

## COST OF CAPITAL STUDY

YIELD CAPITALIZATION

2017 Assessment Year

APPENDIX C

### Pipeline Industry

<b>EQUITY RATE</b>						<b>12.00%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>							PAGE
	CAPM Ex Ante		9.30%				4
<b>DIVIDEND GROWTH MODELS</b>							
	Value Line, based on Dividends Growth		12.50%				6
	Value Line, based on Earnings Growth		12.00%				7
	Value Line, based on Return on Equity		12.00%				8
				<b>RANGE</b>	9.30-12.50%		
<b>DEBT RATE</b>						<b>5.60%</b>	9
<b>MARKET CAPITAL STRUCTURE</b>							
	Equity	60%	x	12.00%	=	7.20%	3
	Debt	40%	x	5.60%	=	2.24%	3
	Marginal Tax Rate	38%	=	(1-.38)	x	2.24%	
						<u>1.39%</u>	
<b>WEIGHTED AVERAGE COST OF CAPITAL</b>						<b>8.59%</b>	

# SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2017 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
Boardwalk Pipeline	bwp	0.90	C++	15.3	2.3%	4,442,767,881	55.1%			3,626,800,000	44.9%	8,069,567,881
Buckeye Partners	bpl	1.10	B+	17.4	7.3%	3,807,036,531	49.9%			3,826,900,000	50.1%	7,633,936,531
DCP Midstream LP	dcp	1.45	B+	24.6	8.1%	2,599,084,057	53.8%			2,231,000,000	46.2%	4,830,084,057
Enbridge Inc	enb.to	0.95	B++	24.3	3.8%	14,011,760,000	25.0%	6,515,000,000	11.6%	35,552,000,000	63.4%	56,078,760,000
Enbridge Energy Ptnrs *	eep	1.15	B	57.3	9.1%	3,977,640,000	31.5%			8,634,000,000	68.5%	12,611,640,000
Energy Transfer Part	etp	1.25	B++	NMF	11.8%	20,013,607,236	40.6%			29,265,000,000	59.4%	49,278,607,236
Energy Transfer Equity LP	ete	1.85	B+	16.9	5.9%	(1,675,115,451)				40,103,000,000	104.4%	38,427,884,549
EnLink Midstream Ptnrs	enlk	1.55	B	NMF	8.5%	4,639,204,622	58.7%			3,268,000,000	41.3%	7,907,204,622
Enterprise Prod	epd	1.20	B+	24.0	5.9%	21,988,862,454	51.0%			21,121,200,000	49.0%	43,110,062,454
EQT Midstream Ptnrs *	eqm	1.20	B++	15.8	4.0%	1,993,592,693	66.9%			985,700,000	33.1%	2,979,292,693
Holly Energy Ptnrs *	hep	0.95	B+	21.9	0.0%	-				1,070,600,000	100.0%	1,070,600,000
Kinder Morgan Inc	kmi	1.35	B	NMF	2.4%	32,861,501,241	46.8%			37,400,000,000	53.2%	70,261,501,241
Magellan Mid Ptnrs	mmp	1.10	B++	22.9	4.3%	2,095,612,027	34.0%			4,073,500,000	66.0%	6,169,112,027
NuStar Energy LP *	ns	1.15	B	42.3	0.0%	-				3,153,000,000	100.0%	3,153,000,000
ONEOK Inc	oke	1.40	B+	39.3	4.3%	252,626,365	2.9%			8,320,100,000	97.1%	8,572,726,365
ONEOK Partners	oks	1.10	B+	23.5	7.3%	6,745,499,075	50.2%			6,691,700,000	49.8%	13,437,199,075
Pembina Pipeline Corp PBA	ppl.to	1.00	B++	40.8	4.5%	6,363,100,000	57.1%	1,100,000,000	9.9%	3,675,000,000	33.0%	11,138,100,000
Phillips 66 Ptnrs *	psxp	1.15	B+	26.2	4.1%	1,566,168,548				2,396,000,000	60.5%	3,962,168,548
Plains All Amer Pipe	paa	1.35	B+	76.2	8.2%	5,471,756,742	36.2%			9,634,000,000	63.8%	15,105,756,742
Spectra Energy LP	sep	0.85	B++	14.7	5.7%	11,611,182,038	68.0%			5,454,000,000	32.0%	17,065,182,038
Sunoco Logistics Ptnrs	sxl	1.45	B+	55.5	8.2%	8,695,470,825	59.1%			6,014,000,000	40.9%	14,709,470,825
Tallgrass Energy Ptnrs *	tep	1.30	B	24.6	6.1%	1,438,121,327				1,408,000,000	49.5%	2,846,121,327
TransCanada Corp	trp	1.05	B++	nmf	3.6%	17,953,920,000	37.3%	1,801,500,000	3.7%	28,350,900,000	58.9%	48,106,320,000
Western Gas Ptnrs *	wes	1.25	B+	37.9	5.6%	4,109,287,975	58.6%			2,907,400,000	41.4%	7,016,687,975
Williams Cos	wmb	1.70	B+	48.9	5.4%	5,103,591,813	18.4%			22,624,000,000	81.6%	27,727,591,813
Williams Partners LP	wpz	1.45	B	nmf	8.9%	20,886,878,933	52.5%			18,918,000,000	47.5%	39,804,878,933
<b>Mean</b>		<b>1.24</b>		<b>31.9</b>	<b>5.6%</b>	<b>7,728,967,574</b>	<b>45.4%</b>		<b>8.4%</b>	<b>11,950,146,154</b>	<b>59.1%</b>	
<b>Harmonic Mean</b>		<b>1.20</b>					<b>26.0%</b>		<b>6.6%</b>		<b>52.8%</b>	
<b>Weighted Mean</b>						<b>200,953,156,933</b>	<b>38.6%</b>	<b>9,416,500,000</b>	<b>1.8%</b>	<b>310,703,800,000</b>	<b>59.6%</b>	<b>521,073,456,933</b>
<b>Median</b>		<b>1.20</b>			<b>5.7%</b>		<b>50.2%</b>		<b>9.9%</b>		<b>51.7%</b>	

# SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2017 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Boardwalk Pipeline	bwp	17.360	250,296,782	4,345,152,136	53.9%	-		3,709,200,000	46.1%	8,054,352,136
Buckeye Partners	bpl	66.160	140,222,340	9,277,110,014	68.2%	-		4,333,500,000	31.8%	13,610,610,014
DCP Midstream LP	dcp	38.380	114,749,848	4,404,099,166	68.5%	-		2,022,000,000	31.5%	6,426,099,166
Enbridge Inc	enb.to	56.500	917,000,000	51,810,500,000	54.6%	6,515,000,000	6.9%	36,494,000,000	38.5%	94,819,500,000
Enbridge Energy Ptr	eeep	25.480	348,000,000	8,867,040,000	50.7%	-		8,634,400,000	49.3%	17,501,440,000
Energy Transfer Par	etp	35.810	542,668,309	19,432,952,145	36.5%	-		33,850,000,000	63.5%	53,282,952,145
Energy Transfer Equ	ete	19.310	1,046,947,157	20,216,549,602	31.0%	-		45,050,000,000	69.0%	65,266,549,602
EnLink Midstream P	enlk	18.420	342,882,825	6,315,901,637	66.2%	-		3,225,800,000	33.8%	9,541,701,637
Enterprise Prod	epd	27.040	2,104,197,364	56,897,496,723	72.2%	-		21,950,000,000	27.8%	78,847,496,723
EQT Midstream Ptnr	eqm	76.680	80,581,758	6,179,009,203	86.3%	-		981,585,000	13.7%	7,160,594,203
Holly Energy Ptnrs *	hep	32.060	59,361,000	1,903,113,660	59.8%	-		1,276,750,000	40.2%	3,179,863,660
Kinder Morgan Inc	kmi	20.710	2,232,438,943	46,233,810,510	53.0%	-		41,015,000,000	47.0%	87,248,810,510
Magellan Mid Ptnrs	mmp	75.630	227,783,916	17,227,297,567	80.2%	-		4,262,321,000	19.8%	21,489,618,567
NuStar Energy LP *	ns	49.800	78,486,000	3,908,602,800	55.9%	-		3,084,762,000	44.1%	6,993,364,800
ONEOK Inc	oke	57.410	210,521,971	12,086,066,355	57.9%	-		8,800,000,000	42.1%	20,886,066,355
ONEOK Partners	oks	43.010	285,826,232	12,293,386,238	63.4%	-		7,100,000,000	36.6%	19,393,386,238
Pembina Pipeline Co	ppl.to	41.960	394,000,000	16,532,240,000	75.6%	1,100,000,000	5.0%	4,234,000,000	19.4%	21,866,240,000
Phillips 66 Ptnrs *	psxp	48.640	109,369,312	5,319,723,336	69.3%	-		2,357,000,000	30.7%	7,676,723,336
Plains All Amer Pipe	paa	32.290	412,962,773	13,334,567,940	56.2%	-		10,400,000,000	43.8%	23,734,567,940
Spectra Energy LP	sep	45.840	305,960,001	14,025,206,446	67.2%	-		6,855,000,000	32.8%	20,880,206,446
Sunoco Logistics Ptr	sxl	24.020	322,054,475	7,735,748,490	51.4%	-		7,313,000,000	48.6%	15,048,748,490
Tallgrass Energy Ptr	tep	47.450	72,485,954	3,439,458,517	70.9%	-		1,413,000,000	29.1%	4,852,458,517
TransCanada Corp	trp	45.150	864,000,000	39,009,600,000	43.5%	1,801,500,000	2.0%	48,872,000,000	54.5%	89,683,100,000
Western Gas Ptnrs	wes	58.760	142,832,394	8,392,831,471	72.4%	-		3,196,199,000	27.6%	11,589,030,471
Williams Cos	wmb	31.140	825,823,918	25,716,156,807	51.6%	-		24,090,000,000	48.4%	49,806,156,807
Williams Partners LP	wpz	38.030	595,916,660	22,662,710,580	54.5%	-		18,907,000,000	45.5%	41,569,710,580
<b>Mean</b>					<b>60.4%</b>				<b>4.6%</b>	<b>39.0%</b>
<b>Harmonic Mean</b>					<b>57.3%</b>				<b>3.6%</b>	<b>34.2%</b>
<b>Weighted Mean</b>			<b>437,566,331,342</b>	<b>54.7%</b>	<b>9,416,500,000</b>	<b>1.2%</b>	<b>353,426,517,000</b>	<b>44.2%</b>	<b>800,409,348,342</b>	
<b>Median</b>					<b>58.9%</b>				<b>5.0%</b>	<b>39.3%</b>
<b>Std Dev</b>					<b>12.9%</b>				<b>2.5%</b>	<b>13.0%</b>
<b>Coefficient of Variation</b>					<b>21.4%</b>				<b>52.9%</b>	<b>33.3%</b>
<b>Target</b>					<b>60%</b>				<b>40%</b>	<b>100%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2017 Assessment Year

