

# COST OF CAPITAL STUDY

**YIELD CAPITALIZATION**  
**2018 Assessment Year**

APPENDIX C

## Power Industry

<b>EQUITY RATE</b>						<b>11.00%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>							PAGE
	CAPM Ex Ante		7.50%				4
<b>DIVIDEND GROWTH MODELS Single Stage</b>							
	Value Line, based on Dividends Growth		11.00%				5
	Value Line, based on Earnings Growth		11.50%				6
	Value Line, based on Return on Equity		7.50%				7
<b>FCFE GROWTH MODEL Multi Stage</b>							8
			10.00%				
				<b>RANGE</b>	7.50-11.50%		
<b>DEBT RATE</b>						<b>6.00%</b>	9
<b>MARKET CAPITAL STRUCTURE</b>							
	Equity	40%	x	11.00%	=	4.40%	3
	Debt	60%	x	6.00%	=	3.60%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	3.60%	
						<u>2.74%</u>	
<b>WEIGHTED AVERAGE COST OF CAPITAL</b>						<b>7.14%</b>	

## SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2018 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	1.20	B	nmf	4.5%	2,430,228,311	12.0%			17,801,000,000	88.0%	20,231,228,311
Dynegy Inc	dyn	1.40	C+	36.9	0.0%	1,901,543,746	18.6%			8,328,000,000	81.4%	10,229,543,746
Exelon Corp	exc	0.70	B++	8.9	3.3%	27,912,764,341	46.5%			32,090,000,000	53.5%	60,002,764,341
NextEra Energy	nee	0.65	A+	14.3	2.5%	28,176,815,102	48.1%			30,345,000,000	51.9%	58,521,815,102
NRG Energy	nrg	1.30	B+	nmf	0.4%	1,969,436,669	11.0%	266,000,000	1.5%	15,716,000,000	87.5%	17,951,436,669
Pattern Energy	pegi	1.20	B+	nmf	7.8%	1,094,857,452	36.8%			1,878,700,000	63.2%	2,973,557,452
Southern Co	so	0.55	A	15.2	4.8%	23,936,520,430	34.1%	2,218,000,000	3.2%	44,042,000,000	62.7%	70,196,520,430
TransAlta Corp	tato	0.95	C++	nmf	2.7%	2,452,184,270	39.8%	745,000,000	12.1%	2,960,000,000	48.1%	6,157,184,270
<b>Mean</b>		<b>0.99</b>		<b>18.8</b>	<b>3.3%</b>	<b>11,234,293,790</b>	<b>30.9%</b>		<b>5.6%</b>	<b>19,145,087,500</b>	<b>67.0%</b>	
<b>Harmonic Mean</b>		<b>0.89</b>					<b>22.7%</b>		<b>2.8%</b>		<b>63.7%</b>	
<b>Weighted Mean</b>						<b>89,874,350,321</b>	<b>36.5%</b>	<b>3,229,000,000</b>	<b>1.3%</b>	<b>153,160,700,000</b>	<b>62.2%</b>	<b>246,264,050,321</b>
<b>Median</b>		<b>1.08</b>			<b>3.0%</b>				<b>3.2%</b>		<b>63.0%</b>	

## SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2018 Assessment Year

Power Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
AES Corp	aes	10.830	660,388,128	7,152,003,426	25.6%	-		20,810,000,000	74.4%	27,962,003,426
Dynegy Inc	dyn	11.850	144,384,491	1,710,956,218	16.1%	-		8,947,000,000	83.9%	10,657,956,218
Exelon Corp	exc	39.410	960,852,473	37,867,195,961	50.8%	-		36,705,000,000	49.2%	74,572,195,961
NextEra Energy	nee	156.190	470,397,581	73,471,398,176	67.5%	-		35,447,000,000	32.5%	108,918,398,176
NRG Energy	nrg	28.480	315,109,867	8,974,329,012	34.3%	266,000,000	1.0%	16,894,000,000	64.6%	26,134,329,012
Pattern Energy	pegi	21.490	89,012,801	1,912,885,093	49.7%	-		1,937,671,000	50.3%	3,850,556,093
Southern Co	so	48.090	1,003,627,691	48,264,455,660	47.4%	2,218,000,000	2.2%	51,348,000,000	50.4%	101,830,455,660
TransAlta Corp	tato	5.950	288,492,267	1,716,528,989	27.8%	745,000,000	12.1%	3,708,000,000	60.1%	6,169,528,989
			<b>Mean</b>		<b>39.9%</b>		<b>5.1%</b>		<b>58.2%</b>	
			<b>Harmonic Mean</b>		<b>33.0%</b>		<b>2.0%</b>		<b>54.0%</b>	
			<b>Weighted Mean</b>	<b>181,069,752,536</b>	<b>50.3%</b>	<b>3,229,000,000</b>	<b>0.9%</b>	<b>175,796,671,000</b>	<b>48.8%</b>	<b>360,095,423,536</b>
			<b>Median</b>		<b>40.9%</b>		<b>2.2%</b>		<b>55.3%</b>	
			<b>Std Dev</b>		<b>16.8%</b>		<b>6.1%</b>		<b>16.2%</b>	
			<b>Coefficient of Variation</b>		<b>42.2%</b>		<b>119.4%</b>		<b>27.8%</b>	
			<b>Target</b>		<b>40%</b>				<b>60%</b>	<b>100%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2018 Assessment Year

