

COST OF CAPITAL STUDY

YIELD CAPITALIZATION

2021 Assessment Year

APPENDIX C

Power Industry

EQUITY RATE						9.75%	
CAPITAL ASSET PRICING MODEL							PAGE
	CAPM Ex Ante		5.85%				4
DIVIDEND GROWTH MODELS Single Stage							
	Value Line, based on Dividends Growth		9.75%				5
	Value Line, based on Earnings Growth		NMF				6
	Value Line, based on Return on Equity		7.00%				7
FCFE GROWTH MODEL Multi Stage							8
			10.00%				
				RANGE	5.85-10.00%		
DEBT RATE						4.00%	9
MARKET CAPITAL STRUCTURE							
	Equity	50%	x	9.75%	=	4.88%	3
	Debt	50%	x	4.00%	=	2.00%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	2.00%	
						<u>1.52%</u>	
WEIGHTED AVERAGE COST OF CAPITAL						6.40%	

SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2021 Assessment Year

Power 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
AES Corp	aes	1.05	B	NMF	2.4%	2,634,865,200	12.5%			18,451,000,000	87.5%	21,085,865,200
Exelon Corp	exc	0.95	B+	14.0	3.7%	33,184,000,000	48.0%			35,902,000,000	52.0%	69,086,000,000
NextEra Energy Inc	nee	0.90	A+	39.1	1.8%	36,554,000,000	46.1%			42,794,000,000	53.9%	79,348,000,000
NRG Energy Inc	nrg	1.20	B+	20.1	3.2%	nmf		230,000,000		8,691,000,000		nmf
Southern Co	so	0.95	A	19.3	4.2%	28,036,800,000	37.9%	291,000,000	0.4%	45,581,000,000	61.7%	73,908,800,000
TransAlta Corp	ta.to	1.10	C+	NMF	2.2%	1,952,850,000	37.9%	645,000,000	12.5%	2,550,000,000	49.5%	5,147,850,000
Vistra Energy Corp	vst	1.15	B+	14.5	nmf	8,372,094,100	47.5%			9,235,000,000	52.5%	17,607,094,100
Mean		1.04		21.4	2.9%	18,455,768,217	38.3%		6.5%	23,314,857,143	59.5%	
Harmonic Mean		1.03							0.8%		57.3%	
Weighted Mean						110,734,609,300	41.6%	1,166,000,000	0.4%	163,204,000,000	61.3%	266,183,609,300
Median		1.05			2.8%				6.5%		53.2%	

SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2021 Assessment Year

Power Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
AES Corp	aes	23.35	665,370,000	15,536,389,500	41.3%	-		22,080,000,000	58.7%	37,616,389,500
Exelon Corp	exc	41.81	976,000,000	40,806,560,000	50.5%	-		40,033,000,000	49.5%	80,839,560,000
NextEra Energy Inc	nee	76.75	1,960,000,000	150,430,000,000	74.5%	-		51,525,000,000	25.5%	201,955,000,000
NRG Energy Inc	nrg	37.25	244,680,000	9,114,330,000	48.5%	230,000,000	1.2%	9,446,000,000	50.3%	18,790,330,000
Southern Co	so	60.79	1,056,000,000	64,194,240,000	53.2%	291,000,000	0.2%	56,264,000,000	46.6%	120,749,240,000
TransAlta Corp	ta.to	7.59	277,000,000	2,102,430,000	39.6%	645,000,000	12.1%	2,564,035,200	48.3%	5,311,465,200
Vistra Energy Corp	vst	19.66	489,310,000	9,619,834,600	49.3%	-		9,883,000,000	50.7%	19,502,834,600
Mean					51.0%				4.5%	47.1%
Harmonic Mean					49.2%				0.6%	44.2%
Weighted Mean				291,803,784,100	60.2%	1,166,000,000	0.2%	191,795,035,200	39.6%	484,764,819,300
Median					49.3%				1.2%	49.5%
Std Dev					11.5%				6.6%	10.3%
Coefficient of Variation					22.5%				145.6%	21.8%
Target					50%				50%	100%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2021 Assessment Year

Ex Ante
Ke = Rf + B (Rp)