$$\text{Ex Ante} \\ \text{Ke} = \text{Rf} + \text{B} (\text{Rp})$$

<b>Ke = Cost of Equity</b>				<b>9.30%</b>
				to page 1
	Rm =	rate of return	8.25%	
	Rf =	risk free rate	3.00%	
	Rp =	risk premium	5.25%	
	B =	Beta	1.20	page 7
<b>Rp = Risk Premium</b>				<b>5.25%</b>
				to above
	<b>Shannon Pratt and Roger Grabowski</b>		3.50% - 6.00%	
	Cost of Capital, Applications and Examples, 3rd Ed, 2008			
	<b>Dr. Aswath Damodaran</b>		5.69%	chart page 14
	<a href="http://pages.stern.nyu.edu/~adamodar/">http://pages.stern.nyu.edu/~adamodar/</a>		5.14%	adjusted for Rf
	2016 Implied Premium			
	<b>John Graham &amp; Campbell Harvey</b>		5.70%	10 year expected real ret
	Duke CFO magazine Global Business Outlook survey - U.S.		2.23%	Rf rate used in survey
	4th Qtr 2016		4.93%	adjusted for Rf
<b>Rf = Risk Free Rate</b>				<b>3.00%</b>
	<b>2016 Valuation Handbook</b>			to above
	as of 12-30-16	Long Term (20 years) US Treasury Bond Yield	2.79%	
	<b>Value Line Investment Survey, Selected Yields January 6, 2017, page 3197</b>			
	as of 12-28-16	US Treasury Securities year end data		
		5 year	2.00%	
		10 year	2.51%	
		30 year	3.09%	
		30 year Zero	3.17%	
	<b>Federal Reserve Statistical Release (<a href="http://www.federalreserve.gov/Releases/H15/Current/">http://www.federalreserve.gov/Releases/H15/Current/</a>)</b>			
	as of 12-30-16	Treasury Constant Maturities		
		5 year	1.93%	
		10 year	2.45%	
		20 year	2.79%	
		30 year	3.06%	
		20 year TIPS	<u>0.82%</u>	1.97%
		30 year TIPS	<u>0.99%</u>	2.07%
				TIPS inflation indication
<b>Inflation</b>				<b>2.00%</b>
	<b>Value Line Investment Survey, Economic Series January 6, 2017, page 1500</b>			
		Consumer Price Index Annual Rate of Change 2019-2021	2.50%	
	<b>Federal Reserve Bank of Philadelphia</b>			
	The Livingston Survey December 9, 2016 page 2		Table 3	
	Inflation median (measured by the CPI) over next 10 years		2.30%	
	<a href="https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey">https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey</a>			
<b>Nominal Gross Domestic Product (GDP)</b>				<b>3.80%</b>
	<b>Federal Reserve Projected Long Run Real GDP Growth</b>			
		Median Projection Value From Dec 14, 2016 Report		1.80%
		<a href="http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm">http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm</a>		
	<b>Congressional Budget Office Real GDP Economic Projections</b>			Table C-1 pg 126
	The Budget and Economic Outlook 2017-2027	2017-2021		1.86%
	Average Percentage Change From Year to Year	2022-2027		1.90%
	<a href="http://www.cbo.gov/publication/51129">http://www.cbo.gov/publication/51129</a>			
	<b>Federal Reserve Bank of Philadelphia</b>			
	The Livingston Survey, December 9, 2016			pg 4
	Average Annual Real GDP Growth Rate for Next Ten Years			2.20%
	<a href="https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey">https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey</a>			

