

COST OF CAPITAL STUDY

YIELD CAPITALIZATION
2018 Assessment Year

APPENDIX C

Pipeline Industry

EQUITY RATE		12.50%		
CAPITAL ASSET PRICING MODEL			PAGE	
CAPM Ex Ante	9.16%		4	
DIVIDEND GROWTH MODELS Single Stage				
Value Line, based on Dividends Growth	14.00%		5	
Value Line, based on Earnings Growth	17.00%		6	
Value Line, based on Return on Equity	12.00%		7	
DIVIDEND GROWTH MODELS Multi Stage				
Value Line, based on Dividends Growth	12.00%		5a	
Value Line, based on Earnings Growth	12.00%		6a	
FCFE GROWTH MODEL Multi Stage	12.00%		8	
	RANGE	9.16-17.00%		
DEBT RATE		5.00%	9	
MARKET CAPITAL STRUCTURE				
Equity	60%	x 12.50%	= 7.50%	3
Debt	40%	x 5.00%	= 2.00%	3
Marginal Tax Rate	24%	= (1-.24)	x 2.00%	<u>1.52%</u>
WEIGHTED AVERAGE COST OF CAPITAL		9.02%		

SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Capital Structure at Book Value

Company	Ticker	Beta	Fin'l Strength	P/E Ratio	Div'd Yield	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Andeavor Logistics LP	andx	1.40	B+	21.2	8.4%	3,515,892,025	46.0%			4,127,000,000	54.0%	7,642,892,025
Boardwalk Pipeline	bwp	1.00	C++	9.7	3.1%	4,725,603,244	56.2%			3,686,800,000	43.8%	8,412,403,244
Buckeye Partners	bpl	1.20	B+	14.6	10.1%	4,575,291,396	49.9%			4,593,600,000	50.1%	9,168,891,396
DCP Midstream LP	dcp	1.60	B+	NMF	8.6%	7,409,092,258	61.1%			4,711,000,000	38.9%	12,120,092,258
Enable Midstream Part	enbl	1.30	B	15.7	9.2%	7,643,760,694	72.1%	362,000,000	3.4%	2,595,000,000	24.5%	10,600,760,694
Enbridge Inc	enb.to	1.00	B++	21.7	4.9%	50,398,007,381	42.3%	7,747,000,000	6.5%	60,865,000,000	51.1%	119,010,007,381
Energy Transfer Part	etp	1.55	B+	30.0	12.1%	24,438,688,033	42.1%			33,600,000,000	57.9%	58,038,688,033
EnLink Midstream Ptnrs	enlk	1.75	B	NMF	10.1%	4,973,373,491	58.9%			3,467,000,000	41.1%	8,440,373,491
Enterprise Prod	epd	1.30	B+	20.2	6.3%	22,388,107,269	50.8%			21,709,900,000	49.2%	44,098,007,269
EQT Midstream Ptnrs	eqm	1.25	B++	12.7	4.8%	2,149,115,459	64.8%			1,167,400,000	35.2%	3,316,515,459
Kinder Morgan Inc	kmi	1.45	B	NMF	2.8%	31,877,663,584	48.4%			34,000,000,000	51.6%	65,877,663,584
Magellan Mid Ptnrs	mmp	1.20	B++	17.3	5.0%	2,127,469,107	33.2%			4,273,500,000	66.8%	6,400,969,107
MPLX LP	mplx	1.45	B+	33.5	6.3%	11,296,090,380	59.0%	1,000,000,000	5.2%	6,848,000,000	35.8%	19,144,090,380
ONEOK Inc	oke	1.60	B+	35.6	5.1%	5,444,800,955	40.2%			8,092,000,000	59.8%	13,536,800,955
Pembina Pipeline Corp PBA	ppl.to	1.10	B++	33.0	4.4%	12,887,600,000	67.7%	1,100,000,000	5.8%	5,045,000,000	26.5%	19,032,600,000
Phillips 66 Ptnrs	psxp	1.15	B++	19.8	4.5%	1,989,099,036	46.7%			2,273,000,000	53.3%	4,262,099,036
Plains All Amer Pipe	paa	1.50	B+	22.8	9.4%	10,950,355,984	51.1%			10,489,000,000	48.9%	21,439,355,984
Spectra Energy LP	sep	0.90	B++	NMF	7.2%	17,943,748,487	69.3%			7,963,000,000	30.7%	25,906,748,487
TransCanada Corp	trp	1.10	B++	23.2	4.0%	19,786,882,220	36.9%	3,144,200,000	5.9%	30,716,800,000	57.3%	53,647,882,220
Western Gas Ptnrs	wes	1.40	B+	26.7	7.3%	3,729,876,045	51.8%			3,464,700,000	48.2%	7,194,576,045
Williams Cos	wmb	1.90	B+	46.9	3.9%	5,787,225,843	22.0%			20,567,000,000	78.0%	26,354,225,843
Williams Partners LP	wpz	1.60	B	45.9	6.8%	22,136,910,163	58.0%			16,000,000,000	42.0%	38,136,910,163
Mean		1.35		25.0	6.6%	12,644,302,411	51.3%		5.4%	13,193,395,455	47.5%	
Harmonic Mean		1.30					47.7%		5.1%		43.9%	
Weighted Mean						278,174,653,053	47.8%	13,353,200,000	2.3%	290,254,700,000	49.9%	581,782,553,053
Median		1.35			6.3%		50.9%		5.8%		49.1%	

SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Andeavor Logistics	landx	45.320	217,164,424	9,841,891,696	69.6%	-		4,300,000,000	30.4%	14,141,891,696
Boardwalk Pipeline	bwp	12.910	250,296,782	3,231,331,456	45.4%	-		3,889,400,000	54.6%	7,120,731,456
Buckeye Partners	bpl	49.550	146,643,955	7,266,207,970	59.0%	-		5,053,240,000	41.0%	12,319,447,970
DCP Midstream LP	dcp	36.330	143,309,328	5,206,427,886	51.6%	-		4,885,000,000	48.4%	10,091,427,886
Enable Midstream P	enbl	13.910	432,584,080	6,017,244,553	63.6%	362,000,000	3.8%	3,076,000,000	32.5%	9,455,244,553
Enbridge Inc	enb.to	49.160	1,695,190,292	83,335,554,755	52.6%	7,747,000,000	4.9%	67,400,000,000	42.5%	158,482,554,755
Energy Transfer Par	etp	17.920	1,155,493,524	20,706,443,950	37.7%	-		34,280,000,000	62.3%	54,986,443,950
EnLink Midstream P	enlk	15.370	349,008,666	5,364,263,196	60.0%	-		3,575,600,000	40.0%	8,939,863,196
Enterprise Prod	epd	26.510	2,152,702,622	57,068,146,509	70.9%	-		23,470,000,000	29.1%	80,538,146,509
EQT Midstream Ptnr	eqm	76.680	80,581,757	6,179,009,127	83.9%	-		1,186,100,000	16.1%	7,365,109,127
Kinder Morgan Inc	kmi	18.070	2,206,066,684	39,863,624,980	49.9%	-		40,050,000,000	50.1%	79,913,624,980
Magellan Mid Ptnrs	mmp	70.940	228,024,556	16,176,062,003	77.0%	-		4,826,480,000	23.0%	21,002,542,003
MPLX LP	mplx	34.900	407,066,320	14,206,614,568	62.0%	1,000,000,000	4.4%	7,718,000,000	33.7%	22,924,614,568
ONEOK Inc	oke	53.450	383,436,687	20,494,690,920	68.8%	-		9,300,000,000	31.2%	29,794,690,920
Pembina Pipeline Co	ppl.to	45.510	404,000,000	18,386,040,000	67.7%	1,100,000,000	4.0%	7,686,000,000	28.3%	27,172,040,000
Phillips 66 Ptnrs	psxp	52.350	110,505,502	5,784,963,030	65.7%	-		3,018,000,000	34.3%	8,802,963,030
Plains All Amer Pipe	paa	20.640	725,189,138	14,967,903,808	62.2%	-		9,100,000,000	37.8%	24,067,903,808
Spectra Energy LP	sep	39.540	485,885,418	19,211,909,428	68.5%	-		8,824,000,000	31.5%	28,035,909,428
TransCanada Corp	trp	48.640	881,375,600	42,870,109,184	45.9%	3,144,200,000	3.4%	47,413,000,000	50.7%	93,427,309,184
Western Gas Ptnrs	wes	48.090	165,845,978	7,975,533,082	68.8%	-		3,622,177,000	31.2%	11,597,710,082
Williams Cos	wmb	30.490	826,746,549	25,207,502,279	52.3%	-		23,005,000,000	47.7%	48,212,502,279
Williams Partners LP	wpz	38.780	956,238,020	37,082,910,416	67.2%	-		18,112,000,000	32.8%	55,194,910,416
Mean					61.4%		4.1%		37.7%	
Harmonic Mean					59.2%		4.0%		34.4%	
Weighted Mean				466,444,384,795	57.3%	13,353,200,000	1.6%	333,789,997,000	41.0%	813,587,581,795
Median					62.9%		4.0%		34.0%	
Std Dev					11.2%		0.6%		11.1%	
Coefficient of Variation					18.2%		13.9%		29.4%	
Target					60%				40%	100%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2018 Assessment Year

