

COST OF CAPITAL STUDY

YIELD CAPITALIZATION

2020 Assessment Year

APPENDIX C

Pipeline Industry

EQUITY RATE						9.75%	
CAPITAL ASSET PRICING MODEL							PAGE
	CAPM Ex Ante		8.24%				4
DIVIDEND GROWTH MODELS Single Stage							
	Value Line, based on Dividends Growth		13.00%				5
	Value Line, based on Earnings Growth		NMF				6
	Value Line, based on Return on Equity		NMF				7
DIVIDEND GROWTH MODELS Multi Stage							
	Value Line, based on Dividends Growth		9.50%				5a
	Value Line, based on Earnings Growth		9.50%				6a
FCFE GROWTH MODEL Multi Stage							
			8.00%				8
				RANGE		8% - 13%	
DEBT RATE						4.75%	9
MARKET CAPITAL STRUCTURE							
	Equity	60%	x	9.75%	=	5.85%	3
	Debt	40%	x	4.75%	=	1.90%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	1.90%	
						<u>1.44%</u>	
WEIGHTED AVERAGE COST OF CAPITAL						7.29%	

SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2020 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
Enbridge Inc	enb.to	1.00	B++	20.7	5.7%	58,294,395,377	46.4%	7,747,000,000	6.2%	59,661,000,000	47.5%	125,702,395,377
Kinder Morgan Inc	kmi	1.40	B	22.9	4.5%	33,749,445,539	51.4%			31,900,000,000	48.6%	65,649,445,539
ONEOK Inc	oke	1.45	B+	25.6	4.7%	6,278,886,680	33.5%			12,479,500,000	66.5%	18,758,386,680
Pembina Pipeline Corp	ppl.to	1.00	B++	17.0	4.9%	12,641,682,300	54.9%	2,423,000,000	10.5%	7,980,000,000	34.6%	23,044,682,300
TC Energy Corp	trp	1.05	B++	18.3	4.3%	24,941,420,000	45.9%	3,025,000,000	5.6%	26,395,600,000	48.6%	54,362,020,000
The Williams Cos Inc	wmb	1.90	B	23.1	6.4%	13,332,537,196	39.8%			20,148,000,000	60.2%	33,480,537,196
Mean		1.30		21.3	5.1%	24,873,061,182	45.3%		7.4%	26,427,350,000	51.0%	
Harmonic Mean		1.23					44.1%		6.9%		48.9%	
Weighted Mean						149,238,367,092	46.5%	13,195,000,000	4.1%	158,564,100,000	49.4%	320,997,467,092
Median		1.23			4.8%		46.1%		6.2%		48.6%	

SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

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Pipeline Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Enbridge Inc	enb.to	51.63	2,024,814,011	104,541,147,388	62.8%	7,747,000,000	4.7%	54,236,000,000	32.6%	166,524,147,388
Kinder Morgan Inc	kmi	21.17	2,265,063,459	47,951,393,427	56.1%	-		37,588,000,000	43.9%	85,539,393,427
ONEOK Inc	oke	75.67	413,084,650	31,258,115,466	69.4%	-		13,800,000,000	30.6%	45,058,115,466
Pembina Pipeline Co	pppl.to	48.13	511,809,000	24,633,367,170	70.8%	2,423,000,000	7.0%	7,753,000,000	22.3%	34,809,367,170
TC Energy Corp	trp	53.31	938,000,000	50,004,780,000	53.8%	3,025,000,000	3.3%	39,976,000,000	43.0%	93,005,780,000
The Williams Cos Inc	wmb	23.72	1,212,048,836	28,749,798,390	53.2%	-		25,319,000,000	46.8%	54,068,798,390
Mean					61.0%		5.0%		36.5%	
Harmonic Mean					60.2%		4.5%		34.2%	
			Weighted Mean	287,138,601,840	59.9%	13,195,000,000	2.8%	178,672,000,000	37.3%	479,005,601,840
Median					59.4%		4.7%		37.8%	
Std Dev					7.8%		1.9%		9.6%	
Coefficient of Variation					12.8%		37.8%		26.1%	
Target					60%				40%	100%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2020 Assessment Year