Ke = Cost of Equity				5.85%
				to page 1
	Rm =	rate of return	5.65%	
	Rf =	risk free rate	1.65%	
	Rp =	risk premium	4.00%	
	B =	Beta	1.05	page 7
Rp = Risk Premium				4.00%
				to above
	Shannon Pratt and Roger Grabowski		3.50% - 6.00%	
	Cost of Capital, App & Exam, 5th Ed, 2014			
	Dr. Aswath Damodaran		4.72%	chart page 15
	http://pages.stern.nyu.edu/~adamodar/		4.00%	adjusted for Rf
	2020 Implied Premium			
	John Graham & Campbell Harvey		6.20%	10 year expected real ret
	Duke CFO magazine Global Business Outlook		5.48%	adjusted for Rf
	4th Qtr 2020		0.93%	Rf rate used in survey
Rf = Risk Free Rate				1.65%
				to above
	Value Line Investment Survey, Selected Yields January 8, 2021, page 689			
	as of 12-28-20	US Treasury Securities year end data		
		5 year	0.37%	
		10 year	0.94%	
		30 year	1.67%	
		30 year Zero	NA	
	Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/Current/)			
	as of 12-31-20	Treasury Constant Maturities		
		5 year	0.36%	
		10 year	0.93%	
		20 year	1.45%	
		30 year	1.65%	
		20 year TIPS	<u>-0.61%</u>	2.06%
		30 year TIPS	<u>-0.37%</u>	2.02%
				TIPS inflation indication
Inflation				2.00%
				to appraisal template
	Value Line Investment Survey, Economic Series January 1, 2021, page 1500			
	Consumer Price Index Annual Rate of Change 2023-202		2.30%	
	The Livingston Survey December 18, 2020, page 4, 10			
	Inflation median (measured by the CPI) over next 10 year		2.23%	
Gross Domestic Product (GDP) Nominal				3.80%
				real GDP + inflation est
	Federal Reserve Projected Long Run Real GDP Growth			
	Median Projection Value From Dec 16, 2020 Report		1.80%	
	https://www.federalreserve.gov/monetarypolicy/files/fomcproptab120201216.pdf			
	Congressional Budget Office Real GDP Economic Projections			Table 2.3, pg 15
	The Budget and Economic Outlook 2021-2031	2021-2025	1.90%	
	Average Percentage Change Year to Year	2026-2031	1.70%	
	https://www.cbo.gov/system/files/2021-02/56970-Outlook.pdf			
	Federal Reserve Bank of Philadelphia			
	The Livingston Survey, December 18, 2020, page 4, 10			
	Average Annual Real GDP Growth Rate for Next 10 Years		2.20%	
	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
2021 Assessment Year
Power 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)	Dividend Growth (G)	Ke with Short Term Growth
AES Corp	aes	23.350	0.60	2.57%	4.00%	6.57%
Exelon Corp	exc	41.810	1.61	3.85%	5.50%	9.35%
NextEra Energy Inc	nee	76.750	1.54	2.01%	10.50%	12.51%
NRG Energy Inc	nrg	37.250	1.30	3.49%	nmf	nmf
Southern Co	so	60.790	2.62	4.31%	3.00%	7.31%
TransAlta Corp	ta.to	7.590	0.18	2.37%	10.50%	12.87%
Vistra Energy Corp	vst	19.660	0.60	3.05%	27.50%	30.55%
Mean						13.19%
Harmonic Mean						10.23%
Median						10.93%
Max						30.55%
Min						6.57%
Std Dev						8.89%
Coefficient of Variation						67.38%
Say						9.75%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2021 Assessment Year

Power 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
AES Corp	aes	23.350	0.60	2.57%	nmf	nmf
Exelon Corp	exc	41.810	1.61	3.85%	8.00%	11.85%
NextEra Energy Inc	nee	76.750	1.54	2.01%	10.00%	12.01%
NRG Energy Inc	nrg	37.250	1.30	3.49%	nmf	nmf
Southern Co	so	60.790	2.62	4.31%	4.00%	8.31%
TransAlta Corp	ta.to	7.590	0.18	2.37%	nmf	nmf
Vistra Energy Corp	vst	19.660	0.60	3.05%	39.00%	42.05%
Mean						18.55%
Harmonic Mean						12.83%
Median						11.93%
Max						42.05%
Min						8.31%
Std Dev						15.76%
Coefficient of Variation						84.92%

Say NMF

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2021 Assessment Year

Power 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
AES Corp	aes	23.350	0.60	1.50	2.57%	NMF	6.42%	NMF	NMF	NMF
Exelon Corp	exc	41.810	1.61	3.00	3.85%	50.0%	7.18%	3.59%	7.44%	10.76%
NextEra Energy Inc	nee	76.750	1.54	2.45	2.01%	34.0%	3.19%	1.09%	3.09%	4.28%
NRG Energy Inc	nrg	37.250	1.30	3.40	3.49%	NMF	9.13%	NMF	NMF	NMF
Southern Co	so	60.790	2.62	3.25	4.31%	20.0%	5.35%	1.07%	5.38%	6.42%
TransAlta Corp	ta.to	7.590	0.18	0.50	2.37%	NMF	6.59%	NMF	NMF	NMF
Vistra Energy Corp	vst	19.660	0.60	0.90	3.05%	58.0%	4.58%	2.66%	5.71%	7.23%
Mean									5.40%	7.17%
Harmonic Mean									4.88%	6.44%
Median									5.54%	6.82%
Std Dev									1.79%	2.70%
Coefficient of Variation									33.06%	37.63%

Say **7.00%**

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

Washington State Department of Revenue

2021 Assessment Year

Power Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
AES Corp	aes	23.35	1.50	15.57	40.00%	32.00%	8.79%
Exelon Corp	exc	41.81	3.00	13.94	52.00%	8.50%	10.23%
NextEra Energy Inc	nee	76.75	2.45	31.33	72.00%	11.00%	2.33%
NRG Energy Inc	nrg	37.25	3.40	10.96	38.00%	NMF	13.80%
Southern Co	so	60.79	3.25	18.70	80.00%	12.00%	6.90%
TransAlta Corp	ta.to	7.59	0.50	NMF	NMF	NMF	12.17%
Vistra Energy Corp	vst	19.66	0.90	21.84	67.00%	5.50%	11.03%
Mean				18.72	58.17%	13.80%	9.32%
Harmonic Mean				16.74	53.64%	9.90%	6.79%
Median				17.14	59.50%	11.00%	10.23%
Industry Summary				17.00	55.00%	11.00%	
					Say		10.00%