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2017 Assessment Year

Pipeline Industry

### Based on Dividend Growth

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

$K_e$  = Cost of Equity  
 $D1$  = Expected Dividends  
 $P_o$  = 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	Ke with Multi Stage Growth Adj
Boardwalk Pipeline	bwp	17.360	0.40	2.30%	0.50%	2.80%	NMF
Buckeye Partners	bpl	66.160	5.03	7.60%	4.50%	NMF	NMF
DCP Midstream LP	dcp	38.380	3.12	8.13%	1.50%	NMF	NMF
Enbridge Inc	enb.to	56.500	2.33	4.12%	6.00%	10.12%	9.55%
Enbridge Energy Ptnrs	eep	25.480	2.37	9.30%	2.00%	NMF	NMF
Energy Transfer Part	etp	35.810	4.40	12.29%	4.50%	NMF	NMF
Energy Transfer Equity	ete	19.310	1.20	6.21%	8.50%	NMF	NMF
EnLink Midstream Ptnrs	enlk	18.420	1.56	8.47%	4.00%	NMF	NMF
Enterprise Prod	epd	27.040	1.67	6.18%	9.00%	NMF	NMF
EQT Midstream Ptnrs	eqm	76.680	3.61	4.71%	15.50%	20.21%	18.20%
Holly Energy Ptnrs *	hep	32.060	0.00				NMF
Kinder Morgan Inc	kmi	20.710	0.50	2.41%	-8.50%	NMF	NMF
Magellan Mid Ptnrs	mmp	75.630	3.52	4.65%	11.00%	15.65%	14.67%
NuStar Energy LP *	ns	49.800	0.00				NMF
ONEOK Inc	oke	57.410	2.52	4.39%	6.00%	NMF	NMF
ONEOK Partners	oks	43.010	3.34	7.77%	3.00%	NMF	NMF
Pembina Pipeline Corp	ppl.to	41.960	1.95	4.65%	3.00%	NMF	NMF
Phillips 66 Ptnrs *	psxp	48.640	0.00				NMF
Plains All Amer Pipe	paa	32.290	2.20	6.81%	-0.50%	NMF	NMF
Spectra Energy LP	sep	45.840	2.85	6.22%	6.50%	12.72%	12.43%
Sunoco Logistics Ptnrs	sxl	24.020	2.20	9.16%	12.00%	NMF	NMF
Tallgrass Energy Ptnrs	tep	47.450					NMF
TransCanada Corp	trp	45.150	2.26	5.01%	9.00%	NMF	NMF
Western Gas Ptnrs *	wes	58.760	3.53	6.01%	8.00%	NMF	NMF
Williams Cos	wmb	31.140	1.20	3.85%	-1.50%	NMF	NMF
Williams Partners LP	wpz	38.030	2.40	6.31%	-3.00%	NMF	NMF
<b>Mean</b>						<b>12.30%</b>	<b>13.71%</b>
<b>Harmonic Mean</b>						<b>7.72%</b>	<b>12.98%</b>
<b>Median</b>						<b>12.72%</b>	<b>13.55%</b>
<b>Max</b>						<b>20.21%</b>	<b>18.20%</b>
<b>Min</b>						<b>2.80%</b>	<b>9.55%</b>
<b>Std Dev</b>						<b>6.50%</b>	<b>3.65%</b>
<b>Coefficient of Variation</b>						<b>52.82%</b>	<b>26.64%</b>
<b>Say</b>							<b>12.50%</b>

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2017 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	Ke with Multi Stage Growth Adj
Boardwalk Pipeline	bwp	17.360	0.40	2.30%	11.50%	13.80%	13.10%
Buckeye Partners	bpl	66.160	5.03	7.60%	8.50%	NMF	NMF
DCP Midstream LP	dcp	38.380	3.12	8.13%	5.50%	NMF	NMF
Enbridge Inc	enb.to	56.500	2.33	4.12%	6.50%	10.62%	9.95%
Enbridge Energy Ptnrs *	eep	25.480	2.37	9.30%	28.50%	NMF	NMF
Energy Transfer Part	etp	35.810	4.40	12.29%	20.50%	NMF	NMF
Energy Transfer Equity LP	ete	19.310	1.20	6.21%	18.50%	NMF	NMF
EnLink Midstream Ptnrs	enlk	18.420	1.56	8.47%	NMF	NMF	NMF
Enterprise Prod	epd	27.040	1.67	6.18%	10.00%	NMF	NMF
EQT Midstream Ptnrs *	eqm	76.680	3.61	4.71%	11.50%	16.21%	14.96%
Holly Energy Ptnrs *	hep	32.060	0.00				
Kinder Morgan Inc	kmi	20.710	0.50	2.41%	24.00%	NMF	NMF
Magellan Mid Ptnrs	mmp	75.630	3.52	4.65%	7.00%	11.65%	11.41%
NuStar Energy LP *	ns	49.800	0.00				NMF
ONEOK Inc	oke	57.410	2.52	4.39%	11.00%	NMF	NMF
ONEOK Partners	oks	43.010	3.34	7.77%	7.00%	NMF	NMF
Pembina Pipeline Corp PB	ppl.to	41.960	1.95	4.65%	9.00%	NMF	NMF
Phillips 66 Ptnrs *	psxp	48.640	0.00				NMF
Plains All Amer Pipe	paa	32.290	2.20	6.81%	3.50%	NMF	NMF
Spectra Energy LP	sep	45.840	2.85	6.22%	5.50%	11.72%	11.59%
Sunoco Logistics Ptnrs	sxl	24.020	2.20	9.16%	11.50%	NMF	NMF
Tallgrass Energy Ptnrs *	tep	47.450	0.00				NMF
TransCanada Corp	trp	45.150	2.26	5.01%	23.00%	NMF	NMF
Western Gas Ptnrs *	wes	58.760	3.53	6.01%	15.50%	NMF	NMF
Williams Cos	wmb	31.140	1.20	3.85%	14.00%	NMF	NMF
Williams Partners LP	wpz	38.030	2.40	6.31%	NMF	NMF	NMF
<b>Mean</b>						<b>12.80%</b>	<b>12.20%</b>
<b>Harmonic Mean</b>						<b>12.52%</b>	<b>11.97%</b>
<b>Median</b>						<b>11.72%</b>	<b>11.59%</b>
<b>Max</b>						<b>16.21%</b>	<b>14.96%</b>
<b>Min</b>						<b>10.62%</b>	<b>9.95%</b>
<b>Std Dev</b>						<b>2.23%</b>	<b>1.90%</b>
<b>Coefficient of Variation</b>						<b>17.40%</b>	<b>15.58%</b>
<b>Say</b>							<b>12.00%</b>