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

Ke = Cost of Equity				8.24%
				to page 1
	Rm =	rate of return	7.15%	
	Rf =	risk free rate	2.40%	
	Rp =	risk premium	4.75%	
	B =	Beta	1.23	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		5.20%	chart page 15
	http://pages.stern.nyu.edu/~adamodar/		4.72%	adjusted for Rf
	2020 Implied Premium			
	John Graham & Campbell Harvey		6.81%	10 year expected real retu
	Duke CFO magazine Global Business Outlook		6.30%-7.32%	95% Interval 10 year expe
	Dec 19 pg 38		6.23%	adjusted for Rf
			1.82%	Rf rate used in survey
Rf = Risk Free Rate				2.40%
				to above
	Value Line Investment Survey, Selected Yields January 10, 2020, page 1313			
	as of 12-31-19	US Treasury Securities year end data		
		5 year	1.69%	
		10 year	1.92%	
		30 year	2.39%	
		30 year Zero	2.42%	
	Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/Current/)			
	as of 12-31-19	Treasury Constant Maturities		
		5 year	1.69%	
		10 year	1.92%	
		20 year	2.25%	
		30 year	2.39%	
		20 year TIPS	0.39%	1.86%
		30 year TIPS	0.58%	1.81%
				TIPS inflation indication
Inflation				2.00%
				to appraisal template
	Value Line Investment Survey, Economic Series January 3, 2020, page 1500			
	Consumer Price Index Annual Rate of Change 2022-2024		2.50%	
	The Livingston Survey December 13, 2019, page 4, 10			
	Inflation median (measured by the CPI) over next 10 years		2.22%	
Gross Domestic Product (GDP) Nominal				3.90%
				real GDP + inflation est
	Federal Reserve Projected Long Run Real GDP Growth			
	Median Projection Value From Dec 11, 2019 Report		1.90%	
	https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20191211.pdf			
	Congressional Budget Office Real GDP Economic Projections			Table E-1 pg 147
	The Budget and Economic Outlook 2020-2030	2020-2024	1.80%	
	Average Percentage Change Year to Year	2025-2030	1.65%	
	http://www.cbo.gov/publication/56020			
	Federal Reserve Bank of Philadelphia			
	The Livingston Survey, December 13, 2019, page 4, 10			
	Average Annual Real GDP Growth Rate for Next Ten Years		2.00%	
	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

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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
Enbridge Inc	enb.to	51.630	3.24	6.28%	5.00%	11.28%
Kinder Morgan Inc	kmi	21.170	1.20	5.67%	14.50%	20.17%
ONEOK Inc	oke	75.670	3.90	5.15%	10.00%	15.15%
Pembina Pipeline Corp	ppl.to	48.130	2.55	5.30%	6.00%	11.30%
TC Energy Corp	trp	53.310	2.43	4.56%	4.50%	9.06%
The Williams Cos Inc	wmb	23.720	1.60	6.75%	5.00%	11.75%
Mean Range						13.12%
Harmonic Mean Range						12.29%
Median Range						11.52%
Max						20.17%
Min						9.06%
Std Dev Range						3.97%
Coefficient of Variation						30.29%
Say						13.00%

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

Washington State Department of Revenue

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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)	Dividend Growth LT	Ke Sustainable
Enbridge Inc	enb.to	51.63	3.24	6.28%	5.00%	3.90%	10.18%
Kinder Morgan Inc	kmi	21.17	1.20	5.67%	14.50%	3.90%	9.57%
ONEOK Inc	oke	75.67	3.90	5.15%	10.00%	3.90%	9.05%
Pembina Pipeline Corp	ppl.to	48.13	2.55	5.30%	6.00%	3.90%	9.20%
TC Energy Corp	trp	53.31	2.43	4.56%	4.50%	3.90%	8.46%
The Williams Cos Inc	wmb	23.72	1.60	6.75%	5.00%	3.90%	10.65%
Mean Range							9.52%
Harmonic Mean Range							9.46%
Median Range							9.38%
Max							10.65%
Min							8.46%
Std Dev Range							0.79%
Coefficient of Variation							8.34%
Say							9.50%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2020 Assessment Year

Pipeline Industry

Based on Dividend 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)	Dividend Growth LT	Ke Sustainable
Enbridge Inc	enb.to	51.63	3.24	6.28%	8.50%	3.90%	10.18%
Kinder Morgan Inc	kmi	21.17	1.20	5.67%	29.00%	3.90%	9.57%
ONEOK Inc	oke	75.67	3.90	5.15%	16.00%	3.90%	9.05%
Pembina Pipeline Corp	ppl.to	48.13	2.55	5.30%	12.00%	3.90%	9.20%
TC Energy Corp	trp	53.31	2.43	4.56%	16.00%	3.90%	8.46%
The Williams Cos Inc	wmb	23.72	1.60	6.75%	17.00%	3.90%	10.65%
Mean Range							9.52%
Harmonic Mean Range							9.46%
Median Range							9.38%
Max							10.65%
Min							8.46%
Std Dev Range							0.79%
Coefficient of Variation							8.34%
Say							9.50%

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

Washington State Department of Revenue

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Pipeline Industry

Based on Earnings 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)	Earnings Growth (G)	Ke with Short Term Growth
Enbridge Inc	enb.to	51.630	3.24	6.28%	8.50%	14.78%
Kinder Morgan Inc	kmi	21.170	1.20	5.67%	29.00%	34.67%
ONEOK Inc	oke	75.670	3.90	5.15%	16.00%	21.15%
Pembina Pipeline Corp	ppl.to	48.130	2.55	5.30%	12.00%	17.30%
TC Energy Corp	trp	53.310	2.43	4.56%	16.00%	20.56%
The Williams Cos Inc	wmb	23.720	1.60	6.75%	17.00%	23.75%
Mean Range						22.03%
Harmonic Mean Range						20.52%
Median Range						20.86%
Max						34.67%
Min						14.78%
Std Dev						6.94%
Coefficient of Variation						31.49%
Say						NMF