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

Washington State Department of Revenue

2021 Assessment Year

Power Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
AES Corp	aes	Ba1	BB
Exelon Corp	exc	Baa2	BBB+
NextEra Energy Inc	nee	Baa1	A-
NRG Energy Inc	nrg	Ba2	BB+
Southern Co	so	Baa2	A-
TransAlta Corp	ta.to	Ba1	BB+
Vistra Energy Corp	vst	Ba1	BB+
Overall Average Debt Rating		Baa3	BBB-

Mergent's Bond Record January 2021, page 251				
Corporate	Aaa	Aa	A	Baa
October	2.35%	2.55%	2.88%	3.44%
November	2.30%	2.47%	2.79%	3.30%
December	2.26%	2.44%	2.72%	3.16%
4th Qtr Average	2.30%	2.49%	2.80%	3.30%
Public Utilities	Aaa	Aa	A	Baa
October		2.72%	2.95%	3.27%
November		2.63%	2.85%	3.17%
December		2.57%	2.77%	3.05%
4th Qtr Average		2.64%	2.86%	3.16%
Industrials	Aaa	Aa	A	Baa
October	2.35%	2.37%	2.81%	3.60%
November	2.30%	2.30%	2.72%	3.41%
December	2.26%	2.31%	2.66%	3.27%
4th Qtr Average	2.30%	2.33%	2.73%	3.43%

		Ave YTM	Med YTM
S&P's Long Term Bond Yield	BBB-	3.98%	3.83%
Moody's Long Term Bond Yield	Baa3	3.78%	3.84%

Bloomberg Dec 2020	20y	25Y	30Y
BBB-	4.13%	4.14%	4.27%

Debt Yield Rate **4.00%**

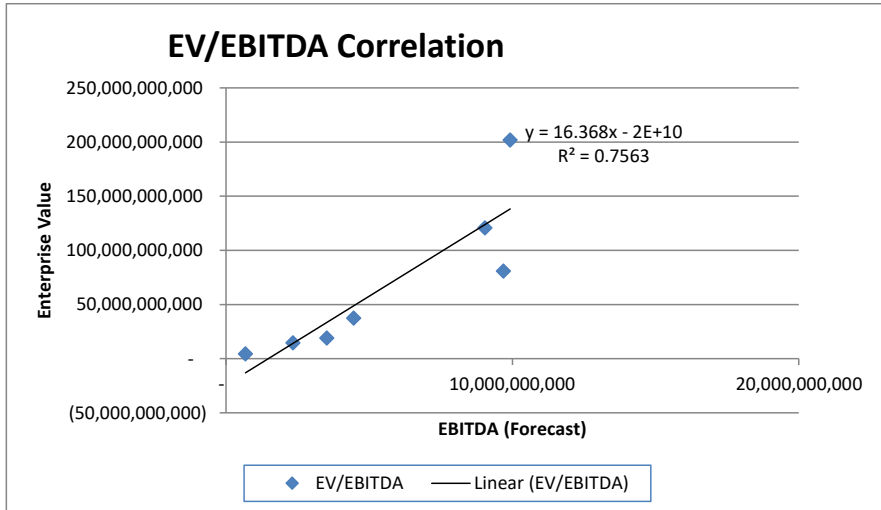
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SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2021 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
AES Corp	aes	23.35	37,564,389,500	3,596,000,000	24.00%	4,459,040,000	8.42	10,180,161,000	3.69	2,095,915,500	883,200,000	12.61
Exelon Corp	exc	41.81	80,839,560,000	9,326,000,000	3.85%	9,684,692,308	8.35	33,916,000,000	2.38	9,223,200,000	1,601,320,000	7.47
NextEra Energy Inc	nee	76.75	201,955,000,000	9,078,000,000	9.30%	9,922,465,116	20.35	19,208,000,000	10.51	9,212,000,000	2,061,000,000	17.91
NRG Energy Inc	nrg	37.25	14,677,330,000	1,666,000,000	39.90%	2,330,673,575	6.30	9,395,712,000	1.56	1,321,272,000	377,840,000	8.64
Southern Co	so	60.79	120,749,240,000	8,725,000,000	3.62%	9,041,123,188	13.36	21,014,400,000	5.75	7,550,400,000	2,250,560,000	12.32
TransAlta Corp	ta.to	7.59	4,551,838,350	591,519,150	14.81%	679,151,617	6.70	2,146,750,000	2.12	429,350,000	102,561,408	8.56
Vistra Energy Corp	vst	19.66	19,109,834,600	3,923,000,000	-10.31%	3,518,567,010	5.43	10,985,009,500	1.74	2,128,498,500	395,320,000	7.57
7							Mean	9.84				10.73
							Harmonic Mean	8.19		3.97		9.79
							Median	8.35		2.65		8.64
							Std Dev	5.31		3.23		3.82
Source:							Say	8.50		3.00		10.00