Ex Ante

$$K_e = R_f + B (R_p)$$

Ke = Cost of Equity				9.16%
				to page 1
	Rm =	rate of return	7.50%	
	Rf =	risk free rate	2.75%	
	Rp =	risk premium	4.75%	
	B =	Beta	1.35	page 7
Rp = Risk Premium				4.75%
				to above
	Shannon Pratt and Roger Grabowski		3.50% - 6.00%	
	Cost of Capital, App and Exam, 5th Ed, 2014			
	Dr. Aswath Damodaran		5.08%	chart page 15
	http://pages.stern.nyu.edu/~adamodar/		4.73%	adjusted for Rf
	2017 Implied Premium			
	John Graham & Campbell Harvey		7.16%	10 year expected real ret
	Duke CFO magazine Global Business Outlook survey - U.S.		2.37%	Rf rate used in survey
	4th Qtr 2017		6.78%	adjusted for Rf
Rf = Risk Free Rate				2.75%
				to above
	Value Line Investment Survey, Selected Yields January 5, 2018, page 2573			
	as of 12-27-17	US Treasury Securities year end data		
		5 year	2.19%	
		10 year	2.41%	
		30 year	2.75%	
		30 year Zero	2.87%	
	Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/Current/)			
	as of 12-29-17	Treasury Constant Maturities		
		5 year	2.20%	
		10 year	2.40%	
		20 year	2.58%	
		30 year	2.74%	
		20 year TIPS	0.61%	1.97%
		30 year TIPS	0.73%	2.01%
				TIPS inflation indication
Inflation				2.00%
	Value Line Investment Survey, Economic Series January 5, 2018, page 1500			
	Consumer Price Index Annual Rate of Change 2020-2022		2.50%	
	Federal Reserve Bank of Philadelphia			
	The Livingston Survey December 15, 2017		Table 3	
	Inflation median (measured by the CPI) over next 10 year		2.34%	
	https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey			
Nominal Gross Domestic Product (GDP)				3.80%
	Federal Reserve Projected Long Run Real GDP Growth			
	Median Projection Value From Dec 15, 2017 Report			1.80%
	http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm			
	Congressional Budget Office Real GDP Economic Projections			Table D-1 pg 140
	The Budget and Economic Outlook 2018-2028	2018-2022	2.18%	
	Average Percentage Change From Year to Year	2023-2028	1.73%	
	http://www.cbo.gov/publication/53651			
	Federal Reserve Bank of Philadelphia			
	The Livingston Survey, December 15, 2017			pg 4
	Average Annual Real GDP Growth Rate for Next Ten Years			2.18%
	https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey			

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

Washington State Department of Revenue
2018 Assessment Year
Pipeline Industry

Based on Dividend Growth

$$K_e = (D_1 / P_0) + G$$

Ke = Cost of Equity
D1 = Expected Dividends
Po = Current Price
G = Sustainable Growth

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Dividend Growth (G)	Ke with Short Term Growth
Andeavor Logistics LP	andx	45.320	4.00	8.83%	11.50%	20.33%
Boardwalk Pipeline	bwp	12.910	0.40	3.10%	15.00%	18.10%
Buckeye Partners	bpl	49.550	5.15	10.39%	3.50%	13.89%
DCP Midstream LP	dcp	36.330	3.12	8.59%	1.50%	10.09%
Enable Midstream Part	enbl	13.910	1.28	9.20%	8.50%	17.70%
Enbridge Inc	enb.to	49.160	2.68	5.45%	5.50%	10.95%
Energy Transfer Part	etp	17.920	2.20	12.28%	3.50%	15.78%
EnLink Midstream Ptnrs	enlk	15.370	1.56	10.15%	2.50%	12.65%
Enterprise Prod	epd	26.510	1.72	6.49%	8.00%	14.49%
EQT Midstream Ptnrs	eqm	76.680	4.37	5.70%	13.50%	19.20%
Kinder Morgan Inc	kmi	18.070	0.80	4.43%	7.50%	11.93%
Magellan Mid Ptnrs	mmp	70.940	3.80	5.36%	9.50%	14.86%
MPLX LP	mplx	34.900	2.47	7.08%	6.00%	13.08%
ONEOK Inc	oke	53.450	3.15	5.89%	9.00%	14.89%
Pembina Pipeline Corp PB	ppl.to	45.510	2.16	4.75%	4.00%	8.75%
Phillips 66 Ptnrs	psxp	52.350	2.85	5.44%	23.50%	28.94%
Plains All Amer Pipe	paa	20.640	1.20	5.81%	-1.00%	nmf
Spectra Energy LP	sep	39.540	3.05	7.71%	5.50%	13.21%
TransCanada Corp	trp	48.640	2.14	4.40%	11.00%	15.40%
Western Gas Ptnrs	wes	48.090	3.77	7.84%	7.00%	14.84%
Williams Cos	wmb	30.490	1.36	4.46%	nil	nmf
Williams Partners LP	wpz	38.780	1.95	5.03%	-3.00%	nmf
					Mean Range	15.21%
					Harmonic Mean Range	14.19%
					Median Range	14.84%
					Max	28.94%
					Min	8.75%
					Std Dev Range	4.47%
					Coefficient of Variation	29.40%
					Say	14.00%

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Based on Dividend Growth

$$K_e = (D1 / P_o) + G$$

Ke = Cost of Equity

D1 = Expected Dividends

Po = Current Price

G = Sustainable Growth

Max % Above Economic Growth

2%

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Dividend Growth (G)	Dividend Growth LT	Ke Sustainable
Andeavor Logistics LP	andx	45.32	4.00	8.83%	11.50%	5.80%	14.63%
Boardwalk Pipeline	bwp	12.91	0.40	3.10%	15.00%	5.80%	8.90%
Buckeye Partners	bpl	49.55	5.15	10.39%	3.50%	3.50%	13.89%
DCP Midstream LP	dcp	36.33	3.12	8.59%	1.50%	1.50%	10.09%
Enable Midstream Part	enbl	13.91	1.28	9.20%	8.50%	5.80%	15.00%
Enbridge Inc	enb.to	49.16	2.68	5.45%	5.50%	5.50%	10.95%
Energy Transfer Part	etp	17.92	2.20	12.28%	3.50%	3.50%	15.78%
EnLink Midstream Ptnrs	enlk	15.37	1.56	10.15%	2.50%	2.50%	12.65%
Enterprise Prod	epd	26.51	1.72	6.49%	8.00%	5.80%	12.29%
EQT Midstream Ptnrs	eqm	76.68	4.37	5.70%	13.50%	5.80%	11.50%
Kinder Morgan Inc	kmi	18.07	0.80	4.43%	7.50%	5.80%	10.23%
Magellan Mid Ptnrs	mmp	70.94	3.80	5.36%	9.50%	5.80%	11.16%
MPLX LP	mplx	34.90	2.47	7.08%	6.00%	5.80%	12.88%
ONEOK Inc	oke	53.45	3.15	5.89%	9.00%	5.80%	11.69%
Pembina Pipeline Corp PB	ppl.to	45.51	2.16	4.75%	4.00%	4.00%	8.75%
Phillips 66 Ptnrs	psxp	52.35	2.85	5.44%	23.50%	5.80%	11.24%
Plains All Amer Pipe	paa	20.64	1.20	5.81%	-1.00%	-1.00%	nmf
Spectra Energy LP	sep	39.54	3.05	7.71%	5.50%	5.50%	13.21%
TransCanada Corp	trp	48.64	2.14	4.40%	11.00%	5.80%	10.20%
Western Gas Ptnrs	wes	48.09	3.77	7.84%	7.00%	5.80%	13.64%
Williams Cos	wmb	30.49	1.36	4.46%	nil	5.80%	10.26%
Williams Partners LP	wpz	38.78	1.95	5.03%	-3.00%	-3.00%	nmf
Mean Range							11.95%
Harmonic Mean Range							11.63%
Median Range							11.60%
Max							15.78%
Min							8.75%
Std Dev Range							1.99%
Coefficient of Variation							16.65%
Say							12.00%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Based on Earnings Growth

$$K_e = (D_1 / P_0) + G$$

K_e = Cost of Equity
 D_1 = Expected Dividends
 P_0 = Current Price
 G = Sustainable Growth