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

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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 Earnings (E1)	Dividend Yield (D1/P _o)	Retained Earnings (b)	ROE (E1/P _o)	Growth (b*ROE)	K _e Dividends	K _e Earnings
Enbridge Inc	enb.to	51.630	3.24	3.15	6.28%	-19.0%	6.10%	-1.16%	5.12%	4.94%
Kinder Morgan Inc	kmi	21.170	1.20	1.15	5.67%	1.0%	5.43%	0.05%	5.72%	5.49%
ONEOK Inc	oke	75.670	3.90	3.75	5.15%	NMF	4.96%	NMF	NMF	NMF
Pembina Pipeline Corp	ppl.to	48.130	2.55	2.80	5.30%	24.0%	5.82%	1.40%	6.69%	7.21%
TC Energy Corp	trp	53.310	2.43	3.50	4.56%	56.0%	6.57%	3.68%	8.23%	10.24%
The Williams Cos Inc	wmb	23.720	1.60	1.10	6.75%	NMF	4.64%	NMF	NMF	NMF
Mean									6.44%	6.97%
Harmonic Mean									6.24%	6.44%
Median									6.21%	6.35%
Std Dev									1.36%	2.39%
Coefficient of Variation									21.12%	34.23%

say

NMF

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

Washington State Department of Revenue

2020 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
Enbridge Inc	enb.to	51.63	3.15	16.39	101.00%	9.50%	8.52%
Kinder Morgan Inc	kmi	21.17	1.15	18.41	104.00%	7.50%	8.51%
ONEOK Inc	oke	75.67	3.75	20.18	NMF	24.00%	7.43%
Pembina Pipeline Corp	ppl.to	48.13	2.80	17.19	91.00%	9.00%	8.37%
TC Energy Corp	trp	53.31	3.50	15.23	70.00%	13.00%	9.68%
The Williams Cos Inc	wmb	23.72	1.10	21.56	NMF	8.00%	6.27%
Mean				18.16	91.50%	11.83%	8.13%
Harmonic Mean				17.91	89.30%	10.11%	7.98%
Median				17.80	96.00%	9.25%	8.44%
Industry Summary				18.00	91.00%	10.00%	
						Say	8.00%

SUPPORT FOR DEBT RATING AND DEBT YIEL

Washington State Department of Revenue

2020 Assessment Year

Pipeline Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
Enbridge Inc	enb.to	Baa2	BBB+
Kinder Morgan Inc	kmi	Baa2	BBB
ONEOK Inc	oke	Baa3	BBB
Pembina Pipeline Corp	ppl.to		BBB
TC Energy Corp	trp	Baa2	BBB+
The Williams Cos Inc	wmb	Baa3	BBB
Overall Average Debt Rating		Baa2	BBB

Mergent's Bond Record January 2020, page 234

Corporate	Aaa	Aa	A	Baa
October	3.01%	3.13%	3.37%	3.93%
November	3.06%	3.16%	3.40%	3.94%
December	3.01%	3.11%	3.36%	3.88%
4th Qtr Average	3.03%	3.13%	3.38%	3.92%

Public Utilities	Aaa	Aa	A	Baa
October		3.24%	3.39%	3.72%
November		3.25%	3.43%	3.76%
December		3.22%	3.40%	3.73%
4th Qtr Average		3.24%	3.41%	3.74%

Industrials	Aaa	Aa	A	Baa
October	3.01%	3.01%	3.35%	4.12%
November	3.06%	3.06%	3.37%	4.12%
December	3.01%	3.00%	3.32%	4.03%
4th Qtr Average	3.03%	3.02%	3.35%	4.09%

		Avg YTM	Med YTM
Moody's Long Term Bond Yield	Baa2	5.21%	4.96%
S&P's Long Term Bond Yield	BBB	5.22%	5.02%

Bloomberg Dec 2019	20y	25Y	30Y
BBB	4.35%	4.35%	4.47%

Debt Yield Rate	4.75%
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to page 1

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2020 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	2019		2020		2019		2020	
			Actual Earnings Ratio (EPS/P)	Projected Earnings Ratio (PEPS/P)	Cash Flow Ratio (CF/P)	Projected Cash Flow Ratio				
Enbridge Inc	enb.to	51.630	2.65	5.1%	3.15	6.1%	4.12	8.0%	4.60	8.9%
Kinder Morgan Inc	kmi	21.170	0.96	4.5%	1.15	5.4%	2.03	9.6%	2.20	10.4%
ONEOK Inc	oke	75.670	3.10	4.1%	3.75	5.0%	4.25	5.6%	5.00	6.6%
Pembina Pipeline Corp	ppl.to	48.130	3.10	6.4%	2.80	5.8%	3.80	7.9%	3.55	7.4%
TC Energy Corp	trp	53.310	3.29	6.2%	3.50	6.6%	5.66	10.6%	4.85	9.1%
The Williams Cos Inc	wmb	23.720	0.99	4.2%	1.10	4.6%	2.40	10.1%	2.65	11.2%
Mean			5.1%	5.6%	8.6%	8.9%				
Harmonic Mean			4.9%	5.5%	8.2%	8.6%				
Median			4.8%	5.6%	8.8%	9.0%				
Max			6.4%	6.6%	10.6%	11.2%				
Min			4.1%	4.6%	5.6%	6.6%				
Std Dev			1.0%	0.7%	1.9%	1.7%				
Coefficient of Variation			19.9%	12.9%	21.4%	19.4%				
Say			5.0%	5.5%	8.0%	9.0%				