Value Line & Morning Star



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast		
Vistra Energy Corp	5.43	6.54	Low Harmonic Mean
NRG Energy Inc	6.30	6.69	Low Average
TransAlta Corp	6.70	6.50	Low Median
Exelon Corp	8.35	6.50	Say
AES Corp	8.42	11.03	High Harmonic Mean
Southern Co	13.36	12.62	High Average
NextEra Energy Inc	20.35	10.89	High Median
		11.00	Say

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2021 Assessment Year

Power Industry

Company	Ticker	Stock Price	2020		2021		2020		2021	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio	
AES Corp	aes	23.35	0.07	NMF	1.50	6.4%	1.67	7.2%	3.15	13.5%
Exelon Corp	exc	41.81	3.00	7.2%	3.00	7.2%	9.10	21.8%	9.45	22.6%
NextEra Energy Inc	nee	76.75	2.10	2.7%	2.45	3.2%	4.30	5.6%	4.70	6.1%
NRG Energy Inc	nrg	37.25	2.07	5.6%	3.40	9.1%	3.86	10.4%	5.40	14.5%
Southern Co	so	60.79	3.15	5.2%	3.25	5.3%	6.90	11.4%	7.15	11.8%
TransAlta Corp	ta.to	7.59	1.22	NMF	0.50	NMF	1.35	17.8%	1.55	20.4%
Vistra Energy Corp	vst	19.66	1.30	6.6%	0.90	4.6%	4.85	24.7%	4.35	22.1%
		Mean		5.5%		6.0%		14.1%		15.9%
		Harmonic Mean		4.9%		5.3%		10.8%		13.2%
		Median		5.6%		5.9%		11.4%		14.5%
		Max		7.2%		9.1%		24.7%		22.6%
		Min		2.7%		3.2%		5.6%		6.1%
		Std Dev		1.7%		2.1%		7.4%		6.1%
		Coefficient of Variation		31.5%		34.9%		52.3%		38.6%
		Say		5.5%		6.0%		13.0%		15.0%

Source: Value Line / yr end stock price

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2021 Assessment Year

Power Industry

Company	Ticker	Stock Price	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Book Value	Multiple
AES Corp	aes	23.35	14.52	1.61	1.67	13.98	0.07	NMF	3.96	5.90
Exelon Corp	exc	41.81	33.80	1.24	9.10	4.59	3.00	13.94	34.00	1.23
NextEra Energy I	nee	76.75	9.20	8.34	4.30	17.85	2.10	36.55	18.65	4.12
NRG Energy Inc	nrg	37.25	37.16	1.00	3.86	9.65	2.07	18.00	6.87	5.42
Southern Co	so	60.79	19.15	3.17	6.90	8.81	3.15	19.30	26.55	2.29
TransAlta Corp	ta.to	7.59	7.60	1.00	1.35	5.62	1.22	NMF	7.05	1.08
Vistra Energy Co	vst	19.66	23.39	0.84	4.85	4.05	1.30	15.12	17.11	1.15
Mean				2.46	9.22		20.58		3.03	
Harmonic Mean				1.39	7.09		18.34		1.92	
Median				1.24	8.81		18.00		2.29	
Max				8.34	17.85		36.55		5.90	
Min				0.84	4.05		13.94		1.08	
Say				1.50	8.00		19.00		2.50	

DATA INPUT

Washington State Department of Revenue

2021 Assessment Year

Power Industry

Guideline Companies		Stock Price 12/31/20	Historic Figures (2020)												
Name	Ticker	Yahoo	Beta Levered VL	Fin'l Strength VL	Revenues Per Share VL	Cash Flow Per Share VL	Earnings Per Share VL	Dividends Per Share VL	Bk Value Per Share VL	Common Shares VL	LTD (BV) V L	Trailing P/E Ratio V L	Div Yield V L	Operating Margin V L	Calculated Debt Formula
AES Corp	aes	23.35	1.05	B	14.52	1.67	0.07	0.57	3.96	665,370,000	18,451,000,000	NMF	2.3%	19.5%	111.52%
Exelon Corp	exc	41.81	0.95	B+	33.80	9.10	3.00	1.53	34.00	976,000,000	35,902,000,000	14.0	3.8%		91.50%
NextEra Energy Inc	nee	76.75	0.90	A+	9.20	4.30	2.10	1.40	18.65	1,960,000,000	42,794,000,000	39.1	1.9%		111.81%
NRG Energy Inc	nrg	37.25	1.20	B+	37.16	3.86	2.07	1.20	6.87	244,680,000	8,691,000,000	20.1	3.1%	18.0%	107.57%
Southern Co	so	60.79	0.95	A	19.15	6.90	3.15	2.54	26.55	1,056,000,000	45,581,000,000	19.3	4.4%		116.37%
TransAlta Corp	ta.to	7.59	1.10	C+	7.60	1.35	1.22	0.17	7.05	277,000,000	2,550,000,000	NMF	1.7%		101.15%
Vistra Energy Corp	vst	19.66	1.15	B+	23.39	4.85	1.30	0.54	17.11	489,310,000	9,235,000,000	14.5	3.2%	31.6%	105.93%