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Earnings Growth (G)	Ke with Short Term Growth
Andeavor Logistics LP	andx	45.320	4.00	8.83%	15.00%	23.83%
Boardwalk Pipeline	bwp	12.910	0.40	3.10%	11.00%	14.10%
Buckeye Partners	bpl	49.550	5.15	10.39%	6.00%	16.39%
DCP Midstream LP	dcp	36.330	3.12	8.59%	nil	NMF
Enable Midstream Part	enbl	13.910	1.28	9.20%	13.00%	22.20%
Enbridge Inc	enb.to	49.160	2.68	5.45%	5.50%	10.95%
Energy Transfer Part	etp	17.920	2.20	12.28%	9.00%	21.28%
EnLink Midstream Ptnrs	enlk	15.370	1.56	10.15%	NMF	NMF
Enterprise Prod	epd	26.510	1.72	6.49%	9.50%	15.99%
EQT Midstream Ptnrs	eqm	76.680	4.37	5.70%	9.50%	15.20%
Kinder Morgan Inc	kmi	18.070	0.80	4.43%	NMF	NMF
Magellan Mid Ptnrs	mmp	70.940	3.80	5.36%	7.00%	12.36%
MPLX LP	mplx	34.900	2.47	7.08%	17.00%	24.08%
ONEOK Inc	oke	53.450	3.15	5.89%	17.50%	23.39%
Pembina Pipeline Corp PB	ppl.to	45.510	2.16	4.75%	9.00%	13.75%
Phillips 66 Ptnrs	psxp	52.350	2.85	5.44%	22.50%	27.94%
Plains All Amer Pipe	paa	20.640	1.20	5.81%	11.00%	16.81%
Spectra Energy LP	sep	39.540	3.05	7.71%	5.50%	13.21%
TransCanada Corp	trp	48.640	2.14	4.40%	55.00%	NMF
Western Gas Ptnrs	wes	48.090	3.77	7.84%	17.50%	25.34%
Williams Cos	wmb	30.490	1.36	4.46%	17.50%	21.96%
Williams Partners LP	wpz	38.780	1.95	5.03%	NMF	NMF
					Mean Range	18.75%
					Harmonic Mean Range	17.36%
					Median Range	16.81%
					Max	27.94%
					Min	10.95%
					Std Dev	5.25%
					Coefficient of Variation	27.99%
					Say	17.00%

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Based on Dividend Growth

$$K_e = (D_1 / P_o) + G$$

Ke = Cost of Equity

D1 = Expected Dividends

Po = Current Price

G = Sustainable Growth

Max % Above Economic Growth

2%

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Earnings Growth (G)	Dividend Growth LT	Ke Sustainable
Andeavor Logistics LP	andx	45.32	4.00	8.83%	15.00%	5.80%	14.63%
Boardwalk Pipeline	bwp	12.91	0.40	3.10%	11.00%	5.80%	8.90%
Buckeye Partners	bpl	49.55	5.15	10.39%	6.00%	5.80%	16.19%
DCP Midstream LP	dcp	36.33	3.12	8.59%	nil		NMF
Enable Midstream Part	enbl	13.91	1.28	9.20%	13.00%	5.80%	15.00%
Enbridge Inc	enb.to	49.16	2.68	5.45%	5.50%	5.50%	10.95%
Energy Transfer Part	etp	17.92	2.20	12.28%	9.00%	5.80%	18.08%
EnLink Midstream Ptnrs	enlk	15.37	1.56	10.15%	NMF		NMF
Enterprise Prod	epd	26.51	1.72	6.49%	9.50%	5.80%	12.29%
EQT Midstream Ptnrs	eqm	76.68	4.37	5.70%	9.50%	5.80%	11.50%
Kinder Morgan Inc	kmi	18.07	0.80	4.43%	NMF		4.43%
Magellan Mid Ptnrs	mmp	70.94	3.80	5.36%	7.00%	5.80%	11.16%
MPLX LP	mplx	34.90	2.47	7.08%	17.00%	5.80%	12.88%
ONEOK Inc	oke	53.45	3.15	5.89%	17.50%	5.80%	11.69%
Pembina Pipeline Corp PB	pppl.to	45.51	2.16	4.75%	9.00%	5.80%	10.55%
Phillips 66 Ptnrs	psxp	52.35	2.85	5.44%	22.50%	5.80%	11.24%
Plains All Amer Pipe	paa	20.64	1.20	5.81%	11.00%	5.80%	11.61%
Spectra Energy LP	sep	39.54	3.05	7.71%	5.50%	5.50%	13.21%
TransCanada Corp	trp	48.64	2.14	4.40%	55.00%	5.80%	10.20%
Western Gas Ptnrs	wes	48.09	3.77	7.84%	17.50%	5.80%	13.64%
Williams Cos	wmb	30.49	1.36	4.46%	17.50%	5.80%	10.26%
Williams Partners LP	wpz	38.78	1.95	5.03%	NMF		NMF
Mean Range							12.02%
Harmonic Mean Range							11.06%
Median Range							11.61%
Max							18.08%
Min							4.43%
Std Dev Range							2.92%
Coefficient of Variation							24.30%
Say							12.00%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Based on Return on Equity $K_e = (D1 / P_o) + G$

K_e = Cost of Equity

$D1$ = Expected Dividends

$E1$ = Expected Earnings

P_o = Current Price

G = Sustainable Growth

b = Retained Earnings % = (1 - Payout Ratio)

ROE = Return on Equity = ($E1 / P_o$)

Company	Ticker	Stock Price (P_o)	Expected Dividend ($D1$)	Expected Cash Flow ($E1$)	Dividend Yield ($D1/P_o$)	Coverage Ratio (b)	ROE ($E1/P_o$)	Growth ($b*ROE$)	K_e Dividend s	K_e Earnings
Andeavor Logistics LP	andx	45.320	4.00	4.00	8.83%	-2.0%	8.83%	-0.18%	8.65%	8.65%
Boardwalk Pipeline	bwp	12.910	0.40	2.50	3.10%	83.0%	19.36%	16.07%	19.17%	35.44%
Buckeye Partners	bpl	49.550	5.15	5.60	10.39%	2.0%	11.30%	0.22%	10.62%	11.52%
DCP Midstream LP	dcp	36.330	3.12	3.65	8.59%	15.3%	10.05%	1.53%	10.12%	11.58%
Enable Midstream Part	enbl	13.910	1.28	1.80	9.20%	14.5%	12.94%	1.88%	11.08%	14.82%
Enbridge Inc	enb.to	49.160	2.68	2.50	5.45%	103.0%	5.09%	5.24%	10.69%	10.32%
Energy Transfer Part	etp	17.920	2.20	2.50	12.28%	2.9%	13.95%	0.41%	12.68%	14.36%
EnLink Midstream Ptnrs	enlk	15.370	1.56	1.95	10.15%	2.9%	12.69%	0.37%	10.52%	13.06%
Enterprise Prod	epd	26.510	1.72	2.35	6.49%	17.4%	8.86%	1.54%	8.03%	10.40%
EQT Midstream Ptnrs	eqm	76.680	4.37	8.60	5.70%	29.6%	11.22%	3.32%	9.02%	14.53%
Kinder Morgan Inc	kmi	18.070	0.80	0.80	4.43%	NMF	4.43%	NMF	NMF	NMF
Magellan Mid Ptnrs	mmp	70.940	3.80	5.10	5.36%	21.3%	7.19%	1.53%	6.89%	8.72%
MPLX LP	mplx	34.900	2.47	2.40	7.08%	28.6%	6.88%	1.96%	9.04%	8.84%
ONEOK Inc	oke	53.450	3.15	2.35	5.89%	NMF	4.40%	NMF	NMF	NMF
Pembina Pipeline Corp PBA	ppl.to	45.510	2.16	1.70	4.75%	107.0%	3.74%	4.00%	8.74%	7.73%
Phillips 66 Ptnrs	psxp	52.350	2.85	5.40	5.44%	30.6%	10.32%	3.15%	8.60%	13.47%
Plains All Amer Pipe	paa	20.640	1.20	2.35	5.81%	-6.4%	11.39%	-0.73%	5.09%	10.66%
Spectra Energy LP	sep	39.540	3.05	5.05	7.71%	11.5%	12.77%	1.47%	9.18%	14.24%
TransCanada Corp	trp	48.640	2.14	2.15	4.40%	NMF	4.42%	NMF	NMF	NMF
Western Gas Ptnrs	wes	48.090	3.77	5.85	7.84%	20.0%	12.16%	2.43%	10.27%	14.60%
Williams Cos	wmb	30.490	1.36	1.00	4.46%	NMF	3.28%	NMF	NMF	NMF
Williams Partners LP	wpz	38.780	1.95	3.80	5.03%	9.9%	9.80%	0.97%	6.00%	10.77%
Mean									9.69%	12.98%
Harmonic Mean									8.95%	11.62%
Median									9.11%	11.55%
Std Dev									3.01%	6.07%
Coefficient of Variation									31.03%	46.74%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT FREE CASH FLOW TO EQUITY MODEL MULTI STAGE