Source: VL/Year End Stock Price

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

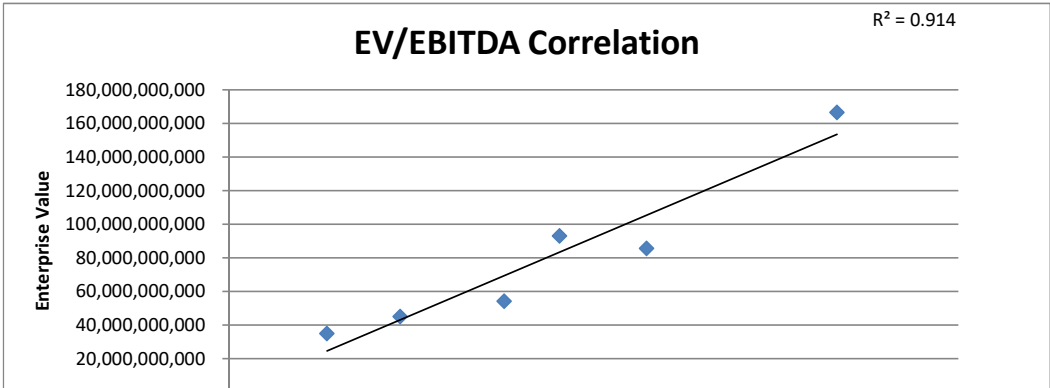
2020 Assessment Year

Company	Ticker	Stock Price	Enterprise Value	EBITDA Historical	Annual Change VL	EBITDA Forecast	EV / EBITDA Forecast	Revenue Forecast	EV / Sales Forecast	Cashflow Forecast	Debt Service	EV / CF Forecast
Enbridge Inc	enb.to	51.630	166,524,147,388	8,963,000,000	11.65%	10,007,233,010	16.64	49,607,943,270	3.36	9,314,144,451	2,576,210,000	14.00
Kinder Morgan Inc	kmi	21.170	85,539,393,427	6,342,000,000	8.37%	6,873,103,448	12.45	15,062,672,002	5.68	4,983,139,610	1,785,430,000	12.64
ONEOK Inc	oke	75.670	45,058,115,466	2,393,463,000	17.65%	2,815,838,824	16.00	12,454,502,198	3.62	2,065,423,250	655,500,000	16.56
Pembina Pipeline Corp	ppl.to	48.130	34,809,367,170	1,725,000,000	-6.58%	1,611,513,158	21.60	7,651,544,550	4.55	1,816,921,950	368,267,500	15.93
TC Energy Corp	trp	53.310	93,005,780,000	6,347,000,000	-14.31%	5,438,683,746	17.10	10,646,300,000	8.74	4,549,300,000	1,898,860,000	14.42
The Williams Cos Inc	wmb	23.720	54,068,798,390	4,101,000,000	10.42%	4,528,187,500	11.94	8,847,956,503	6.11	3,211,929,415	1,202,652,500	12.25
							Mean	15.95	5.34			14.30
							Harmonic Mean	15.33	4.81			14.13
							Median	16.32	5.11			14.21
							Std Dev	3.52	1.99			1.72

Source: **Say** **13.00** **4.00** **14.00**
 Value Line & Morning Star

Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast	
The Williams Cos Inc	11.94	13.24 Low Harmonic mean
Kinder Morgan Inc	12.45	13.46 Low Average
ONEOK Inc	16.00	12.45 Low Median
Enbridge Inc	16.64	13.00 Say
TC Energy Corp	17.10	18.45 High Average
Pembina Pipeline Corp	21.60	17.10 High Median
		18.20 High Harmonic mean
		18.50 Say



SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2020 Assessment Year

Pipeline Industry

Company	Ticker	Stock Price	Revenues		Cash Flow		Earnings		Book Value	
				Multiple		Multiple		Multiple		Multiple
Enbridge Inc	enb.to	51.630	24.73	2.09	4.12	12.53	2.65	19.48	28.79	1.79
Kinder Morgan Inc	kmi	21.170	5.83	3.63	2.03	10.43	0.96	22.05	14.90	1.42
ONEOK Inc	oke	75.670	24.80	3.05	4.25	17.80	3.10	24.41	15.20	4.98
Pembina Pipeline Corp	ppl.to	48.130	14.20	3.39	3.80	12.67	3.10	15.53	24.70	1.95
TC Energy Corp	trp	53.310	10.88	4.90	5.66	9.42	3.29	16.20	26.59	2.00
The Williams Cos Inc	wmb	23.720	6.75	3.51	2.40	9.88	0.99	23.96	11.00	2.16
			Mean	3.43		12.12		20.27		2.38
			Harmonic Mean	3.22		11.58		19.64		2.04
			Median	3.45		11.48		20.77		1.98
			Max	4.90		17.80		24.41		4.98
			Min	2.09		9.42		15.53		1.42
			Say	3.30		12.50		20.00		2.00

