09%	7.52%
Kinder Morgan Inc	5.15	494553AC4	Sr Nts	03/01/2015	0	BB	1.85												1.85%	
Kinder Morgan Fin Co Ulc	5.7	49455WAD8	Gtd Nts	01/05/2016	1	BB	1.78	1.40	2.23	0.99	1.02	1.32	1.45	1.83	1.89	1.45	1.88		1.57%	1.67%
Range Resources Corp.	7.5	75281AAH2	Sr Sub Nts	10/01/2017	2	BB	5.95	5.91	5.86	5.81	5.75	5.69	5.63	5.57	5.49	5.41	5.33	5.22	5.64%	5.32%
Range Resources Corp.	7.25	75281AAJ8	Sr Sub Nts	05/01/2018	3	BB	6.00	5.97	5.94	5.91	5.88	5.84	5.80	5.76	5.71	5.67	5.62	5.56	5.81%	5.62%
Chesapeake Energy Corp.	6.5	165167BS5	Sr Nts	08/15/2017	2	BB-	3.79	3.67	4.15	3.64	3.76	5.14	7.70	10.53	13.74	11.72	0.00	0.00	5.65%	3.91%
Chesapeake Energy Corp.	6.88	165167BU0	Sr Nts	11/15/2020	5	BB-	5.10	4.61	5.92	6.17	5.68	7.21	9.18	12.69	14.43	16.45	0.00	0.00	7.29%	5.48%
Chesapeake Energy Corp.	2.75	165167BW6	Contingent Sr Nt Conv	11/15/2035	20	BB-	2.75	2.74	2.78	2.74	2.73	2.83	2.84	2.90	2.84	2.80	2.81	2.82	2.80%	2.81%
Chesapeake Energy Corp.	2.5	165167BZ9	Contingent Sr Nt Conv	5/15/2037	22	BB-	2.66	2.66	2.80	2.71	2.67	2.75	2.75	3.23	3.09	3.70	5.23	7.36	3.24%	5.43%

MONTANA DEPARTMENT OF REVENUE

**Support for Yield Capitalization Cost of Debt Component - Yield to Maturity From Standard & Poor's Bond Guide
Industry: Liquid Pipelines
2016 Assessment Year**

Company Name	Coupon	CUSIP	Issue	Maturity Date	Years to Maturity	S&P Bond Rating	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Avg Full Year	Avg 4th QTR	
Chesapeake Energy Corp.	2.5	165167CA3	Sr Contingent Conv Nt	5/15/2037	22	BB-	2.72	2.70	2.80	2.77	2.69	2.72	3.13	3.31	3.31	3.46	5.23	7.36	3.52%	5.35%	
Chesapeake Energy Corp.	2.25	165167CB1	Contingent Sr Nt Conv	12/15/2038	23	BB-	2.65	2.69	2.75	2.71	2.70	2.88	3.47	4.09	3.79	4.18	7.08	10.19	4.10%	7.15%	
Chesapeake Energy Corp.	7.25	165167CC9	Sr Nt	12/15/2018	3	BB-	4.47	4.16	4.96	5.03	4.84	6.35	8.99	13.40	14.21	15.32			8.17%	15.32%	
Plains Exploration & Production	7	726505AC4	SrNts	03/15/2017	2	BB-	5.23	5.17	5.09	5.01	4.93								5.09%		
Plains Exploration & Production	7.75	726505AD2	SrNts	06/15/2015	0	BB-	2.50	1.30											1.90%		
Berry Petroleum Co.	8.25	085789AC9	Sr SubNts	11/01/2016	1	B	5.73	5.63	5.48	5.36	5.20	5.01	4.80	4.59	4.31	4.01	3.68	3.20	4.75%	3.63%	
Cimarex Energy Co.	7.12	171798AA9	SrNts	05/01/2017	2	NR	5.41	5.36	5.29	5.23	5.15	5.06	4.97	4.87	4.76	4.64	4.51	4.34	4.97%	4.50%	
Encore Acquisition	6	29255WAG5	Sr Sub Nt	7/15/2015	0	NR	3.77	3.35	2.48	1.22									2.71%		
Pioneer Natural Resources Co.	7.2	723787AB3	Sr Nt	6/15/2028	13	NR	4.45	4.67	4.65	4.39	4.56	4.91	4.75	5.26	5.40	5.21	5.28	6.32	4.99%	5.60%	
Range Resources Corp.	7.5	75281AAG4	Sr Sub Nts	05/15/2016	1	NR	0.00	0.00	6.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.58	1.10%	2.19%	
Sunoco, Inc.	5.75	86764PAD1	Nts	01/15/2017	2	NR	1.47	1.87	1.80	2.17	2.23	2.24	2.30	2.56	2.50	2.40	2.58	5.21	2.44%	3.40%	
Tesoro Corp.	6.62	881609AS0	Sr Nt	11/1/2015	0	NR	5.23	5.09	4.85	4.60	4.20	3.59	2.60	0.88					3.88%		
Texaco Capital	7.5	881685BD2	GtdDeb	03/01/2043	28	NR	7.27	7.27	7.27	7.27	7.27	7.27	7.27	7.27	7.27	7.27	7.27	7.27	7.27%	7.27%	
							129	129	127	126	126	123	120	120	120	119	119	118	117		