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
Andeavor Logistics LP	andx	45.32	2.90	15.63	102.04%	20.50%	12.59%
Boardwalk Pipeline	bwp	12.91	1.20	10.76	17.01%	9.50%	16.88%
Buckeye Partners	bpl	49.55	3.65	13.58	98.04%	17.50%	12.71%
DCP Midstream LP	dcp	36.33	0.90	40.37	84.75%	4.00%	NMF
Enable Midstream Part	enbl	13.91	0.95	14.64	85.47%	11.50%	15.33%
Enbridge Inc	enb.to	49.16	2.50	19.66	107.00%	8.00%	NMF
Energy Transfer Part	etp	17.92	0.95	18.86	97.09%	8.00%	7.55%
EnLink Midstream Ptnrs	enlk	15.37	0.35	43.91	97.09%	5.00%	NMF
Enterprise Prod	epd	26.51	1.55	17.10	82.64%	24.00%	11.09%
EQT Midstream Ptnrs	eqm	76.68	5.70	13.45	70.42%	33.00%	13.52%
Kinder Morgan Inc	kmi	18.07	0.80	22.59	83.00%	10.00%	10.72%
Magellan Mid Ptnrs	mmp	70.94	4.05	17.52	78.74%	46.00%	9.73%
MPLX LP	mplx	34.90	1.50	23.27	71.43%	6.50%	NMF
ONEOK Inc	oke	53.45	2.35	22.74	94.00%	47.00%	9.35%
Pembina Pipeline Corp PBA	ppl.to	45.51	1.70	26.77	74.00%	7.00%	NMF
Phillips 66 Ptnrs	psxp	52.35	3.40	15.40	69.44%	27.00%	13.96%
Plains All Amer Pipe	paa	20.64	1.45	14.23	106.38%	14.50%	13.64%
Spectra Energy LP	sep	39.54	3.55	11.14	88.50%	10.50%	14.58%
TransCanada Corp	trp	48.64	2.15	22.62	75.00%	12.50%	9.48%
Western Gas Ptnrs	wes	48.09	2.00	24.05	80.00%	21.50%	10.10%
Williams Cos	wmb	30.49	1.00	30.49	100.00%	15.00%	NMF
Williams Partners LP	wpz	38.78	1.85	20.96	90.09%	11.50%	8.10%
Mean				20.90	84.19%	16.82%	11.83%
Harmonic Mean				18.33	72.49%	11.05%	11.24%
Median				19.26	85.11%	12.00%	11.84%
Industry Summary				19.00	80.00%	12.00%	
						Say	12.00%

SUPPORT FOR DEBT RATING AND DEBT YIE

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
Andeavor Logistics LP	andx	Ba1	BBB-
Boardwalk Pipeline	bwp	Baa3	
Buckeye Partners	bpl	Baa3	BBB-
DCP Midstream LP	dcp	Ba2	BB
Enable Midstream Part	enbl	Baa3	BBB-
Enbridge Inc	enb.to	Baa3	
Energy Transfer Part	etp	Baa3	BBB-
EnLink Midstream Ptnrs	enlk	Ba1	BBB-
Enterprise Prod	epd	Baa2	BBB+
EQT Midstream Ptnrs	eqm	Ba1	BBB-
Kinder Morgan Inc	kmi	Baa3	BBB-
Magellan Mid Ptnrs	mmp	Baa1	BBB+
MPLX LP	mplx	Baa3	BBB
ONEOK Inc	oke	Baa3	BB+
Pembina Pipeline Corp PB	ppl.to		BBB
Phillips 66 Ptnrs	psxp	Baa3	BBB
Plains All Amer Pipe	paa	Ba1	BBB-
Spectra Energy LP	sep	Baa2	
TransCanada Corp	trp	Baa1	A-
Western Gas Ptnrs	wes	Ba1	BBB-
Williams Cos	wmb	Ba2	BB
Williams Partners LP	wpz	Baa3	BBB-
Overall Average Debt Rating		Baa3	BBB-

Mergent's Bond Record January 2018, page 249

Corporate	Aaa	Aa	A	Baa
October	3.60%	3.75%	3.91%	4.32%
November	3.57%	3.67%	3.84%	4.27%
December	3.51%	3.61%	3.79%	4.22%
4th Qtr Average	3.56%	3.68%	3.85%	4.27%

Public Utilities	Aaa	Aa	A	Baa
October		3.74%	3.91%	4.26%
November		3.65%	3.83%	4.16%
December		3.62%	3.79%	4.14%
4th Qtr Average		3.67%	3.84%	4.19%

Industrials	Aaa	Aa	A	Baa
October	3.60%	3.74%	3.90%	4.37%
November	3.57%	3.68%	3.85%	4.37%
December	3.51%	3.60%	3.79%	4.31%
4th Qtr Average	3.56%	3.67%	3.85%	4.35%

S&P's Long Term Bond Yield	BBB-	5.15%	5.12%
		Avg YTM	Med YTM

Bloomberg Dec	20y	25Y	30Y
BBB-	5.01%	4.97%	5.01%

Debt Yield Rate **5.00%**

to page 1

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	2017		2018		2017		2018	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio	
Andeavor Logistics LP	andx	45.320	2.11	4.7%	2.90	6.4%	3.59	7.9%	4.00	8.8%
Boardwalk Pipeline	bwp	12.910	1.16	9.0%	1.20	9.3%	2.50	19.4%	2.50	19.4%
Buckeye Partners	bpl	49.550	3.33	6.7%	3.65	7.4%	5.10	10.3%	5.60	11.3%
DCP Midstream LP	dcp	36.330	0.43	1.2%	0.90	2.5%	3.05	8.4%	3.65	10.0%
Enable Midstream Part	enbl	13.910	0.92	6.6%	0.95	6.8%	1.85	13.3%	1.80	12.9%
Enbridge Inc	enb.to	49.160	1.96	4.0%	2.50	5.1%	3.45	7.0%	4.35	8.8%
Energy Transfer Part	etp	17.920	0.93	5.2%	0.95	5.3%	2.60	14.5%	2.50	14.0%
EnLink Midstream Ptnrs	enlk	15.370	0.05	0.3%	0.35	2.3%	1.60	10.4%	1.95	12.7%
Enterprise Prod	epd	26.510	1.30	4.9%	1.55	5.8%	2.05	7.7%	2.35	8.9%
EQT Midstream Ptnrs	eqm	76.680	5.19	6.8%	5.70	7.4%	8.31	10.8%	8.60	11.2%
Kinder Morgan Inc	kmi	18.070	0.01	0.1%	0.80	4.4%	1.03	5.7%	1.90	10.5%
Magellan Mid Ptnrs	mmp	70.940	3.81	5.4%	4.05	5.7%	4.70	6.6%	5.10	7.2%
MPLX LP	mplx	34.900	1.06	3.0%	1.50	4.3%	2.80	8.0%	2.40	6.9%
ONEOK Inc	oke	53.450	1.70	3.2%	2.35	4.4%	2.50	4.7%	3.55	6.6%
Pembina Pipeline Corp P	ppl.to	45.510	1.88	4.1%	1.70	3.7%	2.94	6.5%	2.35	5.2%
Phillips 66 Ptnrs	psxp	52.350	2.59	4.9%	3.40	6.5%	5.10	9.7%	5.40	10.3%
Plains All Amer Pipe	paa	20.640	0.95	4.6%	1.45	7.0%	2.05	9.9%	2.35	11.4%
Spectra Energy LP	sep	39.540	3.19	8.1%	3.55	9.0%	5.45	13.8%	5.05	12.8%
TransCanada Corp	trp	48.640	1.98	4.1%	2.15	4.4%	4.40	9.0%	4.85	10.0%
Western Gas Ptnrs	wes	48.090	1.62	3.4%	2.00	4.2%	5.46	11.4%	5.85	12.2%
Williams Cos	wmb	30.490	0.63	2.1%	1.00	3.3%	2.72	8.9%	3.25	10.7%
Williams Partners LP	wpz	38.780	1.65	4.3%	1.85	4.8%	3.40	8.8%	3.80	9.8%
		Mean		4.4%		5.5%		9.7%		10.5%
		Harmonic Mean		0.8%		4.8%		8.7%		9.7%
		Median		4.4%		5.2%		9.0%		10.4%
		Max		9.0%		9.3%		19.4%		19.4%
		Min		0.1%		2.3%		4.7%		5.2%
		Std Dev		2.3%		1.9%		3.3%		3.0%
		Coefficient of Variation		51.9%		34.6%		34.4%		28.4%
		Say		4.4%		5.2%		9.0%		10.4%