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2017 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 (Po)	Expected Dividend (D1)	Expected Cash Flow (E1)	Dividend Yield (D1/Po)	Retained Earnings (b)	ROE (E1/Po)	Growth (b*ROE)	$K_e$ Dividends	$K_e$ Earnings
Boardwalk Pipeline	bwp	17.360	0.40	2.65	2.30%	80.0%	15.26%	12.21%	14.52%	27.48%
Buckeye Partners	bpl	66.160	5.03	6.15	7.60%	12.0%	9.30%	1.12%	8.72%	10.41%
DCP Midstream LP	dcp	38.380	3.12	3.45	8.13%	10.0%	8.99%	0.90%	9.03%	9.89%
Enbridge Inc	enb.to	56.500	2.33	2.45	4.12%	N/A	4.34%	N/A	N/A	N/A
Enbridge Energy Ptnr	eep	25.480	2.37	2.15	9.30%	8.0%	8.44%	0.68%	9.98%	9.11%
Energy Transfer Part	etp	35.810	4.40	4.00	12.29%	NMF	11.17%	NMF	NMF	NMF
Energy Transfer Equit	ete	19.310	1.20	3.60	6.21%	13.0%	18.64%	2.42%	8.64%	21.07%
EnLink Midstream Ptnr	enlk	18.420	1.56	1.95	8.47%	5.0%	10.59%	0.53%	9.00%	11.12%
Enterprise Prod	epd	27.040	1.67	2.15	6.18%	19.0%	7.95%	1.51%	7.69%	9.46%
EQT Midstream Ptnrs	eqm	76.680	3.61	8.00	4.71%	37.0%	10.43%	3.86%	8.57%	14.29%
Holly Energy Ptnrs *	hep	32.060		0.00						
Kinder Morgan Inc	kmi	20.710	0.50	0.65	2.41%	NMF	3.14%	NMF	N/A	NMF
Magellan Mid Ptnrs	mmp	75.630	3.52	4.65	4.65%	22.0%	6.15%	1.35%	6.01%	7.50%
NuStar Energy LP *	ns	49.800		0.00						
ONEOK Inc	oke	57.410	2.52	1.90	4.39%	NMF	3.31%	NMF	N/A	NMF
ONEOK Partners	oks	43.010	3.34	5.10	7.77%	22.0%	11.86%	2.61%	10.37%	14.47%
Pembina Pipeline Cor	ppl.to	41.960	1.95	1.30	4.65%	NMF	3.10%	N/A	N/A	NMF
Phillips 66 Ptnrs *	psxp	48.640		0.00		32.0%				
Plains All Amer Pipe	paa	32.290	2.20	2.35	6.81%	NMF	7.28%	NMF	NMF	NMF
Spectra Energy LP	sep	45.840	2.85	5.80	6.22%	11.0%	12.65%	1.39%	7.61%	14.04%
Sunoco Logistics Ptnr	sxl	24.020	2.20	2.65	9.16%	NMF	11.03%	NMF	NMF	NMF
Tallgrass Energy Ptnr	tep	47.450		0.00		29.0%				
TransCanada Corp	trp	45.150	2.26	1.00	5.01%	NMF	2.21%	NMF	NMF	NMF
Western Gas Ptnrs *	wes	58.760	3.53	6.00	6.01%	26.0%	10.21%	2.65%	8.66%	12.87%
Williams Cos	wmb	31.140	1.20	0.90	3.85%	NMF	2.89%	NMF	NMF	NMF
Williams Partners LP	wpz	38.030	2.40	4.90	6.31%	15.0%	12.88%	1.93%	8.24%	14.82%
<b>Mean</b>									<b>9.00%</b>	<b>13.58%</b>
<b>Harmonic Mean</b>									<b>8.67%</b>	<b>12.09%</b>
<b>Median</b>									<b>8.66%</b>	<b>12.87%</b>
<b>Std Dev</b>									<b>1.98%</b>	<b>5.45%</b>
<b>Coefficient of Variation</b>									<b>21.98%</b>	<b>40.13%</b>

