

# COST OF CAPITAL STUDY

**YIELD CAPITALIZATION**

**2022 Assessment Year**

APPENDIX C

## Power Industry

<b>EQUITY RATE</b>						<b>9.00%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>							PAGE
	CAPM Ex Ante		5.95%				4
<b>DIVIDEND GROWTH MODELS Single Stage</b>							
	Value Line, based on Dividends Growth		11.00%				5
	Value Line, based on Earnings Growth		9.25%				6
	Value Line, based on Return on Equity		8.50%				7
<b>FCFE GROWTH MODEL Multi Stage</b>							8
				<b>RANGE</b>	5.95-11%		
<b>DEBT RATE</b>						<b>3.50%</b>	9
<b>MARKET CAPITAL STRUCTURE</b>							
	Equity	55%	x	9.00%	=	4.95%	3
	Debt	45%	x	3.50%	=	1.58%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	1.58%	
						<u>1.20%</u>	
<b>WEIGHTED AVERAGE COST OF CAPITAL</b>						<b>6.15%</b>	

# SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2022 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	1.10	B	NMF	256.9%	3,524,500,000	16.9%			17,332,000,000	83.1%	20,856,500,000
Exelon Corp	exc	0.95	B++	NMF	3.7%	33,369,000,000	48.3%			35,659,000,000	51.7%	69,028,000,000
NextEra Energy Inc	nee	0.95	A+	43.2	1.7%	37,198,850,000	43.6%			48,092,000,000	56.4%	85,290,850,000
NRG Energy Inc	nrg	1.15	B+	4.3	3.0%	nmf		230,000,000		7,966,000,000		nmf
Southern Co	so	0.95	A	19.6	3.9%	28,622,500,000	36.8%	291,000,000	0.4%	48,843,000,000	62.8%	77,756,500,000
Vistra Corp	vst	1.10	B+	NMF	nmf	8,293,157,600	44.2%			10,477,000,000	55.8%	18,770,157,600
<b>Mean</b>		<b>1.03</b>		<b>22.4</b>	<b>53.8%</b>	<b>22,201,601,520</b>	<b>38.0%</b>		<b>0.4%</b>	<b>28,061,500,000</b>	<b>62.0%</b>	
<b>Harmonic Mean</b>		<b>1.03</b>							<b>0.4%</b>		<b>60.3%</b>	
<b>Weighted Mean</b>						<b>111,008,007,600</b>	<b>40.9%</b>	<b>521,000,000</b>	<b>0.2%</b>	<b>168,369,000,000</b>	<b>62.0%</b>	<b>271,702,007,600</b>
<b>Median</b>		<b>1.03</b>			<b>3.7%</b>				<b>0.4%</b>		<b>56.4%</b>	

# SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2022 Assessment Year

Power Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
AES Corp	aes	24.13	665,000,000	16,046,450,000	44.6%	-		19,909,000,000	55.4%	35,955,450,000
Exelon Corp	exc	40.86	980,000,000	40,042,800,000	47.9%	-		43,592,000,000	52.1%	83,634,800,000
NextEra Energy Inc	nee	92.85	1,963,000,000	182,264,550,000	76.1%	-		57,290,000,000	23.9%	239,554,550,000
NRG Energy Inc	nrg	42.70	242,000,000	10,333,400,000	54.7%	230,000,000	1.2%	8,327,000,000	44.1%	18,890,400,000
Southern Co	so	67.88	1,070,000,000	72,631,600,000	55.9%	291,000,000	0.2%	57,100,000,000	43.9%	130,022,600,000
Vistra Corp	vst	22.77	469,070,000	10,680,723,900	49.3%	-		10,986,000,000	50.7%	21,666,723,900
<b>Mean</b>					<b>54.7%</b>				<b>45.0%</b>	
<b>Harmonic Mean</b>					<b>53.1%</b>				<b>41.6%</b>	
<b>Weighted Mean</b>				<b>331,999,523,900</b>	<b>62.7%</b>	<b>521,000,000</b>	<b>0.1%</b>	<b>197,204,000,000</b>	<b>37.2%</b>	<b>529,724,523,900</b>
<b>Median</b>					<b>52.0%</b>				<b>47.4%</b>	
<b>Std Dev</b>					<b>11.3%</b>				<b>11.3%</b>	
<b>Coefficient of Variation</b>					<b>20.6%</b>				<b>25.1%</b>	
<b>Target</b>					<b>55%</b>				<b>45%</b>	<b>100%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2022 Assessment Year

**Ex Ante**  
**Ke = Rf + B (Rp)**

<b>Ke = Cost of Equity</b>		<b>5.95%</b>
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Rm =	rate of return	5.76%
Rf =	risk free rate	1.90%
Rp =	risk premium	3.86%
B =	Beta	1.05

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<b>Rp = Risk Premium</b>		<b>3.86%</b>
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to above