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

<b>Ke = Cost of Equity</b>				<b>7.50%</b>
				to page 1
	Rm =	rate of return	7.50%	
	Rf =	risk free rate	2.75%	
	Rp =	risk premium	4.75%	
	B =	Beta	1.00	page 7
<b>Rp = Risk Premium</b>				<b>4.75%</b>
				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>		5.08%	chart page 13
	<a href="http://pages.stern.nyu.edu/~adamodar/">http://pages.stern.nyu.edu/~adamodar/</a>		4.73%	adjusted for Rf
	2017 Implied Premium			
	<b>John Graham &amp; Campbell Harvey</b>		7.16%	10 year expected real ret
	Duke CFO magazine Global Business Outlook survey - U.S.		2.37%	Rf rate used in survey
	4th Qtr 2017		6.78%	adjusted for Rf
<b>Rf = Risk Free Rate</b>				<b>2.75%</b>
				to above
	<b>Value Line Investment Survey, Selected Yields January 5, 2018, page 2573</b>			
	as of 12-29-17	US Treasury Securities year end data		
		5 year	2.19%	
		10 year	2.41%	
		30 year	2.75%	
		30 year Zero	2.87%	
	<b>Federal Reserve Statistical Release (<a href="http://www.federalreserve.gov/Releases/H15/Current/">http://www.federalreserve.gov/Releases/H15/Current/</a>)</b>			
	as of 12-29-17	Treasury Constant Maturities		
		5 year	2.20%	
		10 year	2.40%	
		20 year	2.58%	
		30 year	2.74%	
		20 year TIPS	0.61%	1.97%
		30 year TIPS	0.73%	2.01%
				TIPS inflation indication
<b>Inflation</b>				<b>2.00%</b>
	<b>Value Line Investment Survey, Economic Series January 5, 2018, page 1500</b>			
	Consumer Price Index Annual Rate of Change 2020-2022		2.50%	
	<b>Federal Reserve Bank of Philadelphia</b>			
	The Livingston Survey December 15, 2017		Table 3	
	Inflation median (measured by the CPI) over next 10 year		2.34%	
	<a href="https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey">https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey</a>			
<b>Nominal Gross Domestic Product (GDP)</b>				<b>3.80%</b>
	<b>Federal Reserve Projected Long Run Real GDP Growth</b>			
	Median Projection Value From Dec 13, 2017 Report		1.80%	
	<a href="http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm">http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm</a>			
	<b>Congressional Budget Office Real GDP Economic Projections</b>			Table D-1 pg 140
	The Budget and Economic Outlook 2018-2028	2018-2022	2.18%	
	Average Percentage Change From Year to Year	2023-2028	1.73%	
	<a href="http://www.cbo.gov/publication/53651">http://www.cbo.gov/publication/53651</a>			
	<b>Federal Reserve Bank of Philadelphia</b>			
	The Livingston Survey, December 15, 2017		pg 4	
	Average Annual Real GDP Growth Rate for Next Ten Years		2.18%	
	<a href="https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey">https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey</a>			

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue  
2018 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 (P <sub>0</sub> )	Expected Dividend (D <sub>1</sub> )	Dividend Yield (D <sub>1</sub> /P <sub>0</sub> )	Dividend Growth (G)	Ke with Short Term Growth
AES Corp	aes	10.830	0.53	4.89%	14.00%	18.89%
Dynegy Inc	dyn	11.850				
Exelon Corp	exc	39.410	1.38	3.50%	4.50%	8.00%
NextEra Energy	nee	156.190	4.48	2.87%	9.50%	12.37%
NRG Energy	nrg	28.480	0.12	0.42%	-8.50%	nmf
Pattern Energy	pegi	21.490	1.78	8.28%	4.50%	12.78%
Southern Co	so	48.090	2.38	4.95%	3.50%	8.45%
TransAlta Corp	tato	5.950	0.16	2.69%	-16.00%	nmf
<b>Mean</b>						<b>12.10%</b>
<b>Harmonic Mean</b>						<b>10.98%</b>
<b>Median</b>						<b>12.37%</b>
<b>Max</b>						<b>18.89%</b>
<b>Min</b>						<b>8.00%</b>
<b>Std Dev</b>						<b>4.38%</b>
<b>Coefficient of Variation</b>						<b>36.22%</b>
<b>Say</b>						<b>11.00%</b>