NOTES:

Data downloaded from the S&P website and missing data supplemented from month end Bond Guides when available.
 means the data was not available in S&P Guide
 means issuance matured or called

All Bonds		
	Annual	4th Qtr
All Ratings	4.23%	5.05%
Investment Grade (BBB- & Above)	4.23%	5.01%
Bonds With 20 or More Years to Maturity		
All Ratings	5.22%	6.07%
Investment Grade (BBB- & Above)	5.57%	6.23%
Say:	6.00%	

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization Cost of Debt Component - Current Yield From Standard & Poor's Bond Guide
 Industry: Liquid Pipelines
 2016 Assessment Year

Company Name	Coupon	CUSIP	Issue	Maturity Date	Years to Maturity	S&P Bond Rating	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Avg Full Year	Avg 4th QTR	
XTO Energy Inc.	5.3	98385XAG1	Sr Nts	06/30/2015	0	AAA	5.19	5.21	5.23	5.25	5.27								5.23%		
XTO Energy Inc.	5.65	98385XAH9	Sr Nts	04/01/2016	1	AAA	5.32	5.34	5.37	5.39	5.41	5.43	5.46	5.48	5.50	5.52	5.55	5.58	5.45%	5.55%	
XTO Energy Inc.	6.1	98385XAJ5	Sr Nts	04/01/2036	21	AAA	4.18	4.33	4.35	4.40	4.54	4.77	4.63	4.63	4.63	4.70	4.73	4.73	4.73	4.55%	4.72%
XTO Energy Inc.	6.25	98385XAL0	Sr Nts	08/01/2017	2	AAA	5.55	5.55	5.58	5.59	5.61	5.66	5.68	5.69	5.71	5.73	5.77	5.79	5.66%	5.76%	
XTO Energy Inc.	6.75	98385XAM8	Sr Nts	08/01/2037	22	AAA	4.34	4.35	4.40	4.49	4.63	4.91	4.76	4.76	4.80	4.87	4.86	4.86	4.67%	4.86%	
XTO Energy Inc.	5.5	98385XAP1	Sr Nts	06/15/2018	3	AAA	4.85	4.85	4.86	4.87	4.89	4.92	4.92	4.95	4.96	4.98	5.00	5.04	4.92%	5.01%	
XTO Energy Inc.	6.38	98385XAQ9	Sr Nts	06/15/2038	23	AAA	4.25	4.41	4.40	4.46	4.60	4.83	4.70	4.77	4.77	4.82	4.81	4.81	4.64%	4.81%	
Texaco Capital	9.75	881685AN1	GtdDeb	03/15/2020	5	AA	7.41	7.49	7.50	7.51	7.59	7.67	7.66	7.64	7.64	7.71	7.77	7.82	7.62%	7.77%	
Texaco Capital	8.875	881685AV3	GtdDeb	09/01/2021	6	AA	6.49	6.58	6.59	6.60	6.67	6.79	6.74	6.72	6.70	6.76	6.83	6.86	6.69%	6.82%	
Texaco Capital	8.625	881685AX9	GtdDeb	11/15/2031	16	AA	5.07	5.18	5.18	5.32	5.44	5.66	5.52	5.62	5.59	5.67	5.69	5.67	5.47%	5.68%	
Texaco Capital	8.625	881685AY7	GtdDeb	04/01/2032	17	AA	5.09	5.18	5.18	5.25	5.44	5.67	5.52	5.48	5.46	5.53	5.56	5.54	5.41%	5.54%	
Texaco Capital	8	881685BB6	GtdDeb	08/01/2032	17	AA	4.97	5.12	5.12	5.18	5.33	5.56	5.41	5.51	5.48	5.55	5.58	5.55	5.36%	5.56%	
ANR Pipeline	7.38	001814AQ5	Deb	2/15/2024	9	A-	5.80	5.85	5.86	5.85	5.90	6.05	6.06	6.11	6.14	6.20	6.22	6.25	6.02%	6.22%	
ANR Pipeline	9.62	001814AR3	Deb	11/1/2021	6	A-	7.07	7.15	7.13	7.05	7.10	7.34	7.28	7.23	7.23	7.28	7.20	7.42	7.01%	7.30%	
EOG Resources, Inc.	5.88	26875PAA9	Sr Nts	09/15/2017	2	A-	5.28	5.30	5.30	5.30	5.32	5.35	5.35	5.40	5.41	5.43	5.45	5.50	5.37%	5.46%	
Enron Oil & Gas	6.65	293562AD6	Nts	04/01/2028	13	A-	5.00	5.11	5.11	5.13	5.22	5.38	5.38	5.46	5.27	5.28	5.33	5.49	5.26%	5.37%	