<b>Shannon Pratt and Roger Grabowski</b>	3.50% - 6.00%	
Cost of Capital, App & Exam, 5th Ed, 2014		
<b>Dr. Aswath Damodaran</b>	4.24%	chart page 15
<a href="http://pages.stern.nyu.edu/~adamodar/">http://pages.stern.nyu.edu/~adamodar/</a>	3.86%	adjusted for Rf
2022 Implied Premium		

<b>Rf = Risk Free Rate</b>		<b>1.90%</b>
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**Value Line Investment Survey, Selected Yields January 7, 2022, page 2089**  
as of 12-27-21

US Treasury Securities year end data		
	5 year	1.26%
	10 year	1.48%
	30 year	1.88%
	30 year Zero	1.90%

**Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>)**  
As of 12-31-21

Treasury Constant Maturities		
	5 year	1.26%
	10 year	<b>1.52%</b>
	<b>20 year</b>	1.94%
	30 year	1.90%
	<b>20 year TIPS</b>	<u>-0.63%</u>
	30 year TIPS	<u>-0.44%</u>

<b>Inflation</b>		<b>2.34%</b>
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**Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>)**  
As of 12-31-21

Inflation Indication from Treasury Inflation-Protected Securities		
	20 year	2.57%
	30 year	2.34%

**Federal Reserve Bank of Philadelphia**

The Livingston Survey December 17, 2021, page 8		
		2.40%
<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>Gross Domestic Product (GDP) Nominal</b>		<b>4.14%</b>
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real GDP + inflation est

**Federal Reserve Projected Long Run Real GDP Growth**

Median Projection Value From Dec 15, 2021 Report, page 2		
		1.80%
<a href="https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20211215.pdf">https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20211215.pdf</a>		

**Congressional Budget Office Real GDP Economic Projections**

The Budget and Economic Outlook 2021-2031		
	2021-2025	1.90%
	2026-2031	1.70%
<a href="https://www.cbo.gov/system/files/2021-02/56970-Outlook.pdf">https://www.cbo.gov/system/files/2021-02/56970-Outlook.pdf</a>		

Table 2.3, pg 15

**Federal Reserve Bank of Philadelphia**

		2.10%
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## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue  
2022 Assessment Year  
Power Industry

### Based on Dividend Growth

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

$K_e$  = Cost of Equity  
 $D_1$  = 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
AES Corp	aes	24.130	0.68	2.82%	8.00%	10.82%
Exelon Corp	exc	40.860	1.35	3.30%	NMF	NMF
NextEra Energy Inc	nee	92.850	1.70	1.83%	10.00%	11.83%
NRG Energy Inc	nrg	42.700	1.36	3.19%	11.50%	14.69%
Southern Co	so	67.880	2.70	3.98%	3.00%	6.98%
Vistra Corp	vst	22.770	0.68	2.99%	10.50%	13.49%
<b>Mean</b>						<b>11.56%</b>
<b>Harmonic Mean</b>						<b>10.81%</b>
<b>Median</b>						<b>11.83%</b>
<b>Max</b>						<b>14.69%</b>
<b>Min</b>						<b>6.98%</b>
<b>Std Dev</b>						<b>2.96%</b>
<b>Coefficient of Variation</b>						<b>25.63%</b>
<b>Say</b>						<b>11.00%</b>

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2022 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	24.130	0.68	2.82%	14.00%	16.82%
Exelon Corp	exc	40.860	1.35	3.30%	NMF	NMF
NextEra Energy Inc	nee	92.850	1.70	1.83%	11.00%	12.83%
NRG Energy Inc	nrg	42.700	1.36	3.19%	-10.50%	NMF
Southern Co	so	67.880	2.70	3.98%	5.50%	9.48%
Vistra Corp	vst	22.770	0.68	2.99%	NMF	NMF
<b>Mean</b>						<b>13.04%</b>
<b>Harmonic Mean</b>						<b>12.35%</b>
<b>Median</b>						<b>12.83%</b>
<b>Max</b>						<b>16.82%</b>
<b>Min</b>						<b>9.48%</b>
<b>Std Dev</b>						<b>3.67%</b>
<b>Coefficient of Variation</b>						<b>28.18%</b>
<b>Say</b>						<b>9.25%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2022 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/Po)

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Expected Earnings (E1)	Dividend Yield (D1/Po)	Retained Earnings (b)	ROE (E1/Po)	Growth (b*ROE)	$K_e$ Dividends	$K_e$ Earnings
AES Corp	aes	24.130	0.68	1.00	2.82%	NMF	4.14%	NMF	NMF	NMF
Exelon Corp	exc	40.860	1.35	2.25	3.30%	44.0%	5.51%	2.42%	5.73%	7.93%
NextEra Energy Inc	nee	92.850	1.70	2.80	1.83%	15.0%	3.02%	0.45%	2.28%	3.47%
NRG Energy Inc	nrg	42.700	1.36	4.70	3.19%	89.0%	11.01%	9.80%	12.98%	20.80%
Southern Co	so	67.880	2.70	3.60	3.98%	25.0%	5.30%	1.33%	5.30%	6.63%
Vistra Corp	vst	22.770	0.68	3.30	2.99%	NMF	14.49%	NMF	NMF	NMF
<b>Mean</b>									<b>6.57%</b>	<b>9.71%</b>
<b>Harmonic Mean</b>									<b>4.55%</b>	<b>6.52%</b>
<b>Median</b>									<b>5.52%</b>	<b>7.28%</b>
<b>Std Dev</b>									<b>4.54%</b>	<b>7.63%</b>
<b>Coefficient of Variation</b>									<b>69.04%</b>	<b>78.61%</b>