Source: VL/Year End Stock Price

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Company	Ticker	Stock Price	Enterprise Value	EBITDA Historical	Annual Change VL	EBITDA Forecast	EV / EBITDA Forecast
Andeavor Logistics LP	andx	45.320	12,259,891,696	2,546,000,000	11.42%	2,836,768,802	4.32
Boardwalk Pipeline	bwp	12.910	7,120,731,456	789,300,000	0.00%	789,300,000	9.02
Buckeye Partners	bpl	49.550	12,319,447,970	953,147,000	9.80%	1,046,592,784	11.77
DCP Midstream LP	dcp	36.330	10,091,427,886	601,000,000	19.67%	719,229,508	14.03
Enable Midstream Part	enbl	13.910	9,455,244,553	894,000,000	-2.70%	869,837,838	10.87
Enbridge Inc	enb.to	49.160	158,482,554,755	6,136,000,000	26.09%	7,736,695,652	20.48
Energy Transfer Part	etp	17.920	54,986,443,950	4,729,000,000	-3.85%	4,547,115,385	12.09
EnLink Midstream Ptnrs	enlk	15.370	8,939,863,196	844,800,000	21.88%	1,029,600,000	8.68
Enterprise Prod	epd	26.510	80,538,146,509	5,572,900,000	14.63%	6,388,446,341	12.61
EQT Midstream Ptnrs	eqm	76.680	7,365,109,127	678,193,000	3.49%	701,860,385	10.49
Kinder Morgan Inc	kmi	18.070	79,913,624,980	5,805,000,000	84.47%	10,708,252,427	7.46
Magellan Mid Ptnrs	mmp	70.940	21,002,542,003	1,249,343,000	8.51%	1,355,670,064	15.49
MPLX LP	mplx	34.900	22,924,614,568	1,874,000,000	-14.29%	1,606,285,714	14.27
ONEOK Inc	oke	53.450	29,794,690,920	1,787,230,000	42.00%	2,537,866,600	11.74
Pembina Pipeline Corp PBA	ppl.to	45.510	27,172,040,000	1,600,000,000	-20.07%	1,278,911,565	21.25
Phillips 66 Ptnrs	psxp	52.350	8,681,963,030	746,000,000	5.88%	789,882,353	10.99
Plains All Amer Pipe	paa	20.640	24,067,903,808	1,779,000,000	14.63%	2,039,341,463	11.80
Spectra Energy LP	sep	39.540	28,035,909,428	901,000,000	-7.34%	834,871,560	33.58
TransCanada Corp	trp	48.640	93,427,309,184	7,365,000,000	10.23%	8,118,238,636	11.51
Western Gas Ptnrs	wes	48.090	11,597,710,082	998,145,000	7.14%	1,069,441,071	10.84
Williams Cos	wmb	30.490	48,212,502,279	2,640,000,000	19.49%	3,154,411,765	15.28
Williams Partners LP	wpz	38.780	55,194,910,416	2,733,000,000	11.76%	3,054,529,412	18.07
			Mean				13.49
			Harmonic Mean				11.47
			Median				11.79
			Std Dev				5.98

Source:

Value Line & Morning Star

Say

10.00

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	Revenues		Cash Flow		Earnings		Book Value	
				Multiple		Multiple		Multiple		Multiple
Andeavor Logistics LP	andx	45.320	14.80	3.06	3.59	12.62	2.11	21.48	16.19	2.80
Boardwalk Pipeline	bwp	12.910	5.28	2.45	2.50	5.16	1.16	11.13	18.88	0.68
Buckeye Partners	bpl	49.550	24.75	2.00	5.10	9.72	3.33	14.88	31.20	1.59
DCP Midstream LP	dcp	36.330	59.05	0.62	3.05	11.91	0.43	84.49	51.70	0.70
Enable Midstream Part	enbl	13.910	6.48	2.15	1.85	7.52	0.92	15.12	17.67	0.79
Enbridge Inc	enb.to	49.160	26.18	1.88	3.45	14.25	1.96	25.08	29.73	1.65
Energy Transfer Part	etp	17.920	25.15	0.71	2.60	6.89	0.93	19.27	21.15	0.85
EnLink Midstream Ptnrs	enlk	15.370	16.35	0.94	1.60	9.61	0.05	NMF	14.25	1.08
Enterprise Prod	epd	26.510	13.45	1.97	2.05	12.93	1.30	20.39	10.40	2.55
EQT Midstream Ptnrs	eqm	76.680	10.35	7.41	8.31	9.23	5.19	14.77	26.67	2.88
Kinder Morgan Inc	kmi	18.070	6.18	2.92	1.03	17.54	0.01	NMF	14.45	1.25
Magellan Mid Ptnrs	mmp	70.940	11.00	6.45	4.70	15.09	3.81	18.62	9.33	7.60
MPLX LP	mplx	34.900	9.90	3.53	2.80	12.46	1.06	32.92	27.75	1.26
ONEOK Inc	oke	53.450	30.20	1.77	2.50	21.38	1.70	31.44	14.20	3.76
Pembina Pipeline Corp P	ppl.to	45.510	12.52	3.63	2.94	15.48	1.88	24.21	31.90	1.43
Phillips 66 Ptnrs	psxp	52.350	9.30	5.63	5.10	10.26	2.59	20.21	18.00	2.91
Plains All Amer Pipe	paa	20.640	36.10	0.57	2.05	10.07	0.95	21.73	15.10	1.37
Spectra Energy LP	sep	39.540	6.24	6.34	5.45	7.26	3.19	12.39	36.93	1.07
TransCanada Corp	trp	48.640	12.05	4.04	4.40	11.05	1.98	24.57	22.45	2.17
Western Gas Ptnrs	wes	48.090	13.56	3.55	5.46	8.81	1.62	29.69	22.49	2.14
Williams Cos	wmb	30.490	9.69	3.15	2.72	11.21	0.63	48.40	7.00	4.36
Williams Partners LP	wpz	38.780	8.35	4.64	3.40	11.41	1.65	23.50	23.15	1.68
			Mean	3.15		11.45		25.71		2.12
			Harmonic Mean	1.87		10.34		20.81		1.46
			Median	2.99		11.13		21.60		1.62
			Max	7.41		21.38		84.49		7.60
			Min	0.57		5.16		11.13		0.68
			Say	3.00		11.00		22.00		2.00

Source: VL/Year End Stock Price

DATA INPUT

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

Instructions: Data entered on this page will flow to the applicable worksheets.