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2018 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	10.830	0.53	4.89%	nmf	nmf
Dynegy Inc	dyn	11.850				
Exelon Corp	exc	39.410	1.38	3.50%	6.00%	9.50%
NextEra Energy	nee	156.190	4.48	2.87%	8.50%	11.37%
NRG Energy	nrg	28.480	0.12	0.42%	nmf	nmf
Pattern Energy	pegi	21.490	1.78	8.28%	nmf	nmf
Southern Co	so	48.090	2.38	4.95%	4.00%	8.95%
TransAlta Corp	tato	5.950	0.16	2.69%	16.00%	18.69%
<b>Mean</b>						<b>12.13%</b>
<b>Harmonic Mean</b>						<b>11.16%</b>
<b>Median</b>						<b>10.43%</b>
<b>Max</b>						<b>18.69%</b>
<b>Min</b>						<b>8.95%</b>
<b>Std Dev</b>						<b>4.50%</b>
<b>Coefficient of Variation</b>						<b>37.07%</b>
<b>Say</b>						<b>11.50%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2018 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	10.830	0.53	1.10	4.89%	nmf	10.16%	nmf	nmf	nmf
Dynegy Inc	dyn	11.850	0.00	1.00					nmf	nmf
Exelon Corp	exc	39.410	1.38	2.90	3.50%	71.0%	7.36%	5.22%	8.73%	12.58%
NextEra Energy	nee	156.190	4.48	7.65	2.87%	62.0%	4.90%	3.04%	5.90%	7.93%
NRG Energy	nrg	28.480	0.12	2.15	0.42%	nmf	7.55%	nmf	nmf	nmf
Pattern Energy	pegi	21.490	1.78	0.45	8.28%	nmf	2.09%	nmf	nmf	nmf
Southern Co	so	48.090	2.38	3.00	4.95%	24.0%	6.24%	1.50%	6.45%	7.74%
TransAlta Corp	tato	5.950	0.16	0.15	2.69%		2.52%			2.52%
<b>Mean</b>									<b>7.03%</b>	<b>7.69%</b>
<b>Harmonic Mean</b>									<b>6.83%</b>	<b>5.47%</b>
<b>Median</b>									<b>6.45%</b>	<b>7.84%</b>
<b>Std Dev</b>									<b>1.50%</b>	<b>4.11%</b>
<b>Coefficient of Variation</b>									<b>21.31%</b>	<b>53.45%</b>

**Say 7.50%**

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

Washington State Department of Revenue

2018 Assessment Year

Power Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
AES Corp	aes	10.83	1.10	9.85	45.00%	32.00%	15.59%
Dynegy Inc	dyn	11.85	1.00				nmf
Exelon Corp	exc	39.41	2.90	13.59	51.00%	8.50%	10.03%
NextEra Energy	nee	156.19	7.65	20.42	56.00%	14.00%	6.34%
NRG Energy	nrg	28.48	2.15	13.25	10.00%	23.00%	10.64%
Pattern Energy	pegi	21.49	0.45	47.76	nmf	11.50%	5.68%
Southern Co	so	48.09	3.00	16.03	72.00%	12.50%	8.70%
TransAlta Corp	tato	5.95	0.15	39.67	20.00%	4.50%	10.93%
<b>Mean</b>				<b>22.94</b>	<b>42.33%</b>	<b>15.14%</b>	<b>9.70%</b>
<b>Harmonic Mean</b>				<b>17.15</b>	<b>26.84%</b>	<b>10.72%</b>	<b>8.77%</b>
<b>Median</b>				<b>16.03</b>	<b>48.00%</b>	<b>12.50%</b>	<b>10.03%</b>
<b>Industry Summary</b>				<b>16.00</b>	<b>48.00%</b>	<b>12.50%</b>	



## SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

Washington State Department of Revenue

2018 Assessment Year

Power Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
AES Corp	aes	Ba2	BB
Dynegy Inc	dyn	B2	B+
Exelon Corp	exc	Baa2	BBB
NextEra Energy	nee	Baa1	A-
NRG Energy	nrg	Ba3	BB-
Pattern Energy	pegi	Ba3	BB-
Southern Co	so	Baa2	A-
TransAlta Corp	tato	Ba1	BBB-
<b>Overall Average Debt Rating</b>		<b>Ba1</b>	<b>BB+</b>