**Say 8.50%**

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

Washington State Department of Revenue

2022 Assessment Year

Power Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
AES Corp	aes	24.13	1.00	24.13	68.00%	18.50%	7.05%
Exelon Corp	exc	40.86	2.25	18.16	61.00%	9.50%	6.39%
NextEra Energy Inc	nee	92.85	2.80	33.16	67.00%	12.50%	2.18%
NRG Energy Inc	nrg	42.70	4.70	9.09	29.00%	NMF	15.81%
Southern Co	so	67.88	3.60	18.86	76.00%	13.00%	7.38%
Vistra Corp	vst	22.77	3.30	6.90	21.00%	16.50%	19.95%
<b>Mean</b>				<b>18.38</b>	<b>53.67%</b>	<b>14.00%</b>	<b>9.79%</b>
<b>Harmonic Mean</b>				<b>13.80</b>	<b>42.47%</b>	<b>13.27%</b>	<b>5.96%</b>
<b>Median</b>				<b>18.51</b>	<b>64.00%</b>	<b>13.00%</b>	<b>7.21%</b>
<b>Industry Summary</b>				<b>17.00</b>	<b>51.00%</b>	<b>13.00%</b>	
						<b>Say</b>	<b>8.50%</b>



## SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

Washington State Department of Revenue

2022 Assessment Year

Power Industry

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

### Mergent's Bond Record January 2022 page 90

Corporate	Aaa	Aa	A	Baa
October	2.68%	2.86%	3.02%	3.35%
November	2.62%	2.77%	2.95%	3.28%
December	2.71%	2.82%	3.04%	3.37%
<b>4th Qtr Average</b>	<b>2.67%</b>	<b>2.82%</b>	<b>3.00%</b>	<b>3.33%</b>
Public Utilities		Aa	A	Baa
October		2.99%	3.09%	3.32%
November		2.91%	3.02%	3.25%
December		3.01%	3.13%	3.36%
<b>4th Qtr Average</b>		<b>2.97%</b>	<b>3.08%</b>	<b>3.31%</b>
Industrials	Aaa	Aa	A	Baa
October	2.68%	2.73%	2.96%	3.38%
November	2.62%	2.63%	2.88%	3.30%
December	2.71%	2.62%	2.95%	3.37%
<b>4th Qtr Average</b>	<b>2.67%</b>	<b>2.66%</b>	<b>2.93%</b>	<b>3.35%</b>

<b>Bloomberg S&amp;P Bond Yields</b>	<b>BBB</b>	<b>Corporate</b>	<b>Utilities</b>
		3.24%	3.31%
<b>Capital IQ Bond Yield</b>	<b>BBB</b>	<b>Corporate</b>	<b>Energy</b>
		3.79%	4.07%