Source: VL/Year End Stock Price

DATA INPUT

Washington State Department of Revenue

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Pipeline Industry

Guideline Companies		Historic Figures (2019)												
Name	Ticker	Stock Price 12/31/19	Beta Levered	Fin'l Strength	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Bk Value Per Share	Common Shares	LTD (BV)	Trailing P/E Ratio	Div Yield	Operating Margin
		Yahoo	V L	V L	V L	V L	V L	V L	V L	V L	V L	V L	V L	V L
Enbridge Inc	enb.to	51.63	1.00	B++	24.73	4.12	2.65	2.95	28.79	2,024,814,011	59,661,000,000	20.7	5.9%	23.6%
Kinder Morgan Inc	kmi	21.17	1.40	B	5.83	2.03	0.96	0.95	14.90	2,265,063,459	31,900,000,000	22.9	4.5%	48.0%
ONEOK Inc	oke	75.67	1.45	B+	24.80	4.25	3.10	3.53	15.20	413,084,650	12,479,500,000	25.6	5.1%	20.0%
Pembina Pipeline Corp	ppl.to	48.13	1.00	B++	14.20	3.80	3.10	2.35	24.70	511,809,000	7,980,000,000	17.0	4.7%	28.0%
TC Energy Corp	trp	53.31	1.05	B++	10.88	5.66	3.29	2.31	26.59	938,000,000	26,395,600,000	18.3	4.4%	
The Williams Cos Inc	wmb	23.72	1.90	B	6.75	2.40	0.99	1.52	11.00	1,212,048,836	20,148,000,000	23.1	7.4%	45.8%
Average											average	21.3		33.1%
Harmonic Mean											harmonic mean	20.8		29.3%
Median											median	21.8		28.0%

			Projected (Next Year) 2020									Income Statement	Balance Sheet		
Calculated Debt	All Div'ds to Net Profits	Rtn on Shrhldrs Equity	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Bk Value Per Share	All Div'ds to Net Profits	Rtn on Shrhldrs Equity	CF Projection 22-24	Operating Income	Current Assets	PP & E Gross	Intangibles (excl. GW)	
Formula	V L	V L	V L	V L	V L	V L	V L	VL	V L	V L	Morningstar	Morningstar	Morningstar	Morningstar	
109.13%	119%	8.1%	24.50	4.60	3.15	3.24	29.60	101%	9.50%	5.70	6,354,000,000	6,789,000,000	27,919,000,000	2,717,000,000	
110.74%	99%	6.50%	6.65	2.20	1.15	1.20	15.60	104%	7.50%	3.00	3,931,000,000	3,238,000,000	53,369,000,000	4,126,000,000	
110.40%	NMF	20.5%	30.15	5.00	3.75	3.90	15.55	NMF	24.00%	7.35	1,916,928,000	1,470,334,000	22,051,492,000	414,345,000	
105.69%	76%	10.5%	14.95	3.55	2.80	2.55	27.10	91%	9.00%	4.70	1,332,000,000	759,000,000	17,135,000,000	1,632,000,000	
113.96%	44%	14.0%	11.35	4.85	3.50	2.43	27.30	70%	13.00%	7.30	4,451,000,000	5,886,000,000	50,381,000,000	9,914,000,000	
113.60%	NMF	9.0%	7.30	2.65	1.10	1.60	13.55	NMF	8.00%	3.60	2,387,000,000	1,580,000,000	41,510,000,000	7,959,000,000	
	85%	11.4%						average	92%	5.28					
		9.9%						Median	89%	5.20					
		9.8%						Harmonic mean	96%	4.72					

		Cash Flow Statement	Other Financials	
Current Liabilities	Long Term Debt Less Current Maturities	Depreciation & Amortization	Carrying Value Debt	Fair Value Debt
Morningstar	Morningstar	Morningstar	10-K	10-K
12,316,000,000	45,897,000,000	2,609,000,000	49,697,000,000	54,236,000,000
5,100,000,000	31,915,000,000	2,411,000,000	33,943,000,000	37,588,000,000
2,020,298,000	12,479,757,000	476,535,000	12,500,000,000	13,800,000,000
1,121,000,000	7,753,000,000	393,000,000	7,810,000,000	8,254,000,000
9,923,000,000	32,998,000,000	1,896,000,000	35,079,000,000	39,976,000,000
3,968,000,000	20,148,000,000	1,714,000,000	22,288,000,000	25,319,000,000

STOCK PRICE

Washington State Department of Revenue

2020 Assessment Year

Pipeline Industry

								45.61
								Year End
Enbridge Inc	enb.to							
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/31/2019	51.51	51.69	51.35	51.63	51.63	1,677,100		51.63
Kinder Morgan Energy	kmi							
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/31/2019	21	21.18	20.95	21.17	21.17	10,033,500		21.17
ONEOK Inc	oke							
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/31/2019	74.93	75.71	74.73	75.67	75.67	1,677,400		75.67
Pembina Pipeline Corp	ppl.to							
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/31/2019	47.92	48.21	47.71	48.13	48.13	732,900		48.13
TransCanada Corp	trp							
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/31/2019	52.59	53.31	52.53	53.31	53.31	2,098,600		53.31
Williams Cos	wmb							
Date	Open	High	Low	Close	Adj. Close*	Volume		
12/31/2019	23.14	23.73	23.1	23.72	23.72	8,600,200		23.72