Mergent's Bond Record January 2018, page 249				
<b>Corporate</b>	<b>Aaa</b>	<b>Aa</b>	<b>A</b>	<b>Baa</b>
October	3.60%	3.75%	3.91%	4.32%
November	3.57%	3.67%	3.84%	4.27%
December	3.51%	3.61%	3.79%	4.22%
<b>4th Qtr Average</b>	<b>3.56%</b>	<b>3.68%</b>	<b>3.85%</b>	<b>4.27%</b>
<b>Public Utilities</b>	<b>Aaa</b>	<b>Aa</b>	<b>A</b>	<b>Baa</b>
October		3.74%	3.91%	4.26%
November		3.65%	3.83%	4.16%
December		3.62%	3.79%	4.14%
<b>4th Qtr Average</b>		<b>3.67%</b>	<b>3.84%</b>	<b>4.19%</b>
<b>Industrials</b>	<b>Aaa</b>	<b>Aa</b>	<b>A</b>	<b>Baa</b>
October	3.60%	3.74%	3.90%	4.37%
November	3.57%	3.68%	3.85%	4.37%
December	3.51%	3.60%	3.79%	4.31%
<b>4th Qtr Average</b>	<b>3.56%</b>	<b>3.67%</b>	<b>3.85%</b>	<b>4.35%</b>

S&P's Long Term Bond Yield	BB+	Ave YTM <b>6.00%</b>	Med YTM <b>6.05%</b>
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Bloomberg Dec BB+	20y <b>5.81%</b>	25Y <b>5.40%</b>	30Y <b>N/A</b>
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<b>Debt Yield Rate</b>	<b>6.00%</b>
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## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Company	Ticker	Stock Price	Enterprise Value	EBITDA Historical	Annual Change VL	EBITDA Forecast	EV / EBITDA Forecast
AES Corp	aes	10.83	27,592,003,426	3,418,000,000	24.00%	4,238,320,000	6.51
Dynegy Inc	dyn	11.85	10,182,956,218	411,000,000			
Exelon Corp	exc	39.41	73,534,195,961	9,687,000,000	-13.13%	8,414,969,697	8.74
NextEra Energy	nee	156.19	108,918,398,176	7,683,000,000	-5.90%	7,229,655,280	15.07
NRG Energy	nrg	28.48	25,036,329,012	628,000,000	174.65%	1,724,788,732	14.52
Pattern Energy	pegi	21.49	3,797,280,093	208,903,000	37.93%	288,142,069	13.18
Southern Co	so	48.09	101,830,455,660	6,008,000,000	2.36%	6,149,921,260	16.56
TransAlta Corp	tato	5.95	6,068,528,989	846,000,000	38.46%	1,171,384,615	5.18
<b>8</b>							<b>11.39</b>
		<b>Mean</b>					<b>9.55</b>
		<b>Harmonic Mean</b>					<b>13.18</b>
		<b>Median</b>					<b>4.52</b>
		<b>Std Dev</b>					

Source:

Value Line & Morning Star

**Say**

**8.00**

## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Power Industry

Company	Ticker	Stock Price	2017		2018		2017		2018	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio	
AES Corp	aes	10.83	(1.76)	nmf	1.10	10.2%	0.12	1.1%	2.95	27.2%
Dynegy Inc	dyn	11.85	0.36	nmf	1.00	nmf	5.99	nmf	-	nmf
Exelon Corp	exc	39.41	4.39	11.1%	2.90	7.4%	9.90	25.1%	8.60	21.8%
NextEra Energy	nee	156.19	10.47	6.7%	7.65	4.9%	16.10	10.3%	15.15	9.7%
NRG Energy	nrg	28.48	(6.97)	nmf	2.15	7.5%	2.13	7.5%	5.85	20.5%
Pattern Energy	pegi	21.49	(0.20)	nmf	0.45	2.1%	2.03	9.4%	2.80	13.0%
Southern Co	so	48.09	3.00	6.2%	3.00	6.2%	6.35	13.2%	6.50	13.5%
TransAlta Corp	tato	5.95	(0.66)	nmf	0.15	2.5%	0.65	10.9%	0.90	15.1%
		<b>Mean</b>		<b>8.0%</b>		<b>5.8%</b>		<b>11.1%</b>		<b>17.3%</b>
		<b>Harmonic Mean</b>				<b>4.4%</b>		<b>4.8%</b>		<b>15.5%</b>
		<b>Median</b>		<b>6.7%</b>		<b>6.2%</b>		<b>10.3%</b>		<b>15.1%</b>
		<b>Max</b>		<b>11.1%</b>		<b>10.2%</b>		<b>25.1%</b>		<b>27.2%</b>
		<b>Min</b>		<b>6.2%</b>		<b>2.1%</b>		<b>1.1%</b>		<b>9.7%</b>
		<b>Std Dev</b>		<b>2.7%</b>		<b>2.9%</b>		<b>7.3%</b>		<b>6.1%</b>
		<b>Coefficient of Variation</b>		<b>33.7%</b>		<b>49.5%</b>		<b>65.6%</b>		<b>35.4%</b>
		<b>Say</b>		<b>8.0%</b>		<b>5.5%</b>		<b>10.0%</b>		<b>15.0%</b>