Average

Harmonic Mean

Median

21.4 average

18.7 harmonic mean

19.3 median

ha

VL: Updated 4/5/2021

			Projected (Next Year) 2021							
Payout Ratio	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 24-26
Formula	V L	V L	V L	V L	V L	V L	V L	V L	V L	V L
NMF	NMF	NMF	15.30	3.15	1.50	0.60	4.70	40%	32.0%	3.55
51%	50%	8.5%	34.75	9.45	3.00	1.61	35.35	52%	8.5%	11.25
67%	66%	11.5%	9.80	4.70	2.45	1.54	19.50	72%	11.0%	6.00
58%	58%	31.9%	38.40	5.40	3.40	1.30	7.15	38%	47.5%	7.00
81%	80%	12.0%	19.90	7.15	3.25	2.62	27.25	80%	12.0%	8.50
14%	NMF	NMF	7.75	1.55	0.50	0.18	7.00	NMF	NMF	2.45
42%	42%	7.6%	22.45	4.35	0.90	0.60	15.90	67%	5.5%	6.65
average	59%	14%								
rmonic mean	56%	11%								
median	58%	11.5%								

STOCK PRICE

Washington State Department of Revenue

2021 Assessment Year

Power Industry

41.26
2020 Year En

AES	aes								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2020	22.91	23.56	22.83	23.5	23.35	4,316,400			23.35
Exelon	exc								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2020	41.95	42.28	41.71	42.22	41.81	3,248,400			41.81
NextEra	nee								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2020	75.9	77.19	75.66	77.15	76.75	4,119,400			76.75
NRG Energy	nrg								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2020	36.36	37.64	36.36	37.55	37.25	2,630,000			37.25
Southern Co	so								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2020	60.58	61.48	60.45	61.43	60.79	2,417,300			60.79
TransAlta	tac								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2020	7.57	7.65	7.55	7.59	7.59	209,800			7.59
Vistra Energy	vst								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2020	19.56	19.75	19.4	19.66	19.66	2,653,800			19.66

Source:

finance.yahoo.com

Historical Stock Quotes

IMPLIED PREMIUMS FOR US MARKET

Updated January 2021

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

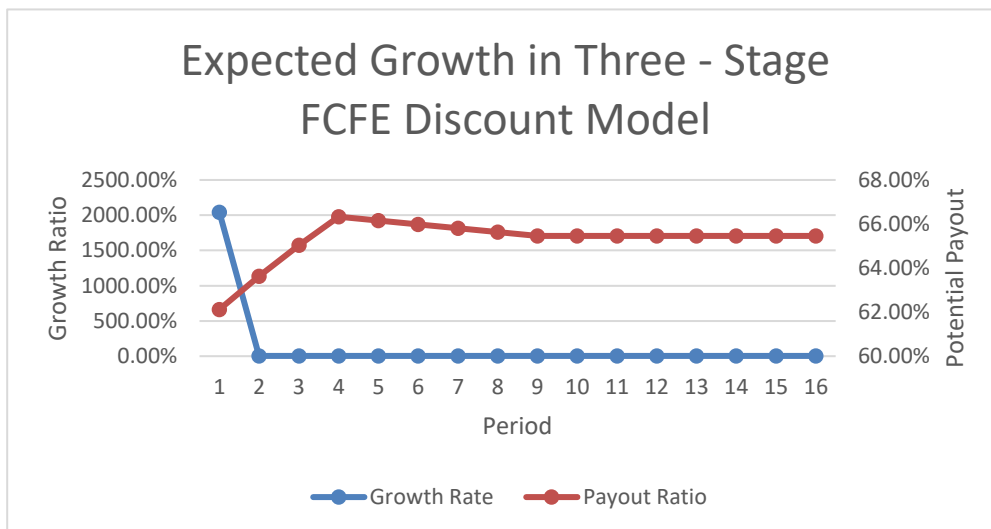
Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Ends + Buy	Inge in Earn	Inge in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	Boothed Grod	Premium	t Growth	Esed Premium (
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%			
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	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	AES Corp	3.80%	GDP
Ticker	aes	17.0	Industry P/E
		55.0%	Target Dividend Payout Ratio
		11.0%	Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		18571.43%	-18471.43%	0.07			(23.35)
Stage 1	1	#####	37.88%	62.12%	1.50	0.93		0.93
	2	4.17%	36.36%	63.64%	1.56	0.99		0.99
	3	4.00%	34.97%	65.03%	1.63	1.06		1.06
	4	3.85%	33.67%	66.33%	1.69	1.12		1.12
	5	3.70%	33.85%	66.15%	1.75	1.16		1.16
Stage 2	6	3.72%	34.02%	65.98%	1.82	1.20		1.20
	7	3.74%	34.20%	65.80%	1.88	1.24		1.24
	8	3.76%	34.37%	65.63%	1.95	1.28		1.28
	9	3.78%	34.55%	65.45%	2.03	1.33		1.33
	10	3.80%	34.55%	65.45%	2.10	1.38	37.14	38.52
Stage 3	11+	3.80%	34.55%	65.45%	2.18	1.43		