say **12.00%**

## SUPPORT FOR DEBT RATING AND DEBT YIELD

Washington State Department of Revenue

2017 Assessment Year

Pipeline Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
Boardwalk Pipeline	bwp		
Buckeye Partners	bpl	Baa3	BBB-
DCP Midstream LP	dcp		BB
Enbridge Inc	enb.to		
Enbridge Energy Ptnrs *	eep	Baa3	BBB
Energy Transfer Part	etp	Baa3	BBB-
Energy Transfer Equity LP	ete	Ba2	BB
EnLink Midstream Ptnrs	enlk	Ba2	BBB-
Enterprise Prod	epd	Baa1	BBB+
EQT Midstream Ptnrs *	eqm	Ba1	BBB-
Holly Energy Ptnrs *	hep	B1	BB+
Kinder Morgan Inc	kmi	Baa3	BBB-
Magellan Mid Ptnrs	mmp	Baa1	BBB+
NuStar Energy LP *	ns		BB+
ONEOK Inc	oke		BB+
ONEOK Partners	oks	Baa2	
Pembina Pipeline Corp PBA	ppl.to		BBB
Phillips 66 Ptnrs *	psxp	Baa3	BBB
Plains All Amer Pipe	paa	Baa3	BBB-
Spectra Energy LP	sep	Baa2	
Sunoco Logistics Ptnrs	sxl	Baa3	BBB
Tallgrass Energy Ptnrs *	tep	B1	BB+
TransCanada Corp	trp	A3	A-
Western Gas Ptnrs *	wes	Ba1	BBB-
Williams Cos	wmb	Ba2	BB
Williams Partners LP	wpz	Baa3	BBB-
<b>Overall Average Debt Rating</b>		<b>Baa3</b>	<b>BBB-</b>

Mergent's Bond Record January 2017, page 201				
Corporate	Aaa	Aa	A	Baa
October	3.51%	3.61%	3.78%	4.38%
November	3.86%	3.94%	4.11%	4.71%
December	4.06%	4.12%	4.28%	4.83%
<b>4th Qtr Average</b>	<b>3.81%</b>	<b>3.89%</b>	<b>4.06%</b>	<b>4.64%</b>

Public Utilities	Aaa	Aa	A	Baa
October	3.59%	3.91%	3.77%	4.34%
November		3.91%	4.08%	4.64%
December		4.11%	4.27%	4.79%
<b>4th Qtr Average</b>		<b>3.87%</b>	<b>4.04%</b>	<b>4.59%</b>

Industrials	Aaa	Aa	A	Baa
October	3.51%	3.63%	3.79%	4.40%
November	3.86%	3.97%	4.14%	4.77%
December	4.06%	4.13%	4.29%	4.85%
<b>4th Qtr Average</b>	<b>3.81%</b>	<b>3.91%</b>	<b>4.07%</b>	<b>4.67%</b>

Moody's Long Term Bond Yield	Baa3	<b>5.52%</b>	<b>5.52%</b>
S&P's Long Term Bond Yield	BBB-	<b>5.73%</b>	<b>5.78%</b>
		Avg YTM	Med YTM