Atlantic Richfield	9	048825AW3	Deb	04/01/2021	6	A	6.91	6.95	7.05	7.05	7.04	7.13	7.10	7.13	7.17	7.23	7.22	7.08	7.09%	7.18%	
Atlantic Richfield	9	048825AY9	Deb	05/01/2031	16	A	5.89	5.98	5.98	6.26	6.35	6.28	6.55	6.47	6.44	6.52	6.52	6.55	6.32%	6.53%	
Atlantic Richfield	9.125	048825AZ6	Deb	08/01/2031	16	A	5.89	6.05	6.05	6.12	6.33	6.60	6.44	6.40	6.38	6.32	6.35	6.69	6.30%	6.45%	
Atlantic Richfield	8.25	048825BA0	Deb	02/01/2022	7	A	6.39	6.41	6.39	6.42	6.42	6.62	6.71	6.93	6.81	6.68	6.64	7.05	6.62%	6.79%	
Atlantic Richfield	8.75	048825BB8	Deb	03/01/2032	17	A	6.11	6.27	6.20	6.17	6.09	6.33	6.17	6.38	6.19	6.27	6.39	6.69	6.27%	6.45%	
Burlington Resources Inc.	9.125	122014AE3	Deb	10/01/2021	6	A	6.72	6.80	6.67	6.68	6.75	6.90	6.88	6.93	6.90	6.96	7.02	7.12	6.86%	7.03%	
Burlington Resources Inc.	8.2	122014AH6	Deb	03/15/2025	10	A	5.99	5.99	6.04	6.04	6.21	6.40	6.31	6.39	6.34	6.26	6.35	6.85	6.26%	6.49%	
Burlington Resources Inc.	6.875	122014AJ2	Deb	02/15/2026	11	A	5.51	5.51	5.55	5.55	5.72	5.61	5.65	5.67	5.66	5.70	5.74	6.29	5.68%	5.91%	
Burlington Resources Inc.	7.375	122014AL7	Deb	03/01/2029	14	A	5.46	5.46	5.50	5.50	5.69	5.91	6.02	6.04	6.03	6.07	6.10	6.45	5.85%	6.21%	
Burlington Resources Fin	7.2	12201PAB2	Gtd Nt	8/15/2031	16	A	5.06	5.27	5.13	5.19	5.46	5.58	5.52	5.65	5.63	5.67	5.76	6.15	5.51%	5.86%	
Conoco Inc	6.95	208251AE8	Nts	04/15/2029	14	A	5.06	5.06	5.10	5.10	5.28	5.49	5.43	5.54	5.54	5.56	5.67	6.12	5.41%	5.78%	
ConocoPhillips	5.9	20825CAF1	Nts	10/15/2032	17	A	4.56	4.65	4.68	4.74	4.87	5.17	5.08	5.14	5.21	5.17	5.28	5.71	5.02%	5.39%	
Conoco Funding	7.25	20825UAC8	Sr Nt	10/15/2031	16	A	5.03	5.24	5.16	5.19	5.40	5.57	5.51	5.56	5.62	5.72	5.75	6.18	5.49%	5.88%	
Diamond Offshore Drilling, Inc.	4.88	25271CAJ1	Sr Nts	07/01/2015	0	A	4.80	4.81	4.82	4.84	4.86								4.83%		
Louisiana Land/Exp	7.65	546268AG8	Deb	12/01/2023	8	A	5.74	5.75	5.83	5.76	5.87	6.06	6.08	6.16	6.11	6.04	6.14	6.36	5.99%	6.18%	
Occidental Petroleum Corp.	9.25	674599BE4	Sr Deb	08/01/2019	4	A	7.22	7.30	7.31	7.30	7.37	7.45	7.44	7.45	7.45	7.51	7.57	7.64	7.42%	7.57%	
Occidental Petroleum Corp.	7.2	674599BM6	Sr Deb	4/1/2028	13	A	5.47	5.59	5.59	5.61	5.70	5.88	5.79	5.83	5.75	5.77	5.81	5.97	5.73%	5.85%	
Occidental Petroleum Corp.	8.45	674599BT1	Sr Nts	02/15/2029	14	A	5.73	5.86	5.86	5.87	5.97	6.19	6.10	6.08	6.06	6.13	6.18	6.24	6.02%	6.18%	
Occidental Pete Corp Med Terr	8.75	67461FED5	MTN Tranche # Tr 00100	1/15/2023	8	A	6.38	6.48	6.49	6.45	6.53	6.67	6.62	6.62	6.79	6.85	6.89	6.94	6.64%	6.89%	
Phillips Petroleum	6.65	718507BH8	Deb	07/15/2018	3	A	5.72	5.76	5.73	5.72	5.76	5.82	5.83	5.86	5.87	5.89	5.93	5.97	5.82%	5.93%	