$K_e = 8.79%$

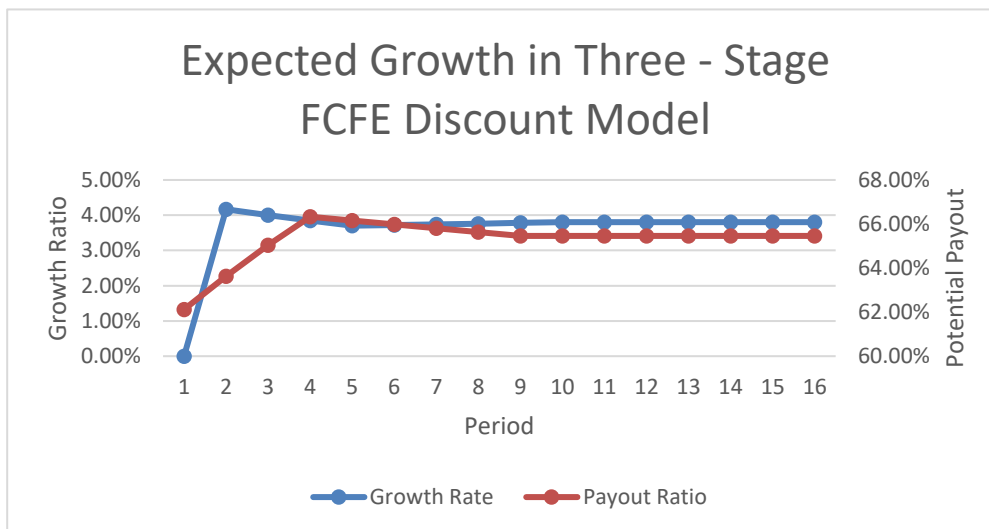


Three Stage Free Cash Flow to Equity Discount Model

Company **Exelon Corp** **3.80%** GDP
 Ticker **exc** **17.0** Industry P/E
55.0% Target Dividend Payout Ratio
11.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		0.00%	100.00%	3.00			(41.81)
	1	0.00%	37.88%	62.12%	3.00	1.86		1.86
	2	4.17%	36.36%	63.64%	3.13	1.99		1.99
Stage 1	3	4.00%	34.97%	65.03%	3.25	2.11		2.11
	4	3.85%	33.67%	66.33%	3.38	2.24		2.24
	5	3.70%	33.85%	66.15%	3.50	2.32		2.32
	6	3.72%	34.02%	65.98%	3.63	2.40		2.40
	7	3.74%	34.20%	65.80%	3.77	2.48		2.48
Stage 2	8	3.76%	34.37%	65.63%	3.91	2.56		2.56
	9	3.78%	34.55%	65.45%	4.06	2.65		2.65
	10	3.80%	34.55%	65.45%	4.21	2.76	74.28	77.04
Stage 3	11+	3.80%	34.55%	65.45%	4.37	2.86		

$K_e = 10.23\%$

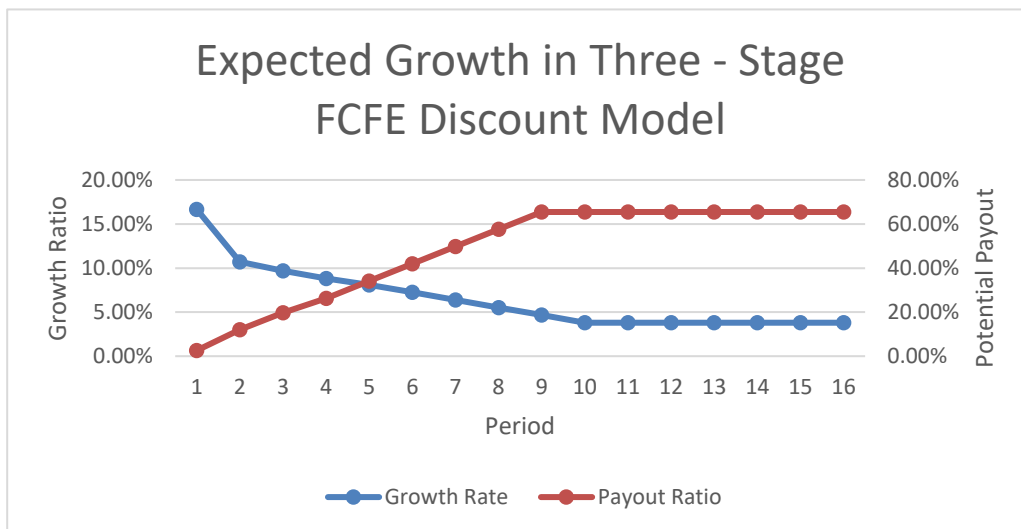


Three Stage Free Cash Flow to Equity Discount Model

Company **NextEra Energy** 3.80% GDP
 Ticker **nee** 17.0 Industry P/E
 55.0% Target Dividend Payout Ratio
 11.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		151.52%	-51.52%	2.10			(76.75)
Stage 1	1	16.67%	97.40%	2.60%	2.45	0.06		0.06
	2	10.71%	87.98%	12.02%	2.71	0.33		0.33
	3	9.68%	80.21%	19.79%	2.98	0.59		0.59
	4	8.82%	73.71%	26.29%	3.24	0.85		0.85
	5	8.11%	65.88%	34.12%	3.50	1.19		1.19
Stage 2	6	7.25%	58.04%	41.96%	3.75	1.57		1.57
	7	6.38%	50.21%	49.79%	3.99	1.99		1.99
	8	5.52%	42.38%	57.62%	4.21	2.43		2.43
	9	4.66%	34.55%	65.45%	4.41	2.89		2.89
	10	3.80%	34.55%	65.45%	4.58	3.00	80.78	83.78
Stage 3	11+	3.80%	34.55%	65.45%	4.75	3.11		