Bloomberg Dec	20y	25Y	30Y
BBB-	<b>5.54%</b>	<b>5.61%</b>	<b>5.35%</b>

<b>Debt Yield Rate</b>	<b>5.60%</b>
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## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2017 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	2016		2017		2016		2017	
			Actual Earnings Ratio (EPS/P)	Projected Earnings Ratio (PEPS/P)	Cash Flow Ratio (CF/P)	Projected Cash Flow Ratio				
Boardwalk Pipeline	bwp	17.360	1.18	6.8%	1.18	6.8%	2.50	14.4%	2.65	15.3%
Buckeye Partners	bpl	66.160	4.03	6.1%	4.35	6.6%	5.60	8.5%	6.15	9.3%
DCP Midstream LP	dcp	38.380	1.64	4.3%	1.35	3.5%	2.70	7.0%	3.45	9.0%
Enbridge Inc	enb.to	56.500	2.28	4.0%	2.45	4.3%	4.45	7.9%	4.80	8.5%
Enbridge Energy Ptnrs *	eep	25.480	0.31	1.2%	0.50	2.0%	1.98	7.8%	2.15	8.4%
Energy Transfer Part	etp	35.810	0.16	0.4%	1.45	4.0%	4.10	11.4%	4.00	11.2%
Energy Transfer Equity L	ete	19.310	1.13	5.9%	1.30	6.7%	3.40	17.6%	3.60	18.6%
EnLink Midstream Ptnrs	enlk	18.420	(1.99)	NMF	0.30	1.6%	0.45	2.4%	1.95	10.6%
Enterprise Prod	epd	27.040	1.20	4.4%	1.40	5.2%	1.95	7.2%	2.15	8.0%
EQT Midstream Ptnrs *	eqm	76.680	5.21	6.8%	5.50	7.2%	7.45	9.7%	8.00	10.4%
Holly Energy Ptnrs *	hep	32.060	1.69	5.3%	2.07	6.5%	-	-	-	-
Kinder Morgan Inc	kmi	20.710	0.25	1.2%	0.65	3.1%	1.24	6.0%	1.70	8.2%
Magellan Mid Ptnrs	mmp	75.630	3.52	4.7%	3.80	5.0%	4.30	5.7%	4.65	6.1%
NuStar Energy LP *	ns	49.800	1.27	2.6%	1.27	2.6%	-	-	-	-
ONEOK Inc	oke	57.410	1.70	3.0%	1.90	3.3%	3.55	6.2%	3.95	6.9%
ONEOK Partners	oks	43.010	2.30	5.3%	2.50	5.8%	4.85	11.3%	5.10	11.9%
Pembina Pipeline Corp PE	ppl.to	41.960	1.01	2.4%	1.30	3.1%	1.65	3.9%	1.90	4.5%
Phillips 66 Ptnrs *	psxp	48.640	2.20	4.5%	3.30	6.8%	3.63	7.5%	-	-
Plains All Amer Pipe	paa	32.290	0.43	1.3%	1.60	5.0%	1.05	3.3%	2.35	7.3%
Spectra Energy LP	sep	45.840	3.10	6.8%	3.45	7.5%	5.50	12.0%	5.80	12.7%
Sunoco Logistics Ptnrs	sxl	24.020	0.98	4.1%	1.20	5.0%	2.35	9.8%	2.65	11.0%
Tallgrass Energy Ptnrs *	tep	47.450	2.23	4.7%	2.55	5.4%	4.81	10.1%	-	-
TransCanada Corp	trp	45.150	0.12	0.3%	1.00	2.2%	2.02	4.5%	2.70	6.0%
Western Gas Ptnrs *	wes	58.760	1.74	3.0%	2.75	4.7%	6.12	10.4%	6.00	10.2%
Williams Cos	wmb	31.140	0.60	1.9%	0.90	2.9%	2.94	9.4%	3.00	9.6%
Williams Partners LP	wpz	38.030	(0.17)	NMF	1.75	4.6%	2.70	7.1%	4.90	12.9%
<b>Mean</b>			<b>3.8%</b>		<b>4.7%</b>		<b>8.4%</b>		<b>9.8%</b>	
<b>Harmonic Mean</b>			<b>1.8%</b>		<b>3.9%</b>		<b>6.8%</b>		<b>8.9%</b>	
<b>Median</b>			<b>4.2%</b>		<b>4.8%</b>		<b>7.8%</b>		<b>9.5%</b>	
<b>Max</b>			<b>6.8%</b>		<b>7.5%</b>		<b>17.6%</b>		<b>18.6%</b>	
<b>Min</b>			<b>0.3%</b>		<b>1.6%</b>		<b>2.4%</b>		<b>4.5%</b>	
<b>Std Dev</b>			<b>2.0%</b>		<b>1.7%</b>		<b>3.5%</b>		<b>3.2%</b>	
<b>Coefficient of Variation</b>			<b>53.7%</b>		<b>37.3%</b>		<b>42.0%</b>		<b>32.5%</b>	
<b>Say</b>			<b>4.0%</b>		<b>4.5%</b>		<b>8.0%</b>		<b>9.5%</b>	

Source: VL/Year End Stock Price

## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2017 Assessment Year

Company	Ticker	Stock Price	Enterprise Value	EBITDA Historical	Annual Change VL	EBITDA Forecast	EV / EBITDA Forecast
Boardwalk Pipeline	bwp	17.360	8,054,352,136	797,400,000	6.00%	845,244,000	9.53
Buckeye Partners	bpl	66.160	12,691,261,014	988,001,000	9.82%	1,085,036,813	11.70
DCP Midstream LP	dcp	38.380	6,426,099,166	320,000,000	27.78%	408,888,889	15.72
Enbridge Inc	enb.to	56.500	94,819,500,000	5,577,000,000	7.87%	6,015,640,449	15.76
Enbridge Energy Ptnrs *	eep	25.480	17,501,440,000	909,000,000	8.59%	987,045,455	17.73
Energy Transfer Part	etp	35.810	53,282,952,145	3,788,000,000	-2.44%	3,695,609,756	14.42
Energy Transfer Equity LP *	ete	19.310	65,266,549,602	3,858,000,000	5.88%	4,084,941,176	15.98
EnLink Midstream Ptnrs	enlk	18.420	9,541,701,637	(310,600,000)			
Enterprise Prod	epd	27.040	78,847,496,723	5,132,700,000	10.26%	5,659,130,769	13.93
EQT Midstream Ptnrs *	eqm	76.680	7,075,527,203	1,064,853,000	7.38%	1,143,466,309	6.19
Holly Energy Ptnrs *	hep	32.060	3,179,863,660	265,525,000			
Kinder Morgan Inc	kmi	20.710	87,248,810,510	5,781,000,000	37.10%	7,925,564,516	11.01
Magellan Mid Ptnrs	mmp	75.630	21,489,618,567	1,113,194,000	8.14%	1,203,802,814	17.85
NuStar Energy LP *	ns	49.800	6,905,577,800	575,845,000			
ONEOK Inc	oke	57.410	20,886,066,355	1,677,261,000	11.27%	1,866,248,155	11.19
ONEOK Partners	oks	43.010	19,393,386,238	1,704,693,000	5.15%	1,792,563,773	10.82
Pembina Pipeline Corp PBA	ppl.to	41.960	21,866,240,000	1,100,000,000	15.15%	1,266,666,667	17.26
Phillips 66 Ptnrs *	psxp	48.640	7,676,723,336	559,000,000			
Plains All Amer Pipe	paa	32.290	23,734,567,940	1,488,000,000	123.81%	3,330,285,714	7.13
Spectra Energy LP	sep	45.840	20,880,206,446	1,548,000,000	5.45%	1,632,436,364	12.79
Sunoco Logistics Ptnrs	sxl	24.020	14,280,748,490	1,261,000,000	12.77%	1,421,978,723	10.04
Tallgrass Energy Ptnrs *	tep	47.450	4,852,458,517	347,823,000			
TransCanada Corp	trp	45.150	89,279,100,000	6,473,000,000	33.66%	8,652,029,703	10.32
Western Gas Ptnrs *	wes	58.760	11,310,321,471	981,141,000	-1.96%	961,902,941	11.76
Williams Cos	wmb	31.140	49,806,156,807	2,463,000,000	2.04%	2,513,265,306	19.82
Williams Partners LP	wpz	38.030	41,569,710,580	3,017,000,000	81.48%	5,475,296,296	7.59
<b>26</b>		<b>Mean</b>				<b>12.79</b>	
		<b>Harmonic Mean</b>				<b>11.62</b>	
		<b>Median</b>				<b>11.76</b>	
		<b>Std Dev</b>				<b>3.81</b>	