Source: Value Line / yr end stock price

## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Power Industry

Company	Ticker	Stock Price	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Book Value	Multiple
AES Corp	aes	10.83	15.96	0.68	0.12	90.25	(1.76)	nmf	3.68	2.94
Dynegy Inc	dyn	11.85	33.54	0.35	5.99	nmf	0.36	nmf	13.17	0.90
Exelon Corp	exc	39.41	35.00	1.13	9.90	3.98	4.39	8.98	29.05	1.36
NextEra Energy	nee	156.19	36.50	4.28	16.10	9.70	10.47	14.92	59.90	2.61
NRG Energy	nrg	28.48	33.73	0.84	2.13	13.37	(6.97)	nmf	6.25	4.56
Pattern Energy	pegi	21.49	4.62	4.65	2.03	10.59	(0.20)	nmf	12.30	1.75
Southern Co	so	48.09	22.50	2.14	6.35	7.57	3.00	16.03	23.85	2.02
TransAlta Corp	tato	5.95	8.00	0.74	0.65	9.15	(0.66)	nmf	8.50	0.70
		<b>Mean</b>		<b>1.85</b>		<b>20.66</b>		<b>13.31</b>		<b>2.10</b>
		<b>Harmonic Mean</b>		<b>0.93</b>		<b>9.02</b>		<b>12.46</b>		<b>1.51</b>
		<b>Median</b>		<b>0.99</b>		<b>9.70</b>		<b>14.92</b>		<b>1.88</b>
		<b>Max</b>		<b>4.65</b>		<b>90.25</b>		<b>16.03</b>		<b>4.56</b>
		<b>Min</b>		<b>0.35</b>		<b>3.98</b>		<b>8.98</b>		<b>0.70</b>
		<b>Say</b>		<b>1.00</b>		<b>10.00</b>		<b>13.00</b>		<b>1.80</b>

## DATA INPUT

Washington State Department of Revenue

2018 Assessment Year

Power Industry

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

Guideline Companies		Stock Price	Beta Levered	Financial Strength	Revenues	Cash Flow	Earnings	Dividends	Bk Value	Common	LTD (BV)	Trailing P/E Ratio	Aver Annual Div Yield	Operating Margin	Calculated Debt
Name	Ticker	Yahoo	V L	V L	Per Share	Per Share	Per Share	Per Share	Stock	Shares	V L	V L	V L	V L	mk to bk
AES Corp	aes	10.83	1.20	B	15.96	0.12	(1.76)	0.49	3.68	660,388,128	17,801,000,000	nmf	4.9%	16.0%	104.21%
Dynegy Inc	dyn	11.85	1.40	C+	33.54	5.99	0.36		13.17	144,384,491	8,328,000,000	36.9	nil	13.8%	106.10%
Exelon Corp	exc	39.41	0.70	B++	35.00	9.90	4.39	1.31	29.05	960,852,473	32,090,000,000	8.9	3.8%		107.12%
NextEra Energy	nee	156.19	0.65	A+	36.50	16.10	10.47	3.93	59.90	470,397,581	30,345,000,000	14.3	3.0%		106.98%
NRG Energy	nrg	28.48	1.30	B+	33.73	2.13	(6.97)	0.12	6.25	315,109,867	15,716,000,000	nmf	0.4%	4.5%	101.75%
Pattern Energy	pegi	21.49	1.20	B+	4.62	2.03	(0.20)	1.67	12.30	89,012,801	1,878,700,000	nmf	9.6%	28.5%	100.36%
Southern Co	so	48.09	0.55	A	22.50	6.35	3.00	2.30	23.85	1,003,627,691	44,042,000,000	15.2	5.5%		106.64%
TransAlta Corp	tato	5.95	0.95	C++	8.00	0.65	(0.66)	0.16	8.50	288,492,267	2,960,000,000	nmf	2.2%		101.92%