Phillips Petroleum	7	718507BK1	Deb	03/30/2029	14	A	5.28	5.28	5.33	5.32	5.43	5.64	5.58	5.69	5.66	5.72	5.83	6.29	5.59%	5.95%	
Apache Corp.	7.7	037411AJ4	Nts	03/15/2026	11	BBB+	5.81	5.92	5.95	5.96	6.05	6.22	6.18	6.20	6.16	6.15	6.15	6.40	6.10%	6.23%	
Apache Corp.	7.95	037411AK1	Nts	04/15/2026	11	BBB+	6.36	6.42	6.27	5.90	5.99	6.16	6.10	6.09	6.10	6.15	6.14	6.40	6.17%	6.23%	
Apache Corp.	7.625	037411AL9	Deb	11/01/2096	81	BBB+	5.78	5.42	5.70	5.82	6.04	6.41	6.22	6.29	6.26	6.37	6.31	6.95	6.13%	6.54%	
Apache Corp.	7.38	037411AM7	Deb	08/15/2047	32	BBB+	5.47	5.20	5.39	5.44	5.62	5.97	5.84	5.93	5.80	5.68	5.54	6.38	5.69%	5.87%	
Apache Corp.	7	037411AN5	Sr Nts	02/01/2018	3	BBB+	6.22	6.22	6.24	6.23	6.25	6.31	6.34	6.37	6.35	6.37	6.41	6.53	6.32%	6.44%	
Apache Corp.	7.62	037411AP0	Sr Nts	07/01/2019	4	BBB+	6.32	6.39	6.39	6.38	6.44	6.50	6.49	6.48	6.47	6.52	6.55	6.64	6.46%	6.57%	
Apache Corp.	6	037411AR6	Nts	01/15/2037	22	BBB+	5.18	5.04	5.03	5.03	5.28	5.62	5.80	5.78	5.61	5.57	5.54	6.29	5.48%	5.80%	
Apache Corp.	5.62	037411AS4	Nts	01/15/2017	2	BBB+	5.20	5.22	5.21	5.24	5.26	5.29	5.31	5.26					5.25%		
Canadian Natural Resources Ltd	6.45	136385AE1	Nt	6/30/2033	18	BBB+	5.54	5.60	5.54	5.52	5.47	5.68	5.76	6.12	6.22	6.11	6.01	6.65	5.85%	6.26%	
Devon Fin Corp	7.95	251799AA0	Sr Deb	04/15/2032	17	BBB+	5.69	5.51	5.78	5.72	5.92	6.18	6.19	6.39	6.42	6.48	6.51	7.63	6.20%	6.87%	
ENSCO International Inc.	7.2	26874QAB6	Deb	11/15/2027	12	BBB+	6.08	5.97	6.08	5.99	6.02	6.31	6.58	7.26	7.40	8.41	8.29	8.92	6.94%	8.54%	
Enterprise Products Oper	6.65	293791AP4	Sr Nts' B'	10/15/2034	19	BBB+	4.98	5.01	5.11	5.12	5.27	5.55	5.61	5.86	5.92	5.86	5.96	6.48	5.96%	6.10%	
Enterprise Products Oper	5	293791AR0	Sr Nts' B'	03/01/2015	0	BBB+	4.98												4.98%		
Enterprise Products Oper	5.75	293791AT6	Sr Nts' B'	03/01/2035	20	BBB+	4.74	4.77	4.84	4.93	5.18	5.42	5.41	5.60	5.64	5.64	5.75	6.17	5.34%	5.85%	
OceanEnergy	8.25	674812AK8	Sr Nts' B'	07/01/2018	3	BBB+	6.97	7.02	7.04	7.05	7.10	7.15	7.18	7.18	7.23	7.26	7.33	7.88	7.20%	7.49%	
Amerada Hess Corp.	7.875	023551AF1	Nts	10/01/2029	14	BBB	5.93	5.94	6.05	5.97	6.08	6.31	6.33	6.54	6.61	6.60	6.67	7.17	6.35%	6.81%	
Amerada Hess Corp.	7.3	023551AJ3	Nts	08/15/2031	16	BBB	5.84	5.79	5.95	5.80	5.97	6.35	6.35	6.52	6.42	6.40	6.43	7.29	6.26%	6.71%	
Diamond Shamrock	8.75	252747AD2	Deb	06/15/2015	0	BBB	8.56	8.60	8.60	8.66									8.61%		
Diamond Shamrock	7.65	252747AF7	Deb	07/01/2026	11	BBB	5.83	5.95	5.95	5.96	6.05	6.22	6.16	6.15	6.16	6.18	6.22	6.33	6.10%	6.24%	
Enbridge Energy Partners, L.P.	5.95	29250RAD8	Sr Nts' B'	06/01/2033	18	BBB	5.03	5.23	5.25	5.38	5.55	5.85	5.77	5.98	5.92	6.12	6.12	6.78	5.75%	6.34%	
Enbridge Energy Partners, L.P.	5.88	29250RAH9	Nt	12/15/2016	1	BBB	5.44	5.47	5.48	5.49	5.52	5.55	5.59	5.60	5.61	5.67	5.68	5.73	5.57%	5.69%	