$K_e = 2.33\%$

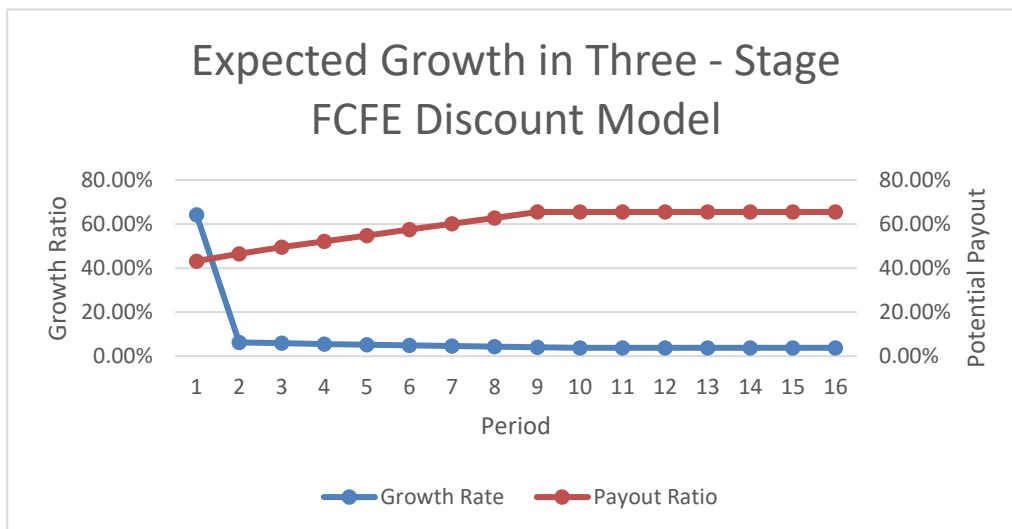


Three Stage Free Cash Flow to Equity Discount Model

Company **NRG Energy Inc** **3.80%** GDP
 Ticker **nrg** **17.0** Industry P/E
55.0% Target Dividend Payout Ratio
11.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		584.10%	-484.10%	2.07			(37.25)
Stage 1	1	64.25%	56.82%	43.18%	3.40	1.47		1.47
	2	6.25%	53.48%	46.52%	3.61	1.68		1.68
	3	5.88%	50.51%	49.49%	3.83	1.89		1.89
	4	5.56%	47.85%	52.15%	4.04	2.11		2.11
	5	5.26%	45.19%	54.81%	4.25	2.33		2.33
Stage 2	6	4.97%	42.53%	57.47%	4.46	2.56		2.56
	7	4.68%	39.87%	60.13%	4.67	2.81		2.81
	8	4.39%	37.21%	62.79%	4.87	3.06		3.06
	9	4.09%	34.55%	65.45%	5.07	3.32		3.32
	10	3.80%	34.55%	65.45%	5.27	3.45	92.94	96.39
Stage 3	11+	3.80%	34.55%	65.45%	5.47	3.58		