Guideline Companies		Stock Price	Beta Levered	Financial Strength	Revenues	Cash Flow	Earnings	Dividends	Bk Value	Common	LTD (BV)	Trailing P/E Ratio	Aver Annual Div Yield	Operating Margin
Name	Ticker	Yahoo	V L	V L	Per Share	Per Share	Per Share	Per Share	Stock	Shares	V L	V L	V L	V L
Andeavor Logistics LP	andx	45.32	1.40	B+	14.80	3.59	2.11	3.81	16.19	217,164,424	4,127,000,000	21.2	8.3%	56.5%
Boardwalk Pipeline	bwp	12.91	1.00	C++	5.28	2.50	1.16	0.40	18.88	250,296,782	3,686,800,000	9.7	3.6%	59.5%
Buckeye Partners	bpl	49.55	1.20	B+	24.75	5.10	3.33	5.01	31.20	146,643,955	4,593,600,000	14.6	10.6%	26.0%
DCP Midstream LP	dcp	36.33	1.60	B+	59.05	3.05	0.43	3.12	51.70	143,309,328	4,711,000,000	NMF	8.7%	7.1%
Enable Midstream Part	enbl	13.91	1.30	B	6.48	1.85	0.92	1.28	17.67	432,584,080	2,595,000,000	15.7	8.8%	31.8%
Enbridge Inc	enb.to	49.16	1.00	B++	26.18	3.45	1.96	2.41	29.73	1,695,190,292	60,865,000,000	21.7	6.2%	19.7%
Energy Transfer Part	etp	17.92	1.55	B+	25.15	2.60	0.93	2.17	21.15	1,155,493,524	33,600,000,000	30.0	12.4%	16.0%
EnLink Midstream Ptnrs	enlk	15.37	1.75	B	16.35	1.60	0.05	1.56	14.25	349,008,666	3,467,000,000	NMF	9.5%	14.7%
Enterprise Prod	epd	26.51	1.30	B+	13.45	2.05	1.30	1.67	10.40	2,152,702,622	21,709,900,000	20.2	6.6%	20.5%
EQT Midstream Ptnrs	eqm	76.68	1.25	B++	10.35	8.31	5.19	3.66	26.67	80,581,757	1,167,400,000	12.7	7.8%	81.3%
Kinder Morgan Inc	kmri	18.07	1.45	B	6.18	1.03	0.01	0.50	14.45	2,206,066,684	34,000,000,000	NMF	2.9%	42.4%
Magellan Mid Ptnrs	mmp	70.94	1.20	B++	11.00	4.70	3.81	3.52	9.33	228,024,556	4,273,500,000	17.3	5.8%	50.0%
MPLX LP	mplx	34.90	1.45	B+	9.90	2.80	1.06	2.21	27.75	407,066,320	6,848,000,000	33.5	6.8%	35.7%
ONEOK Inc	oke	53.45	1.60	B+	30.20	2.50	1.70	2.72	14.20	383,436,687	8,092,000,000	35.6	5.5%	19.0%
Pembina Pipeline Corp PBA	ppl.to	45.51	1.10	B++	12.52	2.94	1.88	2.02	31.90	404,000,000	5,045,000,000	33.0	5.2%	22.0%
Phillips 66 Ptnrs	psxp	52.35	1.15	B++	9.30	5.10	2.59	2.37	18.00	110,505,502	2,273,000,000	19.8	5.4%	
Plains All Amer Pipe	paa	20.64	1.50	B+	36.10	2.05	0.95	1.95	15.10	725,189,138	10,489,000,000	22.8	5.4%	7.0%
Spectra Energy LP	sep	39.54	0.90	B++	6.24	5.45	3.19	2.83	36.93	485,885,418	7,963,000,000	NMF	7.3%	83.9%
TransCanada Corp	trp	48.64	1.10	B++	12.05	4.40	1.98	1.95	22.45	881,375,600	30,716,800,000	23.2	6.1%	
Western Gas Ptnrs	wes	48.09	1.40	B+	13.56	5.46	1.62	3.53	22.49	165,845,978	3,464,700,000	26.7	7.8%	43.4%
Williams Cos	wmb	30.49	1.90	B+	9.69	2.72	0.63	1.20	7.00	826,746,549	20,567,000,000	46.9	4.1%	42.1%
Williams Partners LP	wpz	38.78	1.60	B	8.35	3.40	1.65	2.65	23.15	956,238,020	16,000,000,000	45.9	6.2%	48.0%
Average											average	25.0		36.3%
Harmonic Mean											harmonic mean	21.1		22.7%
Median											median	22.3		33.8%

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Value Line Mar 2, 2018

Projected (Next Year)

Income statement

Balance S

Calculated Debt	Payout Ratio	Projected Payout Ratio	Coverage Ratio	Payout Ratio based	% Rtn on Shrhldrs Equity	% Rtn on Shrhldrs Equity	Revenues	Cash Flow	Earnings	Dividends	Bk Value	CF Projection	Operating Income	Current Assets	Current Liabilities	
mk to bk	VL	VL	NW Pipe	NW Pipe	V L	V L	V L	V L	V L	V L	V L	V L	Morningstar	Morningstar	Morningstar	
102.38%	NMF	NMF		102.0%	10.6%	20.5%	9.30	4.00	2.90	4.00	18.25	6.45	1,525,000,000	6,883,000,000	5,001,000,000	
105.48%	34%	50%	33%	17.0%	6.2%	9.5%	5.10	2.50	1.20	0.40	19.70	3.85	466,500,000	180,600,000	280,400,000	
102.91%	150%	115%	NMF	98.0%	10.5%	17.5%	24.50	5.60	3.65	5.15	29.95	7.15	683,904,000	656,598,000	685,360,000	
103.15%	NMF	NMF	NMF	84.7%	0.8%	4.0%	63.75	3.65	0.90	3.12	50.30	4.65	222,000,000	1,322,000,000	1,488,000,000	
100.52%	NMF	78%		85.5%	5.5%	11.5%	6.65	1.8	0.95	1.28	17.10	3.30	528,000,000	416,000,000	1,279,000,000	
105.31%	103%	107%	67%	N/A	5.1%	8.0%	28.25	4.35	2.50	2.68	29.60	5.35	1,571,000,000	9,215,000,000	14,624,000,000	
103.60%	NMF	NMF	NMF	97.1%	3.0%	8.0%	21.25	2.50	0.95	2.20	18.90	3.10	2,397,000,000	6,528,000,000	6,994,000,000	
103.11%	NMF	NMF	NMF	97.1%	0.5%	5.0%	17.20	1.95	0.35	1.56	14.80	2.65	299,500,000	806,700,000	1,041,700,000	
109.26%	128%	104%	133%	82.6%	12.5%	24.0%	14.20	2.35	1.55	1.72	10.80	3.60	3,928,900,000	6,506,400,000	9,295,100,000	
101.61%	76%	62%	61%	70.4%	26.5%	33.0%	12.65	8.60	5.70	4.37	27.05	12.20	580,708,000	147,327,000	212,244,000	
105.83%	NMF	83%	NMF	N/A	0.05%	10.0%	6.80	1.9	0.80	0.8	16	3.25	3,544,000,000	2,715,000,000	6,181,000,000	
106.67%	92%	96%	92%	78.7%	41.0%	46.0%	11.15	5.10	4.05	3.8	9.65	7.00	1,052,713,000	611,839,000	836,510,000	
110.80%	NMF	NMF	NMF	71.4%	4.0%	6.5%	5.35	2.4	1.50	2.47	31.50	2.90	1,191,000,000	559,000,000	1,304,000,000	
109.41%	NMF	94%	NMF	N/A	10.0%	47.0%	34.20	3.55	2.35	3.15	13.15	6.30	1,380,895,000	1,764,458,000	2,667,335,000	
102.99%	107%	74%	NMF	N/A	6.5%	7.0%	13.50	2.35	1.70	2.16	32.65	3.85	1,218,000,000	1,022,000,000	1,142,000,000	
101.45%	97%	85%	61%	69.4%	23.0%	27.0%	11.3	5.4	3.4	2.85	19.25	8.50	630,000,000	292,000,000	171,000,000	
101.11%	NMF	100%	NMF	106.4%	7.8%	14.5%	37.65	2.35	1.45	1.20	15.35	3.55	1,153,000,000	4,000,000,000	4,531,000,000	
110.81%	65%	70%	59%	88.5%	8.5%	10.5%	6.70	5.05	3.55	3.05	40.30	5.95	563,000,000	561,000,000	1,105,000,000	
113.57%	NMF	75%	108%	N/A	10.5%	12.5%	12.65	4.85	2.15	2.14	21.15	7.00	5,310,000,000	4,680,000,000	9,877,000,000	
103.71%	NMF	81%	111%	80.0%	15.7%	21.5%	15.45	5.85	2.00	3.77	25.45	8.50	707,271,000	254,062,000	424,333,000	
109.89%	NMF	100%	NMF	N/A	9.0%	15.0%	10.1	3.25	1.00	1.36	8.3	4.40	904,000,000	2,179,000,000	2,646,000,000	
109.79%	NMF	109%	NMF	90.1%	7.0%	11.5%	8.45	3.80	1.85	1.95	23.1	5.10	1,033,000,000	2,142,000,000	2,449,000,000	
	95%	87%	81%	82.4%	10.2%							5.34				
		83%		68.2%	0.8%							4.65	average			
		85%		85.1%	7.8%							4.54	Median			
													4.54	Harmonic mean		