Source:

**Say**

**9.40**

Value Line & Morning Star

## DATA INPUT

Washington State Department of Revenue

2017 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)
Name	Ticker	Yahoo	V L	V L	Per Share	Per Share	Per Share	Per Share	Stock	Shares	V L
Boardwalk Pipeline	bwp	17.36	0.90	C++	5.20	2.50	1.18	0.40	17.75	250,296,782	3,626,800,000
Buckeye Partners	bpl	66.16	1.10	B+	23.05	5.60	4.03	4.83	27.15	140,222,340	3,826,900,000
DCP Midstream LP	dcp	38.38	1.45	B+	13.05	2.70	1.64	3.12	22.65	114,749,848	2,231,000,000
Enbridge Inc	enb.to	56.50	0.95	B++	37.36	4.45	2.28	2.12	15.28	917,000,000	35,552,000,000
Enbridge Energy Ptnrs *	eep	25.48	1.15	B	12.88	1.98	0.31	2.33	11.43	348,000,000	8,634,000,000
Energy Transfer Part	etp	35.81	1.25	B++	43.18	4.10	0.16	4.22	36.88	542,668,309	29,265,000,000
Energy Transfer Equity LP *	ete	19.31	1.85	B+	35.70	3.40	1.13	1.14	(1.60)	1,046,947,157	40,103,000,000
EnLink Midstream Ptnrs	enlk	18.42	1.55	B	12.40	0.45	(1.99)	1.56	13.53	342,882,825	3,268,000,000
Enterprise Prod	epd	27.04	1.20	B+	10.85	1.95	1.20	1.59	10.45	2,104,197,364	21,121,200,000
EQT Midstream Ptnrs *	eqm	76.68	1.20	B++	9.13	7.45	5.21	3.05	24.74	80,581,758	985,700,000
Holly Energy Ptnrs *	hep	32.06	0.95	B+			1.69			59,361,000	1,070,600,000
Kinder Morgan Inc	kmi	20.71	1.35	B	5.86	1.24	0.25	0.50	14.72	2,232,438,943	37,400,000,000
Magellan Mid Ptnrs	mmp	75.63	1.10	B++	9.65	4.30	3.52	3.25	9.20	227,783,916	4,073,500,000
NuStar Energy LP *	ns	49.80	1.15	B			1.27			78,486,000	3,153,000,000
ONEOK Inc	oke	57.41	1.40	B+	41.30	3.55	1.70	2.46	1.20	210,521,971	8,320,100,000
ONEOK Partners	oks	43.01	1.10	B+	29.85	4.85	2.30	3.16	23.60	285,826,232	6,691,700,000
Pembina Pipeline Corp PBA	ppl.to	41.96	1.00	B++	10.65	1.65	1.01	1.89	16.15	394,000,000	3,675,000,000
Phillips 66 Ptnrs *	psxp	48.64	1.15	B+	6.93	3.63	2.20	1.98	14.32	109,369,312	2,396,000,000
Plains All Amer Pipe	paa	32.29	1.35	B+	30.60	1.05	0.43	2.65	13.25	412,962,773	9,634,000,000
Spectra Energy LP	sep	45.84	0.85	B++	8.30	5.50	3.10	2.63	37.95	305,960,001	5,454,000,000
Sunoco Logistics Ptnrs	sxl	24.02	1.45	B+	28.40	2.35	0.98	1.98	27.00	322,054,475	6,014,000,000
Tallgrass Energy Ptnrs *	tep	47.45	1.30	B	8.35	4.81	2.23	2.90	19.84	72,485,954	1,408,000,000
TransCanada Corp	trp	45.15	1.05	B++	10.70	2.02	0.12	1.63	20.78	864,000,000	28,350,900,000
Western Gas Ptnrs *	wes	58.76	1.25	B+	12.61	6.12	1.74	3.29	28.77	142,832,394	2,907,400,000
Williams Cos	wmb	31.14	1.70	B+	9.97	2.94	0.60	1.68	6.18	825,823,918	22,624,000,000
Williams Partners LP	wpz	38.03	1.45	B	12.40	2.70	(0.17)	3.40	35.05	595,916,660	18,918,000,000

**Average**

**Harmonic Mean**

**Median**

Value Line March 3, 2017