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization Cost of Debt Component - Current Yield From Standard & Poor's Bond Guide
 Industry: Liquid Pipelines
 2016 Assessment Year

Company Name	Coupon	CUSIP	Issue	Maturity Date	Years to Maturity	S&P Bond Rating	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Avg Full Year	Avg 4th QTR	
Lakehead Pipe Line Co	7	511546AA1	Sr Nt	10/1/2018	3	BBB	6.07	6.11	6.12	6.13	6.16	6.18	6.20	6.26	6.33	6.44	6.47	6.56	6.25%	6.49%	
Lakehead Pipe Line Co	7.12	511546AB9	Sr Nt	10/1/2028	13	BBB	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58%	5.58%
Marathon Oil Corp.	6.8	565849AB2	Nts	03/15/2032	17	BBB	5.47	5.56	5.54	5.58	5.67	5.83	5.96	6.32	6.50	6.51	6.52	7.48	6.08%	6.84%	
Murphy Oil Corp.	7.05	626717AA0	Nts	05/01/2029	14	BBB	6.03	6.13	6.13	6.05	6.15	6.35	6.35	6.55	6.78	7.15	7.20	7.59	6.54%	7.31%	
ONEOK Partners, L.P.	6.15	68268NAB9	Gtd Sr Nt	10/1/2016	1	BBB	5.76	5.79	5.75	5.79	5.79	5.82	5.88	5.88	5.96	5.97	5.98	6.00	5.86%	5.98%	
ONEOK Partners, L.P.	6.65	68268NAC7	Gtd Sr Nt	10/1/2036	21	BBB	5.96	6.14	6.27	6.12	6.23	6.46	6.48	6.68	6.64	7.31	7.50	7.97	6.65%	7.59%	
Plains All Amern Pipeline L P	5.88	72650RAF9	Sr Nt	08/15/2016	1	BBB	5.49	5.52	5.53	5.55	5.58	5.60	5.62	5.63	5.65	5.67	5.70	5.76	5.61%	5.71%	
Plains All Amer/PAA Fin	5.25	72650RAJ1	Sr Nts	06/15/2015	0	BBB	5.16	5.17	5.19	5.21									5.18%		
Plains All Amern Pipeline L P	6.7	72650RAM4	Sr Nt	5/15/2036	21	BBB	5.17	5.13	5.32	5.40	5.60	5.86	5.73	6.29	6.06	6.27	6.78	7.46	5.86%	6.84%	
Talisman Energy Inc.	7.25	87425EAE3	Deb	10/15/2027	12	BBB	6.20	6.11	6.04	6.08	6.20	6.31	6.46	6.72	6.81	7.06	7.01	6.99	6.50%	7.02%	
USX Corp.	9.375	902905AL2	Deb	05/15/2022	7	BBB	6.88	6.98	7.00	7.02	7.11	7.24	7.28	7.55	7.83	7.78	7.78	8.24	7.39%	7.93%	
USX Corp.	8.5	902905AN8	Deb	03/01/2023	8	BBB	6.55	6.65	6.66	6.67	6.76	6.90	6.87	6.97	7.31	7.35	7.41	7.83	6.99%	7.53%	
USX Corp.	8.125	902905AQ1	Deb	07/15/2023	8	BBB	6.32	6.42	6.43	6.45	6.53	6.68	6.64	6.75	7.10	6.92	6.98	7.57	6.73%	7.16%	
Valero Energy Corp. (New)	8.75	91913YAB6	Nts	06/15/2030	15	BBB	6.14	6.30	6.30	6.37	6.51	6.77	6.72	6.71	6.69	6.72	6.77	6.98	6.58%	6.82%	
Valero Energy Corp. (New)	7.5	91913YAE0	Nts	04/15/2032	17	BBB	5.86	5.75	5.78	5.83	5.96	6.24	6.20	6.39	6.31	6.29	6.38	6.75	6.15%	6.47%	
Valero Energy Corp. (New)	6.62	91913YAL4	Nts	06/15/2037	22	BBB	5.55	5.25	5.39	5.34	5.56	5.92	5.83	6.03	6.01	6.01	6.12	6.52	5.79%	6.22%	
Valero Energy Corp. (New)	6.12	91913YAM2	Nts	06/15/2017	2	BBB	5.56	5.55	5.56	5.58	5.60	5.63	5.67	5.68	5.70	5.73	5.75	5.81	5.65%	5.76%	
Williams Ptns L P	7.25	96950HAD2	Sr Nt	2/1/2017	2	BBB	6.58	6.57	6.60	6.61	6.64	6.68	6.74	6.77	6.82	6.86	6.89	7.10	6.74%	6.95%	