Source:

finance.yahoo.com

Historical Stock Quotes

IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2020

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

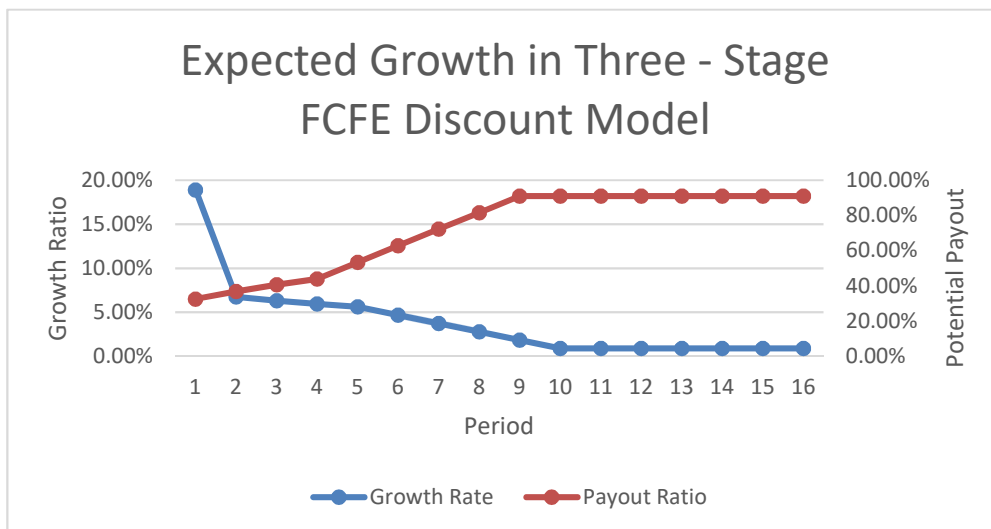
Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Ends + Buy	Inge in Earn	Inge in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	bothed Grov	Premium	et Growth	esed Premium (
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%			
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%		2.92%
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%
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%
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%
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%
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%
1967	5.66%	3.09%	96.47	5.46	2.98		0.85%	3.37%	4.21%	5.70%	1.49%	5.25%	3.20%		3.20%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
2018	5.92%	2.14%	2506.85	148.34	53.61	136.65	18.73%	7.80%	2.37%	2.68%	0.31%	3.24%	2.50%	4.12%	5.96%

Three Stage Free Cash Flow to Equity Discount Model

Company **Enbridge Inc** **3.90%** GDP
 Ticker **enb.to** **18.0** Industry P/E use median
91.0% Target Dividend Payout Ratio
10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		188.68%	-88.68%	2.65			(51.63)
Stage 1	1	18.87%	67.46%	32.54%	3.15	1.03		1.03
	2	6.75%	63.20%	36.80%	3.36	1.24		1.24
	3	6.32%	59.44%	40.56%	3.58	1.45		1.45
	4	5.94%	56.11%	43.89%	3.79	1.66		1.66
	5	5.61%	46.68%	53.32%	4.00	2.13		2.13
Stage 2	6	4.67%	37.26%	62.74%	4.19	2.63		2.63
	7	3.73%	27.84%	72.16%	4.34	3.13		3.13
	8	2.78%	18.42%	81.58%	4.46	3.64		3.64
	9	1.84%	9.00%	91.00%	4.55	4.14		4.14
	10	0.90%	9.00%	91.00%	4.59	4.17	83.31	87.48
Stage 3	11+	0.90%	9.00%	91.00%	4.63	4.21		

$K_e = 8.52%$

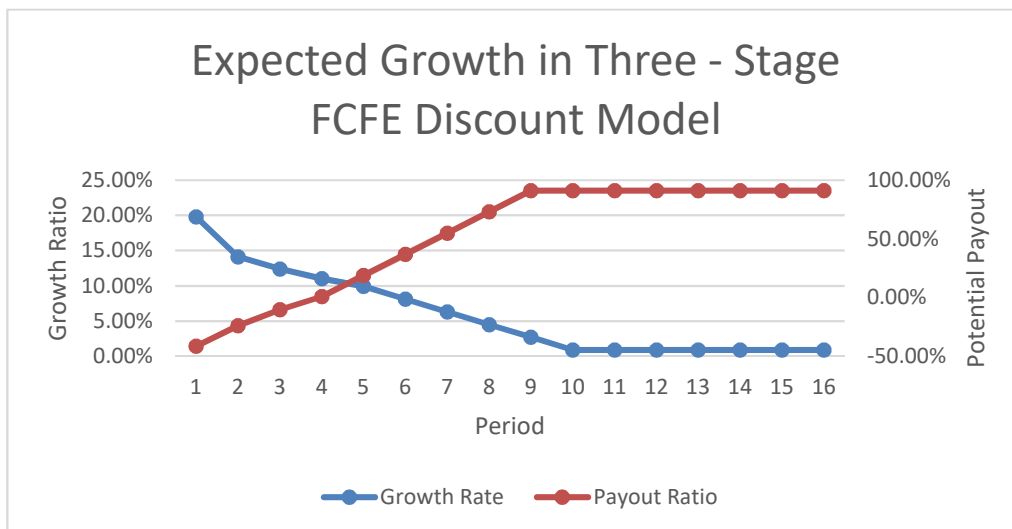


Three Stage Free Cash Flow to Equity Discount Model

Company **Kinder Morgan** **3.90%** GDP
 Ticker **kmi** **18.0** Industry P/E use median
91.0% Target Dividend Payout Ratio
10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		197.92%	-97.92%	0.96			(21.17)
	1	19.79%	141.30%	-41.30%	1.15	(0.48)		-0.48
	2	14.13%	123.81%	-23.81%	1.31	(0.31)		-0.31
Stage 1	3	12.38%	110.17%	-10.17%	1.48	(0.15)		-0.15
	4	11.02%	99.24%	0.76%	1.64	0.01		0.01
	5	9.92%	81.19%	18.81%	1.80	0.34		0.34
	6	8.12%	63.14%	36.86%	1.95	0.72		0.72
	7	6.31%	45.09%	54.91%	2.07	1.14		1.14
Stage 2	8	4.51%	27.05%	72.95%	2.16	1.58		1.58
	9	2.70%	9.00%	91.00%	2.22	2.02		2.02
	10	0.90%	9.00%	91.00%	2.24	2.04	40.70	42.74
Stage 3	11+	0.90%	9.00%	91.00%	2.26	2.06		