sheet

CF Statement

PP&E Gross	Intangibles (Excl. WG)	LT Debt	Dep & Amort	Carrying Value	Fair Value
Morningstar	Morningstar	Morningstar	Morningstar	10-K	10-K
18,823,000,000	1,645,000,000	7,668,000,000	1,021,000,000	4,200,000,000	4,300,000,000
10,883,600,000	-	3,293,700,000	322,800,000	3,687,500,000	3,889,400,000
7,928,240,000	359,061,000	4,658,321,000	269,243,000	4,910,525,000	5,053,240,000
14,532,000,000	106,000,000	4,707,000,000	379,000,000	4,736,000,000	4,885,000,000
12,079,000,000	451,000,000	2,595,000,000	366,000,000	3,060,000,000	3,076,000,000
#####	3,267,000,000	60,865,000,000	4,565,000,000	64,000,000,000	67,400,000,000
67,699,000,000	5,311,000,000	32,687,000,000	2,332,000,000	33,090,000,000	34,280,000,000
9,120,000,000	1,497,100,000	3,467,800,000	545,300,000	3,467,800,000	3,575,600,000
46,545,200,000	3,690,300,000	21,713,700,000	1,644,000,000	21,480,000,000	23,470,000,000
3,200,108,000	-	1,167,352,000	97,485,000	1,167,352,000	1,186,100,000
54,330,000,000	3,099,000,000	35,015,000,000	2,261,000,000	37,843,000,000	40,050,000,000
7,235,468,000	52,764,000	4,273,518,000	196,630,000	4,524,492,000	4,826,480,000
14,462,000,000	453,000,000	6,945,000,000	683,000,000	6,966,000,000	7,718,000,000
15,559,667,000	312,360,000	8,091,629,000	406,335,000	8,500,000,000	9,300,000,000
15,576,000,000	843,000,000	7,300,000,000	382,000,000	7,463,000,000	7,686,000,000
3,754,000,000	-	2,920,000,000	116,000,000	2,975,000,000	3,018,000,000
16,862,000,000	844,000,000	8,933,000,000	626,000,000	9,000,000,000	9,100,000,000
18,993,000,000	-	7,963,000,000	338,000,000	7,963,500,000	8,824,000,000
81,011,000,000	596,000,000	38,882,000,000	2,055,000,000	41,748,000,000	47,413,000,000
7,871,102,000	775,269,000	3,464,712,000	290,874,000	3,492,712,000	3,622,177,000
39,513,000,000	8,744,000,000	20,434,000,000	1,736,000,000	20,935,000,000	23,005,000,000
38,931,000,000	8,790,000,000	15,996,000,000	1,700,000,000	16,497,000,000	18,112,000,000

STOCK PRICE

Washington State Department of Revenue

2018 Assessment Year

Pipeline Industry

								37.14
								Year End
Andeavor Logistics		andx						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	46.32	46.53	45.77	46.19	45.32	465,800		45.32
Boardwalk Pipeline		bwp						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	13.17	13.19	12.81	12.91	12.91	1,513,900		12.91
Buckeye Pipeline		bpl						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	48.75	49.71	48.6	49.55	49.55	1,092,900		49.55
DCP Midstream Ptnrs		dpm						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	36.67	36.67	36.25	36.33	36.33	232,800		36.33
Enable Midstream		enbl						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	14.19	14.26	14.11	14.22	13.91	247600		13.91
Enbridge Inc		enb.to						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	49.41	49.42	48.97	49.16	49.16	1,965,500		49.16
Energy Transfer Ptnrs		etp						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	18.02	18.05	17.78	17.92	17.92	7,159,800		17.92
Energy Transfer Equity		ete						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	17.25	17.36	17.15	17.26	17.26	3,505,000		17.26
EnLink Mid Ptnrs		enlk						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	15.58	15.75	15.31	15.37	15.37	989,000		15.37
Enterprise Products		epd						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	26.48	26.56	26.33	26.51	26.51	3,630,400		26.51
EQT Midstream Ptnrs		eqm						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	75.53	76.71	75.31	76.68	76.68	198100		76.68
Kinder Morgan Energy		kmi						
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/29/2017	18.31	18.34	18.06	18.07	18.07	10,474,300		18.07

Magellan Mid Ptnrs	mmp								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	70.64	71.39	70.3	70.94	70.94	889,100			70.94
MPLX Lp	mplx								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	35.85	35.98	35.22	35.47	34.9	1,226,000			34.90
ONEOK Inc	oke								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	53.62	53.89	53.33	53.45	53.45	2,527,700			53.45
Pembina Pipeline Corp	ppl.to								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	45.48	45.52	45.06	45.51	45.51	511,700			45.51
Phillips 66 Ptnrs	psxp								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	52.43	52.49	52.06	52.35	52.35	199,800			52.35
Plains All American Pipe	paa								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	20.73	20.96	20.52	20.64	20.64	2,715,100			20.64
Spectra Energy LP	sep								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	41.10	41.10	39.46	39.54	39.54	1,063,000			39.54
TransCanada Corp	trp								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	48.64	48.78	48.35	48.64	48.64	543,500			48.64
Western Gas Ptnrs	wes								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	47.86	48.35	47.63	48.09	48.09	441,500			48.09
Williams Cos	wmb								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	30.59	30.72	30.41	30.49	30.49	2,914,900			30.49
Williams Partners	wpz								
Date	Open	High	Low	Close	Adj. Close*	Volume			
12/29/2017	39.11	39.21	38.57	38.78	38.78	1,425,300			38.78

Source:
finance.yahoo.com
Historical Stock Quotes

IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2018.

These implied premiums are calculated using the S&P 500.