Anadarko Petroleum Corp.	7.25	032511AH0	Deb	03/15/2025	10	BBB	6.39	6.25	6.26	6.18	6.30	6.51	6.56	6.70	6.68	6.67	6.70	7.25	6.54%	6.87%	
Anadarko Petroleum Corp.	7.73	032511AJ6	Deb	09/15/2096	81	BBB	5.78	6.03	6.06	6.22	6.08	6.45	6.34	6.37	6.45	6.48	7.00	8.00	6.44%	7.16%	
Anadarko Petroleum Corp.	7.25	032511AK3	Deb	11/15/2096	81	BBB	5.49	5.74	5.78	5.88	6.11	6.48	6.36	6.39	6.44	6.47	7.00	8.29	6.37%	7.25%	
Anadarko Petroleum Corp.	7	032511AL1	Deb	11/15/2027	12	BBB	6.10	5.94	5.96	5.86	6.00	6.23	6.29	6.45	6.42	6.43	6.46	7.24	6.28%	6.71%	
Anadarko Petroleum Corp.	6.62	032511AM9	Deb	01/15/2028	13	BBB	5.92	5.76	5.78	5.68	5.81	6.05	6.10	6.26	6.23	6.23	6.26	7.07	6.10%	6.52%	
Anadarko Petroleum Corp.	7.2	032511AN7	Deb	03/15/2029	14	BBB	5.73	5.57	5.66	5.66	5.71	5.95	6.04	6.20	6.18	6.17	6.21	7.06	6.00%	6.48%	
Anadarko Petroleum Corp.	5.95	032511AX5	Sr Nts	09/15/2016	1	BBB	5.56	5.57	5.57	5.59	5.61	5.64	5.67	5.69	5.72	5.73	5.75	5.80	5.66%	5.76%	
Anadarko Petroleum Corp.	6.45	032511AY3	Sr Nts	09/15/2036	21	BBB	5.11	5.00	5.21	5.12	5.40	5.66	5.77	5.81	5.75	5.75	5.90	6.70	5.60%	6.12%	
Buckeye Partners, L.P.	5.12	118230AE1	Fixed Rt Nts	07/01/2017	2	BBB-	4.84	4.86	4.86	4.87	4.88	4.89	4.90	4.91	4.91	4.93	4.95	5.00	4.90%	4.96%	
Energen Corp MTN BE	7.32	29265AAP1	MTN Tranche # Tr 00014	7/28/2022	7	BBB-	6.78	6.87	6.87	6.88	6.95	7.09	7.01	6.95	6.90	6.95	6.99	7.01	6.94%	6.98%	
Energy Transfer Partners, L.P.	6.12	29273RAE9	Sr Nt	2/15/2017	2	BBB-	5.66	5.66	5.67	5.68	5.71	5.72	5.79	5.80	5.82	5.86	5.92	5.99	5.77%	5.92%	
Energy Transfer Partners, L.P.	6.62	29273RAF6	Sr Nt	10/15/2036	21	BBB-	5.60	5.51	5.58	5.69	5.87	6.36	6.48	6.71	6.89	6.98	7.15	7.58	6.37%	7.24%	
Enterprise Prods Oper L P	8.38	293791AV1	Jr Sub Nt Fixed/ftg Rate	08/01/2066	51	BBB-	7.91	7.92	7.94	7.88	7.93	7.94	8.09	8.53	8.51	8.52	8.54	9.30	8.25%	8.79%	
Kerr-McGee Corp.	7.125	492386AK3	Deb	10/15/2027	12	BBB-	5.64	5.49	5.51	5.46	5.64	5.87	5.88	6.03	6.01	6.01	6.04	6.82	5.87%	6.29%	
Kerr-McGee Corp.	7.875	492386AT4	Nts	09/15/2031	16	BBB-	5.60	5.64	5.78	5.72	5.86	6.20	6.04	6.14	6.32	6.35	6.40	7.24	6.11%	6.66%	
Kerr-McGee Corp.	6.95	492386AU1	Nts	07/01/2024	9	BBB-	5.65	5.53	5.55	5.48	5.59	5.77	5.82	5.95	5.93	5.93	5.96	6.57	5.81%	6.15%	
Sunoco Logistics Ptns Operatio	6.12	86765BAE9	Sr Nt	05/15/2016	1	BBB-	5.86	5.88	5.90	5.83	5.86	5.88	5.90	5.92	5.94	5.97	6.01	6.03	5.92%	6.00%	
Union Pacific Resources Group	7.5	907834AB1	Deb	10/15/2026	11	BBB-	6.02	5.87	5.89	5.80	5.93	6.16	6.22	6.37	6.34	6.42	6.45	7.21	6.22%	6.69%	
Union Pacific Resources Group	7.5	907834AC9	Deb	11/01/2096	-115	BBB-	5.33	5.58	5.62	5.77	5.99	6.36	6.25	6.28	6.32	6.36	7.00	8.29	6.26%	7.22%	
Union Pacific Resources Group	7.05	907834AF2	Deb	05/15/2018	3	BBB-	6.35	6.39	6.41	6.41	6.44	6.46	6.47	6.49	6.49	6.44	6.49	6.54	6.45%	6.49%	