**Average**

**Harmonic Mean**

**Median**

18.8 average  
14.5 harmonic mean  
14.8 median

Value Line Mar 23, 2018

Value Line Feb 16, 2018

check formula					Projected (Next Year)					Income statement				Balance Sheet	
Payout Ratio	Current Payout Ratio	Projected Payout Ratio	% Rtn on Shrhldrs Equity	% Rtn on Shrhldrs Equity	Revenues	Cash Flow	Earnings	Dividends	Bk Value	CF Projection	Operating Income	Current Assets	Current Liabilities	PP&E Gross	
calculated	V L	V L	V L	V L	V L	V L	V L	V L	V L	V L	Morningstar	Morningstar	Morningstar	Morningstar	
-28%	nmf	45%	nmf	32.0%	16.3	2.95	1.1	0.53	3.85	3.60	2,249,000,000	6,398,000,000	6,028,000,000	28,238,000,000	
	29%		4.0%				1.00				(412,000,000)	1,524,000,000	1,049,000,000	11,068,000,000	
30%	29%	51%	14.0%	8.5%	31.20	8.60	2.90	1.38	32.75	9.75	4,260,000,000	11,834,000,000	10,796,000,000	95,266,000,000	
38%	38%	56%	17.5%	14.0%	36.00	15.15	7.65	4.48	61.90	19.25	5,326,000,000	7,157,000,000	11,232,000,000	93,783,000,000	
-2%	nmf	10%	nmf	23.0%	39.00	5.85	2.15	0.12	6.95	7.35	(587,000,000)	4,415,000,000	3,317,000,000	18,373,000,000	
-835%	nmf	nmf	nmf	11.5%	5.15	2.80	0.45	1.78	12.15	3.95	10,259,000	270,310,000	217,034,000	4,747,351,000	
77%	76%	72%	12.0%	12.5%	22.45	6.50	3.00	2.38	24.50	7.50	2,551,000,000	10,072,000,000	13,594,000,000	111,329,000,000	
-24%	nmf	20%	nmf	4.5%	8.45	0.90	0.15	0.16	8.75	2.15	138,000,000	1,709,000,000	1,608,000,000	12,973,000,000	
	43%	42%	12%	15%						7.65		average			
	37%	27%	9%	11%						7.35		median			
	34%	48%	13.0%	12.5%						5.16		harmonic mean			

CF Statement

<b>Intangibles (Excl. WG)</b>	<b>LT Debt</b>	<b>Dep &amp; Amort</b>	<b>Carrying Value</b>	<b>Fair Value</b>
<b>Morningstar</b>	<b>Morningstar</b>	<b>Morningstar</b>	<b>10-K</b>	<b>10-K</b>
366,000,000	17,801,000,000	1,169,000,000	19,970,000,000	20,810,000,000
39,000,000	8,328,000,000	823,000,000	8,433,000,000	8,947,000,000
-	32,565,000,000	5,427,000,000	34,264,000,000	36,705,000,000
-	31,463,000,000	2,357,000,000	33,134,000,000	35,447,000,000
1,746,000,000	15,716,000,000	1,215,000,000	16,603,000,000	16,894,000,000
136,048,000	1,878,735,000	198,644,000	1,930,731,000	1,937,671,000
873,000,000	44,462,000,000	3,457,000,000	48,151,000,000	51,348,000,000
364,000,000	2,909,000,000	708,000,000	3,638,000,000	3,708,000,000

## STOCK PRICE

Washington State Department of Revenue

2018 Assessment Year

Power Industry

									<b>40.29</b>
									<b>Year End</b>
AES	aes								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	10.77	10.88	10.74	10.83	10.83	4,765,500			<b>10.83</b>
Dynegy	dyn								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	11.57	11.96	11.55	11.85	11.85	5,359,800			<b>11.85</b>
Exelon	exc								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	39.44	39.50	39.25	39.41	39.41	3,118,300			<b>39.41</b>
NextEra	nee								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	156.85	157.28	156.01	156.19	156.19	1,186,600			<b>156.19</b>
NRG Energy	nrg								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	27.91	28.77	27.91	28.48	28.48	4,888,400			<b>28.48</b>
Pattern Energy	pegi								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	21.67	21.82	21.46	21.49	21.49	778,300			<b>21.49</b>
Southern Co	so								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	48.35	48.47	48.01	48.09	48.09	3,632,900			<b>48.09</b>
TransAlta	tac								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	5.80	5.95	5.80	5.95	5.95	14,300			<b>5.95</b>

Source:

finance.yahoo.com

Historical Stock Quotes



**IMPLIED PREMIUMS FOR US MARKET**

Updated January 5, 2018.