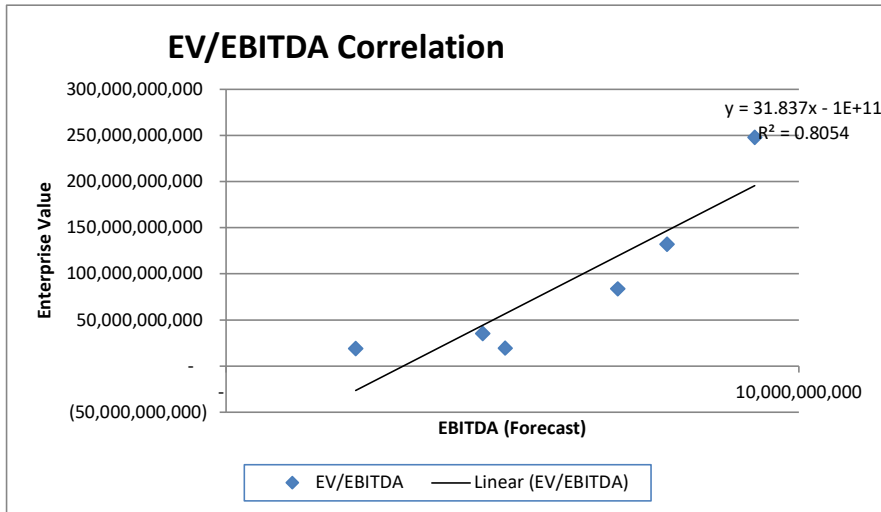
**Debt Yield Rate** **3.50%**

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# SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2022 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	24.13	35,331,450,000	3,612,000,000	24.00%	4,478,880,000	7.89	10,041,500,000	3.52	1,795,500,000	696,815,000	14.18
Exelon Corp	exc	40.86	83,634,800,000	10,095,000,000	-32.29%	6,835,156,250	12.24	17,444,000,000	4.79	6,370,000,000	1,525,720,000	10.59
NextEra Energy Inc	nee	92.85	247,703,550,000	7,220,000,000	27.85%	9,230,632,911	26.83	18,550,350,000	13.35	9,913,150,000	2,005,150,000	20.78
NRG Energy Inc	nrg	42.70	18,890,400,000	4,567,000,000	-50.54%	2,258,946,237	8.36	22,784,300,000	0.83	1,669,800,000	291,445,000	9.63
Southern Co	so	67.88	131,978,600,000	7,487,000,000	2.78%	7,694,972,222	17.15	24,128,500,000	5.47	7,918,000,000	1,998,500,000	13.31
Vistra Corp	vst	22.77	19,626,723,900	606,000,000	703.92%	4,871,764,706	4.03	15,666,938,000	1.25	3,846,374,000	384,510,000	4.64
<b>6</b>		<b>Mean</b>					<b>12.75</b>		<b>4.87</b>			<b>12.19</b>
		<b>Harmonic Mean</b>					<b>8.93</b>		<b>2.18</b>			<b>9.88</b>
		<b>Median</b>					<b>10.30</b>		<b>4.16</b>			<b>11.95</b>
		<b>Std Dev</b>					<b>8.21</b>		<b>4.55</b>			<b>5.39</b>
Source:		<b>Say</b>					<b>10.00</b>		<b>3.50</b>			<b>11.50</b>
Value Line & Morning Star												



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast	6.07	Low Harmonic Mean
Vistra Corp	4.03	<b>6.76</b>	Low Average
AES Corp	7.89	<b>7.89</b>	Low Median
NRG Energy Inc	8.36	<b>6.50</b>	Say
Exelon Corp	12.24	<b>16.92</b>	High Harmonic Mean
Southern Co	17.15	<b>18.74</b>	High Average
NextEra Energy Inc	26.83	<b>17.15</b>	High Median
		<b>15.50</b>	Say

## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2022 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	24.13	61.00	252.8%	1.00	4.1%	1.05	4.4%	2.70	11.2%
Exelon Corp	exc	40.86	2.60	6.4%	2.25	5.5%	9.60	23.5%	6.50	15.9%
NextEra Energy Inc	nee	92.85	1.81	1.9%	2.80	3.0%	3.95	4.3%	5.05	5.4%
NRG Energy Inc	nrg	42.70	8.93	20.9%	4.70	11.0%	13.95	32.7%	6.90	16.2%
Southern Co	so	67.88	3.50	5.2%	3.60	5.3%	7.20	10.6%	7.40	10.9%
Vistra Corp	vst	22.77	2.69	11.8%	3.30	14.5%	1.02	4.5%	8.20	36.0%
<b>Mean</b>			<b>49.8%</b>		<b>7.2%</b>		<b>13.3%</b>		<b>15.9%</b>	
<b>Harmonic Mean</b>			<b>6.0%</b>		<b>5.4%</b>		<b>7.0%</b>		<b>11.6%</b>	
<b>Median</b>			<b>9.1%</b>		<b>5.4%</b>		<b>7.5%</b>		<b>13.5%</b>	
<b>Max</b>			<b>252.8%</b>		<b>14.5%</b>		<b>32.7%</b>		<b>36.0%</b>	
<b>Min</b>			<b>1.9%</b>		<b>3.0%</b>		<b>4.3%</b>		<b>5.4%</b>	
<b>Std Dev</b>			<b>99.7%</b>		<b>4.5%</b>		<b>12.1%</b>		<b>10.6%</b>	
<b>Coefficient of Variation</b>			<b>200.0%</b>		<b>62.0%</b>		<b>90.5%</b>		<b>66.5%</b>	
<b>Say</b>			<b>7.0%</b>		<b>5.5%</b>		<b>12.0%</b>		<b>15.0%</b>	

Source: Value Line / yr end stock price

## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2022 Assessment Year

Power Industry

Company	Ticker	Stock Price	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Book Value	Multiple
AES Corp	aes	24.13	16.75	1.44	1.05	22.98	61.00	NMF	5.30	4.55
Exelon Corp	exc	40.86	35.70	1.14	9.60	4.26	2.60	15.72	34.05	1.20
NextEra Energy I	nee	92.85	8.70	10.67	3.95	23.51	1.81	51.30	18.95	4.90
NRG Energy Inc	nrg	42.70	111.55	0.38	13.95	3.06	8.93	4.78	17.50	2.44
Southern Co	so	67.88	21.50	3.16	7.20	9.43	3.50	19.39	26.75	2.54
Vistra Corp	vst	22.77	25.75	0.88	1.02	22.32	2.69	8.46	17.68	1.29
<b>Mean</b>				<b>2.95</b>	<b>14.26</b>		<b>19.93</b>		<b>2.82</b>	
<b>Harmonic Mean</b>				<b>1.05</b>	<b>7.51</b>		<b>10.82</b>		<b>2.11</b>	
<b>Median</b>				<b>1.29</b>	<b>15.88</b>		<b>15.72</b>		<b>2.49</b>	
<b>Max</b>				<b>10.67</b>	<b>23.51</b>		<b>51.30</b>		<b>4.90</b>	
<b>Min</b>				<b>0.38</b>	<b>3.06</b>		<b>4.78</b>		<b>1.20</b>	
<b>Say</b>				<b>2.00</b>	<b>12.50</b>		<b>17.50</b>		<b>2.50</b>	