K_e = 8.51%

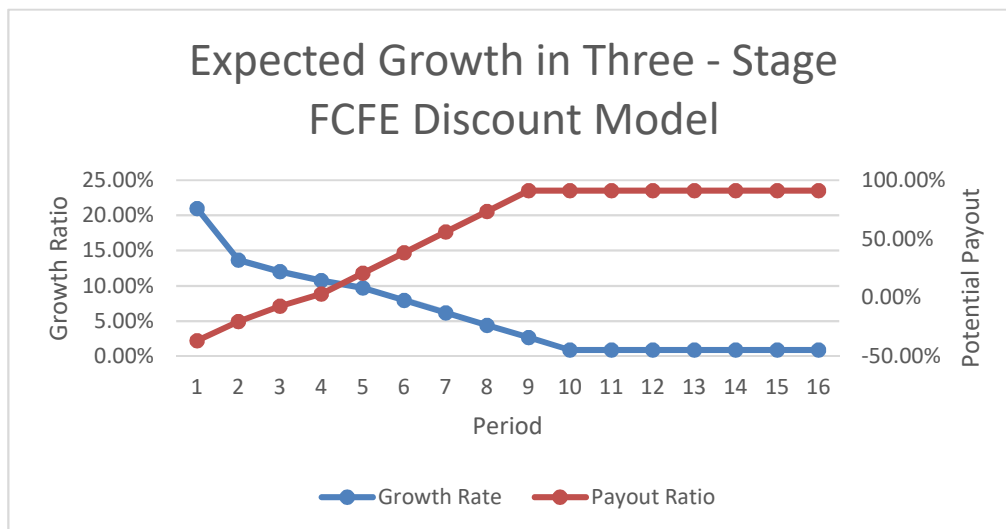


Three Stage Free Cash Flow to Equity Discount Model

Company **ONEOK Inc** **3.90%** GDP
 Ticker **oke** **18.0** Industry P/E use median
91.0% Target Dividend Payout Ratio
10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		209.68%	-109.68%	3.10			(75.67)
	1	20.97%	136.67%	-36.67%	3.75	(1.38)		-1.38
	2	13.67%	120.23%	-20.23%	4.26	(0.86)		-0.86
Stage 1	3	12.02%	107.33%	-7.33%	4.78	(0.35)		-0.35
	4	10.73%	96.93%	3.07%	5.29	0.16		0.16
	5	9.69%	79.34%	20.66%	5.80	1.20		1.20
	6	7.93%	61.76%	38.24%	6.26	2.39		2.39
	7	6.18%	44.17%	55.83%	6.65	3.71		3.71
Stage 2	8	4.42%	26.59%	73.41%	6.94	5.10		5.10
	9	2.66%	9.00%	91.00%	7.12	6.48		6.48
	10	0.90%	9.00%	91.00%	7.19	6.54	130.57	137.11
Stage 3	11+	0.90%	9.00%	91.00%	7.25	6.60		