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	ends + Buy	ange in Earn	ange in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	pothed Grov	Premium	t Growth	Esed Premium	Imple	ERP/Riskfe	
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%						
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%			2.92%	1.24	
1962	5.81%	3.40%	63.1	3.67	2.15		8.79%	5.21%	2.73%	3.85%	1.12%	4.05%	3.56%			3.56%	0.92	
1963	5.51%	3.13%	75.02	4.13	2.35		12.75%	9.45%	3.12%	4.14%	1.02%	4.96%	3.38%			3.38%	0.82	
1964	5.62%	3.05%	84.75	4.76	2.58		15.23%	10.08%	3.54%	4.21%	0.67%	5.13%	3.31%			3.31%	0.79	
1965	5.73%	3.06%	92.43	5.30	2.83		11.20%	9.42%	3.93%	4.65%	0.72%	5.46%	3.32%			3.32%	0.71	
1966	6.74%	3.59%	80.33	5.41	2.88		2.23%	1.96%	4.76%	4.64%	-0.12%	4.19%	3.68%			3.68%	0.79	
1967	5.66%	3.09%	96.47	5.46	2.98		0.85%	3.37%	4.21%	5.70%	1.49%	5.25%	3.20%			3.20%	0.56	
1968	5.51%	2.93%	103.86	5.72	3.04		4.81%	2.09%	5.21%	6.16%	0.95%	5.32%	3.00%			3.00%	0.49	
1969	6.63%	3.52%	92.06	6.10	3.24		6.66%	6.49%	6.58%	7.88%	1.30%	7.55%	3.74%			3.74%	0.47	
1970	5.98%	3.46%	92.15	5.51	3.19		-9.72%	-1.61%	6.53%	6.50%	-0.03%	4.78%	3.41%			3.41%	0.52	
1971	5.46%	3.10%	102.09	5.57	3.16		1.15%	-0.74%	4.39%	5.89%	1.50%	4.57%	3.09%			3.09%	0.52	
1972	5.23%	2.70%	118.05	6.17	3.19		10.76%	0.71%	3.84%	6.41%	2.57%	5.21%	2.72%			2.72%	0.42	
1973	8.16%	3.70%	97.55	7.96	3.61		28.93%	13.24%	6.93%	6.90%	-0.03%	8.30%	4.30%			4.30%	0.62	
1974	13.64%	5.43%	68.56	9.35	3.72		17.48%	3.14%	8.00%	7.40%	-0.60%	6.42%	5.59%			5.59%	0.76	
1975	8.55%	4.14%	90.19	7.71	3.73		-17.54%	0.30%	5.80%	7.76%	1.96%	5.99%	4.13%			4.13%	0.53	
1976	9.07%	3.93%	107.46	9.75	4.22		26.39%	13.10%	5.08%	6.81%	1.73%	8.19%	4.55%			4.55%	0.67	
1977	11.43%	5.11%	95.1	10.87	4.86		11.53%	15.07%	5.12%	7.78%	2.66%	9.52%	5.92%			5.92%	0.76	
1978	12.11%	5.39%	96.11	11.64	5.18		7.07%	6.60%	7.18%	9.15%	1.97%	8.48%	5.72%			5.72%	0.63	
1979	13.48%	5.53%	107.94	14.55	5.97		25.01%	15.23%	10.38%	10.33%	-0.05%	11.70%	6.45%			6.45%	0.62	
1980	11.04%	4.74%	135.76	14.99	6.44		3.01%	7.81%	11.24%	12.43%	1.19%	11.01%	5.03%			5.03%	0.40	
1981	12.39%	5.57%	122.55	15.18	6.83		1.31%	6.08%	14.71%	13.98%	-0.73%	11.42%	5.73%			5.73%	0.41	
1982	9.83%	4.93%	140.64	13.82	6.93		-8.95%	1.58%	10.54%	10.47%	-0.07%	7.96%	4.90%			4.90%	0.47	
1983	8.06%	4.32%	164.93	13.29	7.12		-3.84%	2.76%	8.80%	11.80%	3.00%	9.09%	4.31%			4.31%	0.37	
1984	10.07%	4.68%	167.24	16.84	7.83		26.69%	9.85%	9.85%	11.51%	1.66%	11.02%	5.11%			5.11%	0.44	
1985	7.42%	3.88%	211.28	15.68	8.20		-6.91%	4.74%	7.72%	8.99%	1.27%	7.89%	4.03%	6.75%		3.84%	0.43	
1986	5.96%	3.38%	242.17	14.43	8.19		-7.93%	-0.15%	6.16%	7.22%	1.06%	5.54%	3.36%	6.96%		3.58%	0.50	
1987	6.49%	3.71%	247.08	16.04	9.17		11.10%	11.99%	5.47%	8.86%	3.39%	9.66%	4.18%	8.58%		3.99%	0.45	
1988	8.20%	3.68%	277.72	24.12	10.22		50.42%	11.49%	6.35%	9.14%	2.79%	9.76%	4.12%	7.67%		3.77%	0.41	
1989	6.80%	3.32%	353.4	24.32	11.73		0.83%	14.80%	8.37%	7.93%	-0.44%	9.58%	3.85%	7.46%		3.51%	0.44	