# DATA INPUT

Washington State Department of Revenue

2022 Assessment Year

Power Industry

Guideline Companies		Historic Figures (2021)													
Name	Ticker	Stock Price 12/31/21	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	Calculated Debt
		Yahoo	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	Formula
AES Corp	aes	24.13	1.10	B	16.75	1.05	61.00	62.00	5.30	665,000,000	17,332,000,000	NMF	3.0%	31.0%	107.24%
Exelon Corp	exc	40.86	0.95	B++	35.70	9.60	2.60	1.53	34.05	980,000,000	35,659,000,000	NMF	3.3%		112.65%
NextEra Energy Inc	nee	92.85	0.95	A+	8.70	3.95	1.81	1.54	18.95	1,963,000,000	48,092,000,000	43.2	2.2%		108.62%
NRG Energy Inc	nrg	42.70	1.15	B+	111.55	13.95	8.93	1.28	17.50	242,000,000	7,966,000,000	4.3	3.7%	18.5%	103.57%
Southern Co	so	67.88	0.95	A	21.50	7.20	3.50	2.62	26.75	1,070,000,000	48,843,000,000	19.6	3.9%		109.60%
Vistra Corp	vst	22.77	1.10	B+	25.75	1.02	2.69	0.60	17.68	469,070,000	10,477,000,000	NMF	3.0%	2.6%	102.38%
<b>Average</b>												22.4	average		
<b>Harmonic Mean</b>												9.8	harmonic mean		hai
<b>Median</b>												19.6	median		

VL: Updated 3/18/2022

			Projected (Next Year) 2022							
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 25-27
Formula	V L	V L	V L	V L	V L	V L	V L	V L	V L	V L
102%	NMF	NMF	15.10	2.70	1.00	0.68	5.40	68%	18.5%	3.45
59%	56%	7.5%	17.80	6.50	2.25	1.35	23.85	61%	9.5%	7.50
85%	85%	9.5%	9.45	5.05	2.80	1.70	20.65	67%	12.5%	6.50
14%	11%	68.0%	94.15	6.90	4.70	1.36	18.15	29%	26.0%	7.35
75%	75%	13.0%	22.55	7.40	3.60	2.70	27.65	76%	13.0%	9.00
22%	NMF	NMF	33.40	8.20	3.30	0.68	19.85	21%	16.5%	8.85
average	57%	25%								
rmonic mean	30%	12%								
median	66%	11.3%								

## STOCK PRICE

Washington State Department of Revenue

2022 Assessment Year

Power Industry

**53.68**  
**2021 Year En**

AES	aes								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	24.08	24.43	24.01	24.3	24.13	2,491,100			<b>24.13</b>
Exelon	exc								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	40.59	41.38	40.59	41.2	40.86	5,549,537			<b>40.86</b>
NextEra	nee								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	92.58	93.73	92.5	93.36	92.85	4,811,800			<b>92.85</b>
NRG Energy	nrg								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	42.79	43.23	42.7	43.08	42.7	944,500			<b>42.70</b>
Southern Co	so								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	68.26	68.88	68.16	68.58	67.88	3,609,700			<b>67.88</b>
Vistra Energy	vst								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	22.3	22.87	22.24	22.77	22.77	3,243,500			<b>22.77</b>

Source:

finance.yahoo.com

Historical Stock Quotes

# IMPLIED PREMIUMS FOR US MARKET

Updated January 2022

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Ends + Buy/In	Inge in Earn	Inge in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	toothed Grod	Premium	t Growth	Esed Premium (
1960	5.34%	3.41%	58.11	3.10	1.98										
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.66%	2.76%	0.10%	2.45%			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%