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	ends + Buyback	Change in Earnings	Change in Dividend	T.Bill Rate	T.Bond Rate	Bond-Bill	Implied Growth	Premium	Implied Growth	Implied Premium	ERP/Riskfree	
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%					
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%		2.92%	1.24	
1962	5.81%	3.40%	63.1	3.67	2.15		8.79%	5.21%	2.73%	3.85%	1.12%	4.05%	3.56%		3.56%	0.92	
1963	5.51%	3.13%	75.02	4.13	2.35		12.75%	9.45%	3.12%	4.14%	1.02%	4.96%	3.38%		3.38%	0.82	
1964	5.62%	3.05%	84.75	4.76	2.58		15.23%	10.08%	3.54%	4.21%	0.67%	5.13%	3.31%		3.31%	0.79	
1965	5.73%	3.06%	92.43	5.30	2.83		11.20%	9.42%	3.93%	4.65%	0.72%	5.46%	3.32%		3.32%	0.71	
1966	6.74%	3.59%	80.33	5.41	2.88		2.23%	1.96%	4.76%	4.64%	-0.12%	4.19%	3.68%		3.68%	0.79	
1967	5.66%	3.09%	96.47	5.46	2.98		0.85%	3.37%	4.21%	1.49%	5.25%	3.20%		3.20%		0.56	
1968	5.51%	2.93%	103.86	5.72	3.04		4.81%	2.09%	5.21%	6.16%	0.95%	5.32%	3.00%		3.00%	0.49	
1969	6.63%	3.52%	92.06	6.10	3.24		6.66%	6.49%	6.58%	7.88%	1.30%	7.55%	3.74%		3.74%	0.47	
1970	5.98%	3.46%	92.15	5.51	3.19		-9.72%	-1.61%	6.53%	6.50%	-0.03%	4.78%	3.41%		3.41%	0.52	
1971	5.46%	3.10%	102.09	5.57	3.16		1.15%	-0.74%	4.39%	5.89%	1.50%	4.57%	3.09%		3.09%	0.52	
1972	5.23%	2.70%	118.05	6.17	3.19		10.76%	0.71%	3.84%	6.41%	2.57%	5.21%	2.72%		2.72%	0.42	
1973	8.16%	3.70%	97.55	7.96	3.61		28.93%	13.24%	6.93%	6.90%	-0.03%	8.30%	4.30%		4.30%	0.62	
1974	13.64%	5.43%	68.56	9.35	3.72		17.48%	3.14%	8.00%	7.40%	-0.60%	6.42%	5.59%		5.59%	0.76	
1975	8.55%	4.14%	90.19	7.71	3.73		-17.54%	0.30%	5.80%	7.76%	1.96%	5.99%	4.13%		4.13%	0.53	
1976	9.07%	3.93%	107.46	9.75	4.22		26.39%	13.10%	5.08%	6.81%	1.73%	8.19%	4.55%		4.55%	0.67	
1977	11.43%	5.11%	95.1	10.87	4.86		11.53%	15.07%	5.12%	7.78%	2.66%	9.52%	5.92%		5.92%	0.76	
1978	12.11%	5.39%	96.11	11.64	5.18		7.07%	6.60%	7.18%	9.15%	1.97%	8.48%	5.72%		5.72%	0.63	
1979	13.48%	5.53%	107.94	14.55	5.97		25.01%	15.23%	10.38%	10.33%	-0.05%	11.70%	6.45%		6.45%	0.62	
1980	11.04%	4.74%	135.76	14.99	6.44		3.01%	7.81%	11.24%	12.43%	1.19%	11.01%	5.03%		5.03%	0.40	
1981	12.39%	5.57%	122.55	15.18	6.83		1.31%	6.08%	14.71%	13.98%	-0.73%	11.42%	5.73%		5.73%	0.41	
1982	9.83%	4.93%	140.64	13.82	6.93		-8.95%	1.58%	10.54%	10.47%	-0.07%	7.96%	4.90%		4.90%	0.47	
1983	8.06%	4.32%	164.93	13.29	7.12		-3.84%	2.76%	8.80%	11.80%	3.00%	9.09%	4.31%		4.31%	0.37	
1984	10.07%	4.68%	167.24	16.84	7.83		26.69%	9.85%	9.85%	11.51%	1.66%	11.02%	5.11%		5.11%	0.44	
1985	7.42%	3.88%	211.28	15.68	8.20		-6.91%	4.74%	7.72%	8.99%	1.27%	7.89%	4.03%	6.75%	3.84%	0.43	
1986	5.96%	3.38%	242.17	14.43	8.19		-7.93%	-0.15%	6.16%	7.22%	1.06%	5.54%	3.36%	6.96%	3.58%	0.50	
1987	6.49%	3.71%	247.08	16.04	9.17		11.10%	11.99%	5.47%	8.86%	3.39%	9.66%	4.18%	8.58%	3.99%	0.45	
1988	8.20%	3.68%	277.72	24.12	10.22		50.42%	11.49%	6.35%	9.14%	2.79%	9.76%	4.12%	7.67%	3.77%	0.41	
1989	6.80%	3.32%	353.4	24.32	11.73		0.83%	14.80%	8.37%	7.93%	-0.44%	9.58%	3.85%	7.46%	3.51%	0.44	
1990	6.58%	3.74%	330.22	22.65	12.35		-6.87%	5.26%	7.81%	8.07%	0.26%	7.39%	3.92%	7.19%	3.89%	0.48	
1991	4.58%	3.11%	417.09	19.30	12.97		-14.79%	5.03%	7.00%	6.70%	-0.30%	6.34%	3.27%	7.81%	3.48%	0.52	
1992	4.16%	2.90%	435.71	20.87	12.64		8.13%	-2.59%	5.30%	6.68%	1.38%	4.67%	2.83%	9.83%	3.55%	0.53	
1993	4.25%	2.72%	466.45	26.90	12.69		28.89%	0.41%	3.50%	5.79%	2.29%	4.73%	2.74%	8.00%	3.17%	0.55	
1994	5.89%	2.91%	459.27	31.75	13.36		18.03%	5.34%	5.00%	7.82%	2.82%	7.23%	3.06%	7.17%	3.55%	0.45	
1995	5.74%	2.30%	615.93	37.70	14.17		18.74%	6.00%	3.50%	5.57%	2.07%	5.65%	2.44%	6.50%	3.29%	0.59	
1996	4.83%	2.01%	740.74	40.63	14.89		-7.77%	5.10%	5.00%	6.41%	1.41%	6.13%	2.11%	7.92%	3.20%	0.50	
1997	4.08%	1.60%	970.43	44.09	15.52		8.52%	4.25%	5.35%	5.74%	0.39%	5.45%	1.67%	8.00%	2.73%	0.48	
1998	3.11%	1.32%	1229.23	44.27	16.20		0.41%	4.37%	4.33%	4.65%	0.32%	4.60%	1.38%	7.20%	2.26%	0.49	
1999	3.07%	1.14%	1469.25	51.68	16.71		16.74%	3.16%	5.37%	6.44%	1.07%	5.75%	1.20%	12.50%	2.05%	0.32	
2000	3.94%	1.23%	1320.28	56.13	16.27		8.61%	-2.65%	5.73%	5.11%	-0.62%	3.71%	1.65%	12.00%	2.87%	0.56	
2001	3.85%	1.37%	1148.09	38.85	15.74	30.08	-30.79%	-3.24%	1.80%	5.05%	3.25%	3.56%	1.73%	10.30%	3.62%	2.91%	0.72
2002	5.23%	1.83%	879.82	46.04	16.08	29.83	18.51%	2.15%	1.20%	3.81%	2.61%	3.57%	2.29%	8.00%	4.10%	4.73%	1.08
2003	4.87%	1.61%	1111.91	54.69	17.88	31.58	18.79%	11.19%	1.00%	4.25%	3.25%	5.35%	2.12%	11.00%	3.69%	4.74%	0.87
2004	5.58%	1.60%	1211.92	67.68	19.407	40.60	23.75%	8.54%	2.18%	4.22%	2.04%	4.90%	2.02%	8.50%	3.65%	4.86%	0.86
2005	5.47%	1.79%	1248.29	76.45	22.38	61.17	12.96%	15.32%	4.31%	4.39%	0.08%	6.16%	2.20%	8.00%	4.08%	5.22%	0.93
2006	6.18%	1.77%	1418.3	87.72	25.05	73.16	14.74%	11.93%	4.88%	4.70%	-0.18%	5.93%	1.97%	12.50%	4.16%	6.12%	0.89
2007	5.62%	1.89%	1468.36	82.54	27.73	95.36	-5.91%	10.70%	3.31%	4.02%	0.71%	5.03%	2.06%	5.00%	4.37%	4.59%	1.09
2008	7.24%	3.11%	903.25	65.39	28.05	67.52	-20.78%	1.15%	1.59%	2.21%	0.62%	2.11%	4.05%	4.00%	6.43%	6.92%	2.91
2009	5.35%	2.00%	1115.10	59.65	22.31	37.43	-8.78%	-20.46%	0.14%	3.84%	3.70%	0.28%	2.60%	7.20%	4.36%	4.64%	1.14
2010	6.65%	1.84%	1257.64	83.66	23.12	55.53	40.25%	3.63%	0.13%	3.29%	3.16%	3.33%	2.24%	6.95%	5.20%	6.09%	1.58
2011	7.72%	2.07%	1257.60	97.05	26.02	71.28	16.01%	12.54%	0.03%	1.88%	1.85%	2.75%	2.71%	7.18%	6.01%	8.34%	3.20
2012	7.18%	2.13%	1426.19	102.47	30.44	75.90	5.58%	16.99%	0.05%	1.76%	1.71%	2.93%	2.47%	5.27%	5.78%	7.30%	3.28
2013	5.81%	1.96%	1848.36	107.45	36.28	88.13	4.86%	19.19%	0.07%	3.04%	2.97%	5.01%	2.03%	4.28%	4.96%	4.99%	1.63
2014	5.49%	1.92%	2058.90	113.01	39.44	101.98	5.17%	8.71%	0.05%	2.17%	2.12%	2.77%	2.24%	5.58%	5.78%	5.48%	2.66
2015	5.20%	2.11%	2043.94	106.32	43.16	106.10	-5.92%	9.43%	0.21%	2.27%	2.06%	2.96%	2.46%	5.51%	6.12%	5.16%	2.70
2016	4.86%	2.01%	2238.83	108.86	45.03	108.67	2.39%	4.33%	0.51%	2.45%	1.94%	2.64%	2.41%	5.54%	5.69%	4.50%	2.32
2017	4.67%	1.86%	2673.61	124.94	49.73	108.28	14.77%	10.44%	1.39%	2.41%	1.02%	3.22%	2.36%	7.05%	5.08%	4.75%	2.11

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