K_e = 13.80%

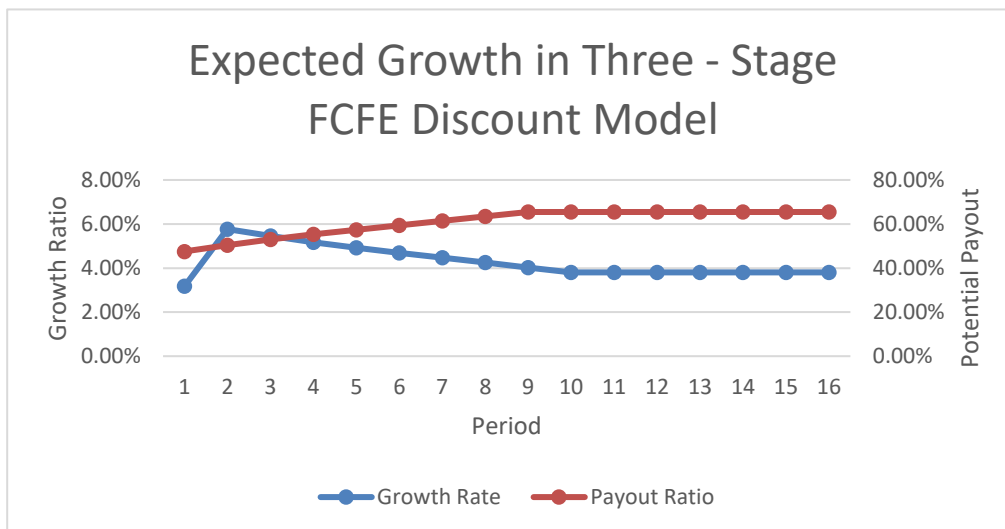


Three Stage Free Cash Flow to Equity Discount Model

Company **Southern Co** **3.80%** GDP
 Ticker **so** **17.0** Industry P/E use median
55.0% Target Dividend Payout Ratio
11.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		28.86%	71.14%	3.15			(60.79)
	1	3.17%	52.45%	47.55%	3.25	1.55		1.55
	2	5.77%	49.59%	50.41%	3.44	1.73		1.73
Stage 1	3	5.45%	47.02%	52.98%	3.63	1.92		1.92
	4	5.17%	44.71%	55.29%	3.81	2.11		2.11
	5	4.92%	42.68%	57.32%	4.00	2.29		2.29
	6	4.69%	40.64%	59.36%	4.19	2.49		2.49
	7	4.47%	38.61%	61.39%	4.38	2.69		2.69
Stage 2	8	4.25%	36.58%	63.42%	4.56	2.89		2.89
	9	4.02%	34.55%	65.45%	4.74	3.11		3.11
	10	3.80%	34.55%	65.45%	4.92	3.22	86.90	90.12
Stage 3	11+	3.80%	34.55%	65.45%	5.11	3.35		

K_e = 6.90%

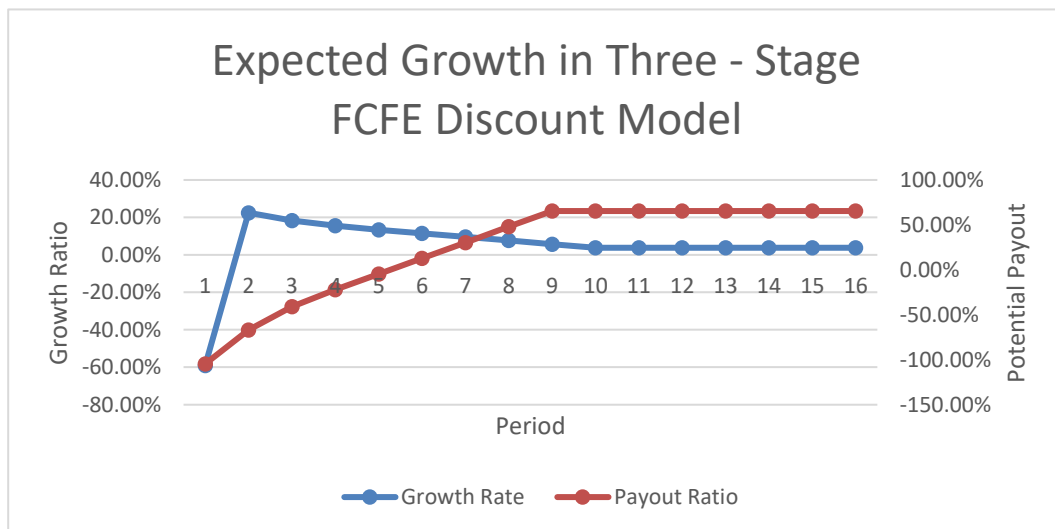


Three Stage Free Cash Flow to Equity Discount Model

Company **TransAlta Corp** **3.80%** GDP
 Ticker **ta.to** **17.0** Industry P/E
55.0% Target Dividend Payout Ratio
11.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-536.51%	636.51%	1.22			(7.59)
	1	-59.02%	204.55%	-104.55%	0.50	(0.52)		-0.52
	2	22.50%	166.98%	-66.98%	0.61	(0.41)		-0.41
Stage 1	3	18.37%	141.07%	-41.07%	0.73	(0.30)		-0.30
	4	15.52%	122.12%	-22.12%	0.84	(0.19)		-0.19
	5	13.43%	104.60%	-4.60%	0.95	(0.04)		-0.04
	6	11.51%	87.09%	12.91%	1.06	0.14		0.14
	7	9.58%	69.57%	30.43%	1.16	0.35		0.35
Stage 2	8	7.65%	52.06%	47.94%	1.25	0.60		0.60
	9	5.73%	34.55%	65.45%	1.32	0.86		0.86
	10	3.80%	34.55%	65.45%	1.37	0.90	24.20	25.10
Stage 3	11+	3.80%	34.55%	65.45%	1.42	0.93		

Ke = 12.17%



Three Stage Free Cash Flow to Equity Discount Model

Company **Vistra Energy Corp** **3.80%** GDP
 Ticker **vst** **17.0** Industry P/E
55.0% Target Dividend Payout Ratio
11.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-279.72%	379.72%	1.30			(19.66)
	1	-30.77%	404.04%	-304.04%	0.90	(2.74)		-2.74
	2	44.44%	279.72%	-179.72%	1.30	(2.34)		-2.34
Stage 1	3	30.77%	213.90%	-113.90%	1.70	(1.94)		-1.94
	4	23.53%	173.16%	-73.16%	2.10	(1.54)		-1.54
	5	19.05%	145.44%	-45.44%	2.50	(1.14)		-1.14
	6	16.00%	117.71%	-17.71%	2.90	(0.51)		-0.51
	7	12.95%	89.99%	10.01%	3.28	0.33		0.33
Stage 2	8	9.90%	62.27%	37.73%	3.60	1.36		1.36
	9	6.85%	34.55%	65.45%	3.85	2.52		2.52
	10	3.80%	34.55%	65.45%	3.99	2.61	70.45	73.06
Stage 3	11+	3.80%	34.55%	65.45%	4.14	2.71		

K_e = 11.03%