1990	6.58%	3.74%	330.22	22.65	12.35		-6.87%	5.26%	7.81%	8.07%	0.26%	7.39%	3.92%	7.19%		3.89%	0.48	
1991	4.58%	3.11%	417.09	19.30	12.97		-14.79%	5.03%	7.00%	6.70%	-0.30%	6.34%	3.27%	7.81%		3.48%	0.52	
1992	4.16%	2.90%	435.71	20.87	12.64		8.13%	-2.59%	5.30%	6.68%	1.38%	4.67%	2.83%	9.83%		3.55%	0.53	
1993	4.25%	2.72%	466.45	26.90	12.69		28.89%	0.41%	3.50%	5.79%	2.29%	4.73%	2.74%	8.00%		3.17%	0.55	
1994	5.89%	2.91%	459.27	31.75	13.36		18.03%	5.34%	5.00%	7.82%	2.82%	7.23%	3.06%	7.17%		3.55%	0.45	
1995	5.74%	2.30%	615.93	37.70	14.17		18.74%	6.00%	3.50%	5.57%	2.07%	5.65%	2.44%	6.50%		3.29%	0.59	
1996	4.83%	2.01%	740.74	40.63	14.89		-7.77%	5.10%	5.00%	6.41%	1.41%	6.13%	2.11%	7.92%		3.20%	0.50	
1997	4.08%	1.60%	970.43	44.09	15.52		8.52%	4.25%	5.35%	5.74%	0.39%	5.45%	1.67%	8.00%		2.73%	0.48	
1998	3.11%	1.32%	1229.23	44.27	16.20		0.41%	4.37%	4.33%	4.65%	0.32%	4.60%	1.38%	7.20%		2.26%	0.49	
1999	3.07%	1.14%	1469.25	51.68	16.71		16.74%	3.16%	5.37%	6.44%	1.07%	5.75%	1.20%	12.50%		2.05%	0.32	
2000	3.94%	1.23%	1320.28	56.13	16.27		8.61%	-2.65%	5.73%	5.11%	-0.62%	3.71%	1.65%	12.00%		2.87%	0.56	
2001	3.85%	1.37%	1148.09	38.85	15.74	30.08	-30.79%	-3.24%	1.80%	5.05%	3.25%	3.56%	1.73%	10.30%		3.62%	2.91%	0.72
2002	5.23%	1.83%	879.82	46.04	16.08	29.83	18.51%	2.15%	1.20%	3.81%	2.61%	3.57%	2.29%	8.00%		4.10%	4.73%	1.08
2003	4.87%	1.61%	1111.91	54.69	17.88	31.58	18.79%	11.19%	1.00%	4.25%	3.25%	5.35%	2.12%	11.00%		3.69%	4.74%	0.87
2004	5.58%	1.60%	1211.92	67.68	19.407	40.60	23.75%	8.54%	2.18%	4.22%	2.04%	4.90%	2.02%	8.50%		3.65%	4.86%	0.86
2005	5.47%	1.79%	1248.29	76.45	22.38	61.17	12.96%	15.32%	4.31%	4.39%	0.08%	6.16%	2.20%	8.00%		4.08%	5.22%	0.93
2006	6.18%	1.77%	1418.3	87.72	25.05	73.16	14.74%	11.93%	4.88%	4.70%	-0.18%	5.93%	1.97%	12.50%		4.16%	6.12%	0.89
2007	5.62%	1.89%	1468.36	82.54	27.73	95.36	-5.91%	10.70%	3.31%	4.02%	0.71%	5.03%	2.06%	5.00%		4.37%	4.59%	1.09
2008	7.24%	3.11%	903.25	65.39	28.05	67.52	-20.78%	1.15%	1.59%	2.21%	0.62%	2.11%	4.05%	4.00%		6.43%	6.92%	2.91
2009	5.35%	2.00%	1115.10	59.65	22.31	37.43	-8.78%	-20.46%	0.14%	3.84%	3.70%	0.28%	2.60%	7.20%		4.36%	4.64%	1.14
2010	6.65%	1.84%	1257.64	83.66	23.12	55.53	40.25%	3.63%	0.13%	3.29%	3.16%	3.33%	2.24%	6.95%		5.20%	6.09%	1.58
2011	7.72%	2.07%	1257.60	97.05	26.02	71.28	16.01%	12.54%	0.03%	1.88%	1.85%	2.75%	2.71%	7.18%		6.01%	8.34%	3.20
2012	7.18%	2.13%	1426.19	102.47	30.44	75.90	5.58%	16.99%	0.05%	1.76%	1.71%	2.93%	2.47%	5.27%		5.78%	7.30%	3.28
2013	5.81%	1.96%	1848.36	107.45	36.28	88.13	4.86%	19.19%	0.07%	3.04%	2.97%	5.01%	2.03%	4.28%		4.96%	4.99%	1.63
2014	5.49%	1.92%	2058.90	113.01	39.44	101.98	5.17%	8.71%	0.05%	2.17%	2.12%	2.77%	2.24%	5.58%		5.78%	5.48%	2.66
2015	5.20%	2.11%	2043.94	106.32	43.16	106.10	-5.92%	9.43%	0.21%	2.27%	2.06%	2.96%	2.46%	5.51%		6.12%	5.16%	2.70
2016	4.86%	2.01%	2238.83	108.86	45.03	108.67	2.39%	4.33%	0.51%	2.45%	1.94%	2.64%	2.41%	5.54%		5.69%	4.50%	2.32
2017	4.67%	1.86%	2673.61	124.94	49.73	108.28	14.77%	10.44%	1.39%	2.41%	1.02%	3.22%	2.36%	7.05%		5.08%	4.75%	2.11

<http://pages.stern.nyu.edu/~adamodar/>