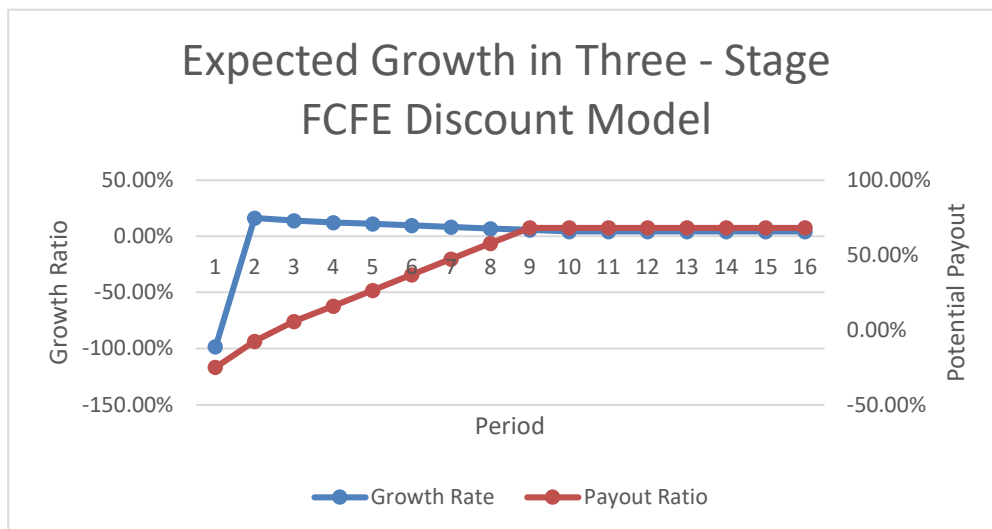


### Three Stage Free Cash Flow to Equity Discount Model

Company **AES Corp** 4.14% GDP  
 Ticker **aes** 17.0 Industry P/E  
 51.0% Target Dividend Payout Ratio  
 13.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-756.62%	856.62%	61.00			(24.13)
Stage 1	1	-98.36%	125.00%	-25.00%	1.00	####		-0.25
	2	16.25%	107.53%	-7.53%	1.16	####		-0.09
	3	13.98%	94.34%	5.66%	1.33	0.07		0.07
	4	12.26%	84.03%	15.97%	1.49	0.24		0.24
	5	10.92%	73.60%	26.40%	1.65	0.44		0.44
Stage 2	6	9.57%	63.16%	36.84%	1.81	0.67		0.67
	7	8.21%	52.72%	47.28%	1.96	0.92		0.92
	8	6.85%	42.28%	57.72%	2.09	1.21		1.21
	9	5.50%	31.85%	68.15%	2.21	1.50		1.50
	10	4.14%	31.85%	68.15%	2.30	1.57	40.66	42.22
Stage 3	11+	4.14%	31.85%	68.15%	2.39	1.63		

**$K_e = 7.05\%$**

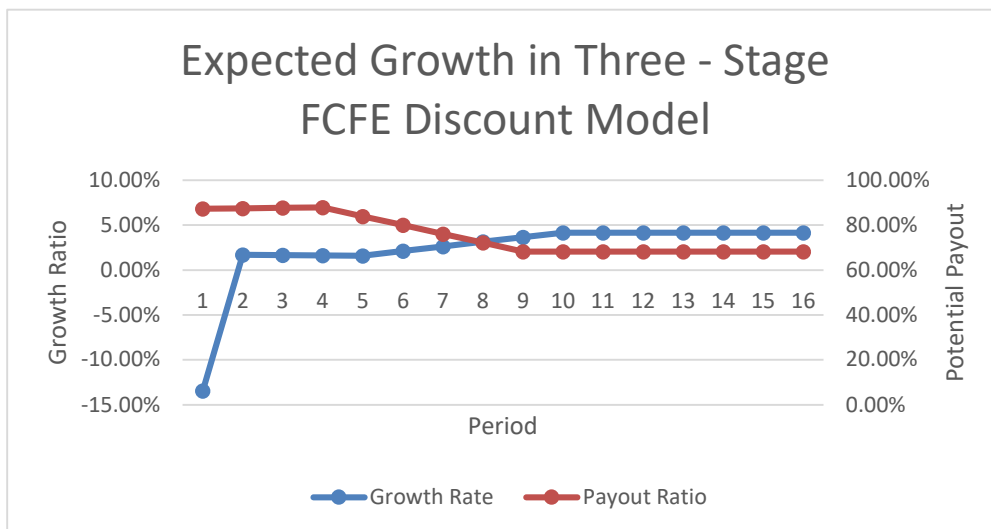


### Three Stage Free Cash Flow to Equity Discount Model

Company **Exelon Corp** 4.14% GDP  
 Ticker **exc** 17.0 Industry P/E  
 51.0% Target Dividend Payout Ratio  
 13.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-103.55%	203.55%	2.60			(40.86)
Stage 1	1	-13.46%	12.82%	87.18%	2.25	1.96		1.96
	2	1.67%	12.61%	87.39%	2.29	2.00		2.00
	3	1.64%	12.41%	87.59%	2.33	2.04		2.04
	4	1.61%	12.21%	87.79%	2.36	2.07		2.07
	5	1.59%	16.14%	83.86%	2.40	2.01		2.01
Stage 2	6	2.10%	20.06%	79.94%	2.45	1.96		1.96
	7	2.61%	23.99%	76.01%	2.51	1.91		1.91
	8	3.12%	27.92%	72.08%	2.59	1.87		1.87
	9	3.63%	31.85%	68.15%	2.69	1.83		1.83
	10	4.14%	31.85%	68.15%	2.80	1.91	49.54	51.44
Stage 3	11+	4.14%	31.85%	68.15%	2.91	1.99		