Union Pacific Resources Group	7.15	907834AG0	Deb	05/15/2028	13	BBB-	5.79	5.38	5.52	5.43	5.56	5.87	6.06	6.22	6.20	6.27	6.30	7.04	5.97%	6.54%	
Williams Companies, Inc. (The)	7.625	969457AW0	Nts	07/15/2019	4	BBB-	6.59	6.65	6.93	6.93	6.80	7.00	7.04	7.29	7.78	7.40	7.40	7.44	7.10%	7.41%	
Williams Companies, Inc. (The)	7.5	969457BB5	Deb	01/15/2031	16	BBB-	6.97	6.70	6.73	6.88	6.45	6.94	7.06	7.22	8.41	8.27	8.08	10.18	7.49%	8.84%	
Williams Companies, Inc. (The)	7.75	969457BD1	Nts	06/15/2031	16	BBB-	6.95	6.78	6.76	6.97	6.52	7.03	7.10	7.33	8.50	8.36	8.35	10.30	7.58%	9.00%	
Williams Companies, Inc. (The)	7.875	969457BG4	Nts	09/01/2021	6	BBB-	6.95	6.95	6.79	6.80	6.45	6.72	6.78	7.12	7.74	7.72	7.74	8.73	7.21%	8.06%	
Williams Companies, Inc. (The)	8.75	969457BM1	Nts	03/15/2032	17	BBB-	7.47	7.40	7.32	7.16	6.82	7.31	7.42	7.57	8.94	8.86	8.92	11.93	8.09%	9.90%	
Boardwalk Pipelines Llc	5.5	096629AA8	Nt	2/1/2017	2	BB+	5.20	5.22	5.26	5.26	5.28	5.27	5.31	5.32	5.34	5.37	5.41	5.42	5.31%	5.40%	
Boardwalk Pipelines Lp	5.88	096630AA6	Sr Nt	11/15/2016	1	BB+	5.53	5.55	5.59	5.60	5.65	5.66	5.65	5.67	5.68	5.70	5.78	5.85	5.66%	5.78%	
Pioneer Natural Resources Co.	6.88	723787AF4	Sr Nts	05/01/2018	3	BB+	6.08	6.09	6.07	6.07	6.08	6.13	6.19	6.26	6.26	6.31	6.34	6.46	6.20%	6.37%	
Pioneer Natural Resources Co.	6.65	723787AG2	Sr Nts	03/15/2017	2	BB+	6.08	6.10	6.11	6.07	6.11	6.15	6.17	6.27	6.27	6.30	6.34	6.43	6.20%	6.36%	
Chesapeake Energy Corp.	6.5	165167BS5	Sr Nts	08/15/2017	2	BB-	6.10	6.09	6.17	6.11	6.14	6.32	6.64	6.98	7.35	7.08	9.38	13.82	7.35%	10.09%	
Chesapeake Energy Corp.	6.88	165167BU0	Sr Nts	11/15/2020	5	BB-	6.32	6.17	6.57	6.65	6.51	6.97	7.59	8.78	9.38	10.11	14.70	0.00	7.48%	8.27%	
Chesapeake Energy Corp.	2.75	165167BW6	Contingent Sr Nt Conv	11/15/2035	20	BB-	2.75	2.74	2.76	2.75	2.74	2.78	2.79	2.81	2.79	2.77	2.77	2.77	2.77%	2.77%	
Chesapeake Energy Corp.	2.5	165167BZ9	Contingent Sr Nt Conv	5/15/2037	22	BB-	2.56	2.57	2.63	2.59	2.57	2.60		2.82	2.75	3.03	3.84	5.20	3.01%	4.02%	
Chesapeake Energy Corp.	2.5	165167CA3	Sr Contingent Conv Nt	5/15/2037	22	BB-	2.59	2.58	2.62	2.61	2.58	2.59	2.77	2.85	2.85	2.92	3.84	5.20	3.00%	3.99%	
Chesapeake Energy Corp.	2.25	165167CB1	Contingent Sr Nt Conv	12/15/2038	23	BB-	2.42	2.43	2.46	2.44	2.44	2.52	2.79	3.10	2.95	3.14	4.94	7.50	3.26%	5.19%	
Chesapeake Energy Corp.	7.25	165167CC9	Sr Nt	12/15/2018	3	BB-	6.60	6.54	6.73	6.75	6.72	7.05	7.63	8.63	8.78	9.00	12.55	19.07	8.84%	13.54%	
Plains Exploration & Production	7	726505AC4	SrNts	03/15/2017	2	BB-	6.76	6.76	6.76	6.76	6.76								6.76%		
Plains Exploration & Production	7.75	726505AD2	SrNts	06/15/2015	0	BB-	7.60	7.60	7.60	7.60									7.60%		
Swift Energy Co.	7.12	870738AF8	SrNts	06/01/2017	2	BB-	18.26	13.07	12.28	10.21	10.79	12.28	19.38	24.25					15.07%		