Ke = 7.43%

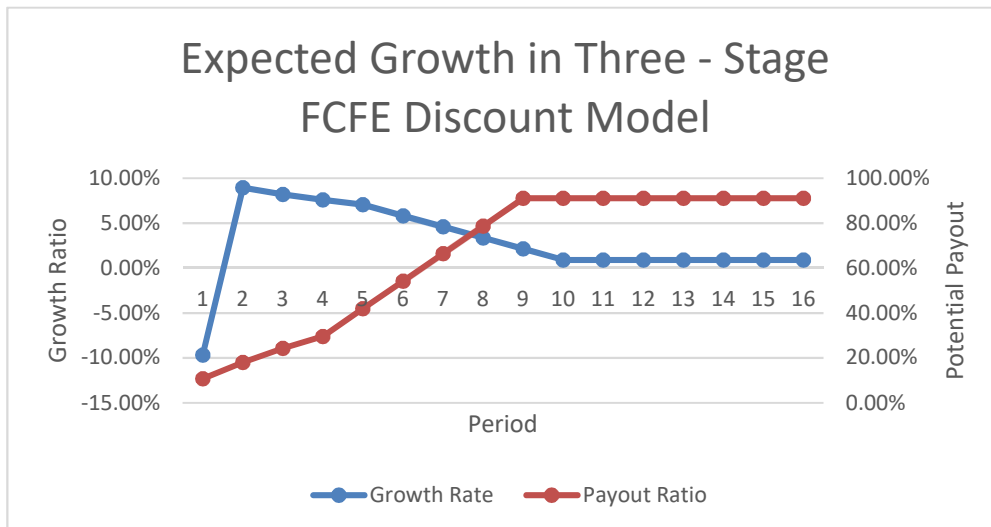


Three Stage Free Cash Flow to Equity Discount Model

Company **Pembina Pipelir** 3.90% GDP
 Ticker **ppl.to** 18.0 Industry P/E use median
 91.0% Target Dividend Payout Ratio
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-96.77%	196.77%	3.10			(48.13)
	1	-9.68%	89.29%	10.71%	2.80	0.30		0.30
	2	8.93%	81.97%	18.03%	3.05	0.55		0.55
Stage 1	3	8.20%	75.76%	24.24%	3.30	0.80		0.80
	4	7.58%	70.42%	29.58%	3.55	1.05		1.05
	5	7.04%	58.14%	41.86%	3.80	1.59		1.59
	6	5.81%	45.85%	54.15%	4.02	2.18		2.18
	7	4.59%	33.57%	66.43%	4.21	2.79		2.79
Stage 2	8	3.36%	21.28%	78.72%	4.35	3.42		3.42
	9	2.13%	9.00%	91.00%	4.44	4.04		4.04
	10	0.90%	9.00%	91.00%	4.48	4.08	81.35	85.42
Stage 3	11+	0.90%	9.00%	91.00%	4.52	4.11		

$K_e = 8.37\%$

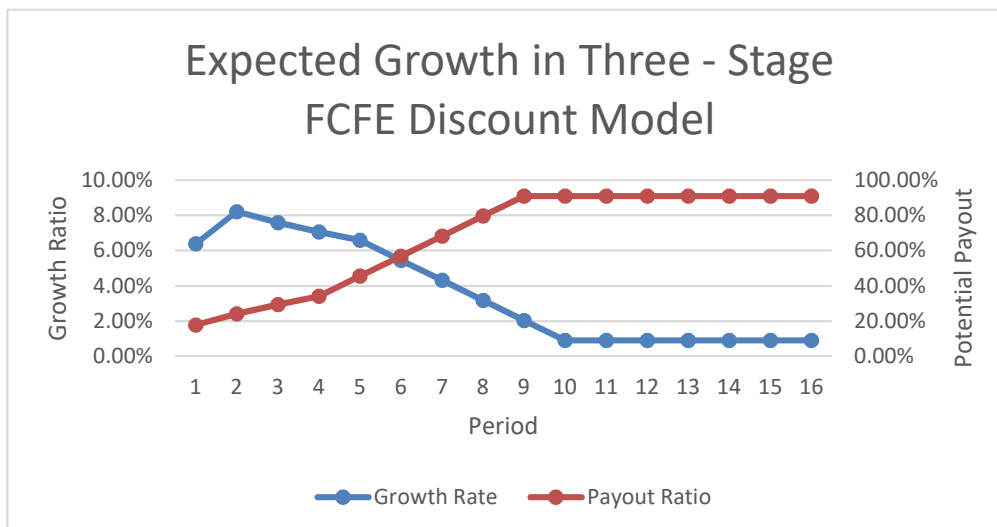


Three Stage Free Cash Flow to Equity Discount Model

Company **TC Energy Corp** **3.90%** GDP
 Ticker **trp** **18.0** Industry P/E use median
91.0% Target Dividend Payout Ratio
10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		63.83%	36.17%	3.29			(53.31)
	1	6.38%	82.14%	17.86%	3.50	0.63		0.63
	2	8.21%	75.91%	24.09%	3.79	0.91		0.91
Stage 1	3	7.59%	70.55%	29.45%	4.08	1.20		1.20
	4	7.06%	65.90%	34.10%	4.36	1.49		1.49
	5	6.59%	54.52%	45.48%	4.65	2.11		2.11
	6	5.45%	43.14%	56.86%	4.90	2.79		2.79
	7	4.31%	31.76%	68.24%	5.12	3.49		3.49
Stage 2	8	3.18%	20.38%	79.62%	5.28	4.20		4.20
	9	2.04%	9.00%	91.00%	5.39	4.90		4.90
	10	0.90%	9.00%	91.00%	5.43	4.94	98.68	103.63
Stage 3	11+	0.90%	9.00%	91.00%	5.48	4.99		

K_e = 9.68%



Three Stage Free Cash Flow to Equity Discount Model

Company **The Williams Co** **3.90%** GDP
 Ticker **wmb** **18.0** Industry P/E use median
91.0% Target Dividend Payout Ratio
10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		111.11%	-11.11%	0.99			(23.72)
	1	11.11%	113.64%	-13.64%	1.10	(0.15)		-0.15
	2	11.36%	102.04%	-2.04%	1.23	(0.02)		-0.02
Stage 1	3	10.20%	92.59%	7.41%	1.35	0.10		0.10
	4	9.26%	84.75%	15.25%	1.48	0.23		0.23
	5	8.47%	69.60%	30.40%	1.60	0.49		0.49
	6	6.96%	54.45%	45.55%	1.71	0.78		0.78
	7	5.44%	39.30%	60.70%	1.80	1.10		1.10
Stage 2	8	3.93%	24.15%	75.85%	1.88	1.42		1.42
	9	2.41%	9.00%	91.00%	1.92	1.75		1.75
	10	0.90%	9.00%	91.00%	1.94	1.76	35.20	36.96
Stage 3	11+	0.90%	9.00%	91.00%	1.96	1.78		

$K_e = 6.27%$