**$K_e = 6.39%$**

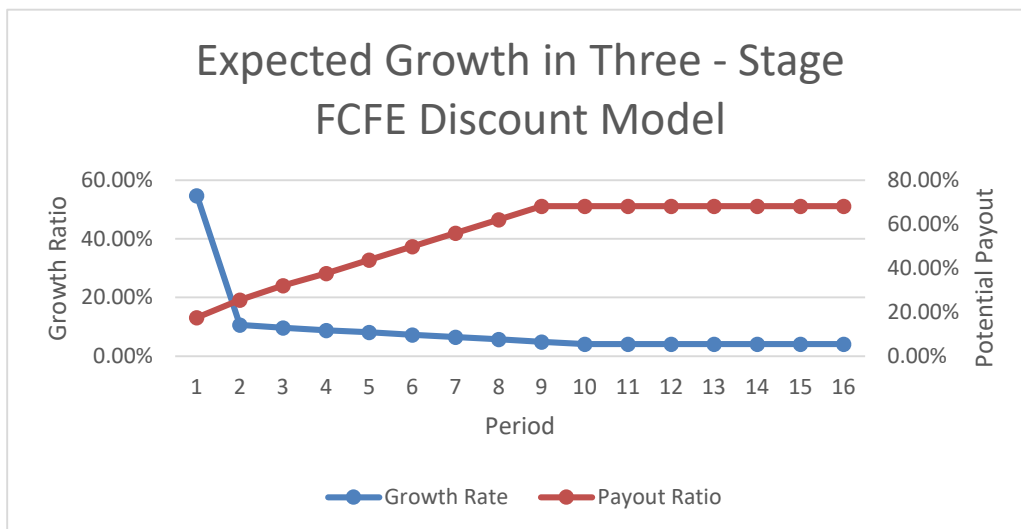


### Three Stage Free Cash Flow to Equity Discount Model

Company **NextEra Energy** 4.14% GDP  
 Ticker **nee** 17.0 Industry P/E  
 51.0% Target Dividend Payout Ratio  
 13.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		420.74%	-320.74%	<b>1.81</b>			<b>(92.85)</b>
Stage 1	1	54.70%	82.42%	17.58%	<b>2.80</b>	0.49		0.49
	2	10.71%	74.44%	25.56%	3.10	0.79		0.79
	3	9.68%	67.87%	32.13%	3.40	1.09		1.09
	4	8.82%	62.37%	37.63%	3.70	1.39		1.39
	5	8.11%	56.27%	43.73%	<b>4.00</b>	1.75		1.75
Stage 2	6	7.31%	50.16%	49.84%	4.29	2.14		2.14
	7	6.52%	44.06%	55.94%	4.57	2.56		2.56
	8	5.73%	37.95%	62.05%	4.83	3.00		3.00
	9	4.93%	31.85%	68.15%	5.07	3.46		3.46
	10	4.14%	31.85%	68.15%	5.28	3.60	93.53	97.13
Stage 3	11+	4.14%	31.85%	68.15%	5.50	3.75		