MONTANA DEPARTMENT OF REVENUE

**Support for Direct Capitalization Cost of Debt Component - Current Yield From Standard & Poor's Bond Guide
Industry: Liquid Pipelines
2016 Assessment Year**

Company Name	Coupon	CUSIP	Issue	Maturity Date	Years to Maturity	S&P Bond Rating	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Avg Full Year	Avg 4th QTR	
KN Energy	6.67	482620AS0	Deb	11/01/2027	12	BB	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01%	7.01%	
KN Energy	7.25	482620AW1	Sr Deb	03/01/2028	13	BB	7.07	7.07	7.07	7.07	7.07	7.07	7.07	7.07	7.07	7.07	7.07	8.12	7.16%	7.42%	
Kinder Morgan Inc	5.15	494553AC4	Sr Nts	03/01/2015	0	BB	5.13												5.13%		
Kinder Morgan Fin Co Ulc	5.7	49455WAD8	Gtd Nts	01/05/2016	1	BB	5.50	5.49	5.51	5.52	5.54	5.57	5.59	5.62	5.64	5.65	5.67		5.57%	5.66%	
Range Resources Corp.	7.5	75281AAH2	Sr Sub Nts	10/01/2017	2	BB	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22%	7.22%	
Range Resources Corp.	7.25	75281AAJ8	Sr Sub Nts	05/01/2018	3	BB	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99%	6.99%	
Berry Petroleum Co.	8.25	085789AC9	Sr SubNts	11/01/2016	1	B	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92%	7.92%	
Cimarex Energy Co.	7.12	171798AA9	SrNts	05/01/2017	2	NR	6.87	6.87	6.87	6.87	6.87	6.87	6.87	6.87	6.87	6.87	6.87	6.87	6.87%	6.87%	
Encore Acquisition	6	29255WAG5	Sr Sub Nt	7/15/2015	0	NR	5.94	5.94	5.94	5.94	5.94								5.94%		
Pioneer Natural Resources Co.	7.2	723787AB3	Sr Nt	6/15/2028	13	NR	5.65	5.76	5.76	5.63	5.72	5.91	5.86	6.13	6.20	6.11	6.15	6.71	5.97%	6.32%	
Range Resources Corp.	7.5	75281AAG4	Sr Sub Nts	05/15/2016	1	NR	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22	7.22%	7.22%	
Sunoco, Inc.	5.75	86764PAD1	Nts	01/15/2017	2	NR	5.31	5.36	5.37	5.42	5.44	5.46	5.48	5.51	5.52	5.53	5.55	5.71	5.47%	5.60%	
Tesoro Corp.	6.62	881609AS0	Sr Nt	11/1/2015	0	NR	6.55	6.55	6.55	6.55	6.55	6.55	6.55	6.55	6.55				6.55%		
Texaco Capital	7.5	881685BD2	GtdDeb	03/01/2043	28	NR	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30%	7.30%	
							130	130	128	128	128	125	121	120	121	119	118	118	117		

NOTES:

Data downloaded from the S&P website and missing data supplemented from month end Bond Guides when available.

means the data was not available in S&P Guide
means issuance matured or called

All Bonds	
Annual	4th Qtr

<u>All Bonds</u>		
All Ratings	6.19%	6.55%
Investment Grade (BBB- & Above)	6.12%	6.52%
<u>Bonds With 20 or More Years to Maturity</u>		
All Ratings	5.36%	5.95%
Investment Grade (BBB- & Above)	5.86%	6.38%
Say:	6.00%	