**$K_e = 2.18\%$**

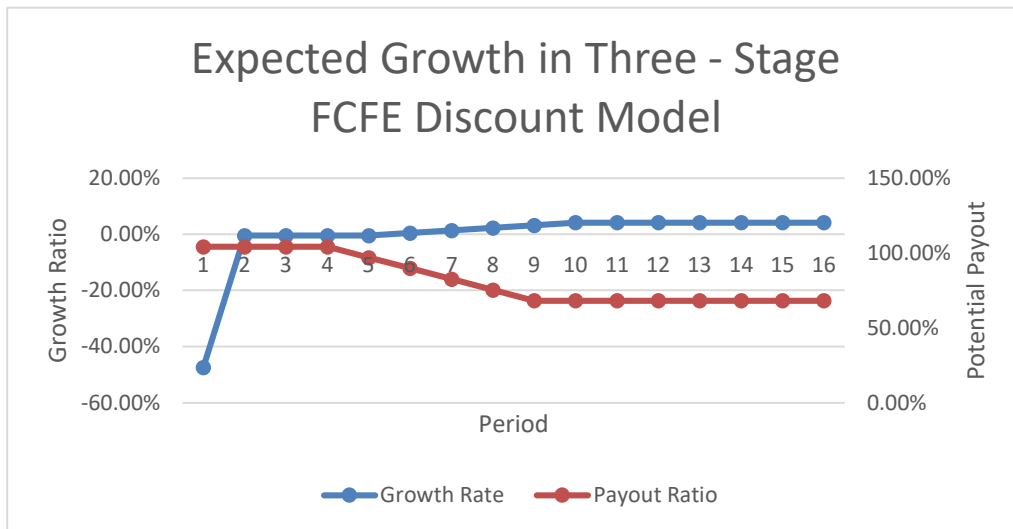


### Three Stage Free Cash Flow to Equity Discount Model

Company **NRG Energy Inc** **4.14%** GDP  
 Ticker **nrg** **17.0** Industry P/E  
**51.0%** Target Dividend Payout Ratio  
**13.0%** Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-364.37%	464.37%	<b>8.93</b>			<b>(42.70)</b>
Stage 1	1	-47.37%	-4.09%	104.09%	<b>4.70</b>	4.89		4.89
	2	-0.53%	-4.11%	104.11%	4.68	4.87		4.87
	3	-0.53%	-4.14%	104.14%	4.65	4.84		4.84
	4	-0.54%	-4.16%	104.16%	4.63	4.82		4.82
	5	-0.54%	3.04%	96.96%	<b>4.60</b>	4.46		4.46
Stage 2	6	0.40%	10.24%	89.76%	4.62	4.15		4.15
	7	1.33%	17.44%	82.56%	4.68	3.86		3.86
	8	2.27%	24.65%	75.35%	4.79	3.61		3.61
	9	3.20%	31.85%	68.15%	4.94	3.37		3.37
	10	4.14%	31.85%	68.15%	5.14	3.51	91.06	94.57
Stage 3	11+	4.14%	31.85%	68.15%	5.36	3.65		

**K<sub>e</sub> = 15.81%**

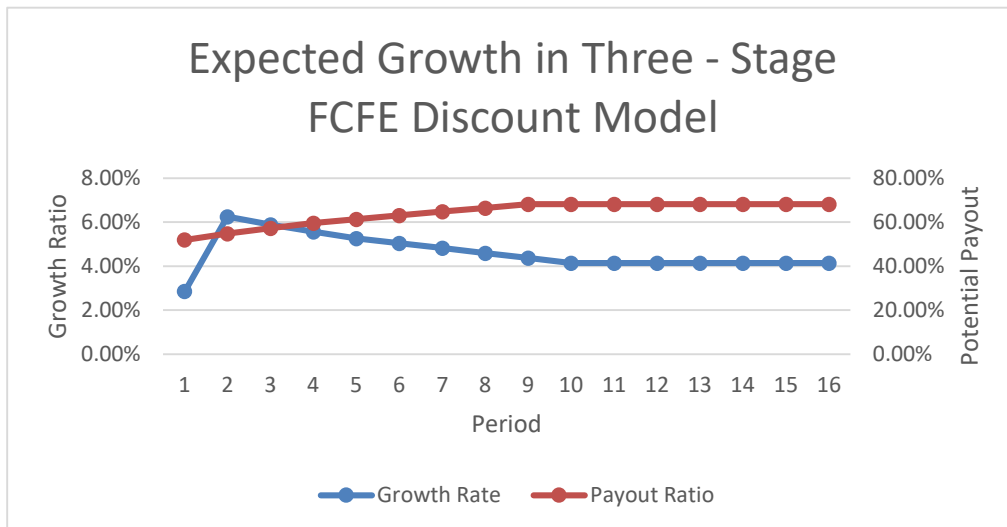


### Three Stage Free Cash Flow to Equity Discount Model

Company **Southern Co** 4.14% GDP  
 Ticker **so** 17.0 Industry P/E use median  
 51.0% Target Dividend Payout Ratio  
 13.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		21.98%	78.02%	3.50			(67.88)
	1	2.86%	48.08%	51.92%	3.60	1.87		1.87
	2	6.25%	45.25%	54.75%	3.83	2.09		2.09
Stage 1	3	5.88%	42.74%	57.26%	4.05	2.32		2.32
	4	5.56%	40.49%	59.51%	4.28	2.54		2.54
	5	5.26%	38.76%	61.24%	4.50	2.76		2.76
	6	5.04%	37.03%	62.97%	4.73	2.98		2.98
	7	4.81%	35.30%	64.70%	4.95	3.21		3.21
Stage 2	8	4.59%	33.57%	66.43%	5.18	3.44		3.44
	9	4.36%	31.85%	68.15%	5.41	3.69		3.69
	10	4.14%	31.85%	68.15%	5.63	3.84	99.70	103.54
Stage 3	11+	4.14%	31.85%	68.15%	5.86	4.00		

**$K_e = 7.38\%$**



### Three Stage Free Cash Flow to Equity Discount Model

Company	Vistra Corp	4.14%	GDP
Ticker	vst	17.0	Industry P/E
		51.0%	Target Dividend Payout Ratio
		13.0%	Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		174.44%	-74.44%	2.69			(22.77)
	1	22.68%	-58.28%	158.28%	3.30	5.22		5.22
	2	-7.58%	-63.05%	163.05%	3.05	4.97		4.97
Stage 1	3	-8.20%	-68.68%	168.68%	2.80	4.72		4.72
	4	-8.93%	-75.41%	175.41%	2.55	4.47		4.47
	5	-9.80%	-53.96%	153.96%	2.30	3.54		3.54
	6	-7.02%	-32.51%	132.51%	2.14	2.83		2.83
	7	-4.23%	-11.06%	111.06%	2.05	2.27		2.27
Stage 2	8	-1.44%	10.39%	89.61%	2.02	1.81		1.81
	9	1.35%	31.85%	68.15%	2.05	1.39		1.39
	10	4.14%	31.85%	68.15%	2.13	1.45	37.72	39.18
Stage 3	11+	4.14%	31.85%	68.15%	2.22	1.51		

**K<sub>e</sub> = 19.95%**

