



## Cost of Capital Study January 1, 2022 Staff Recommendation

Electric Industry (SIC 4911)			Reference
<b>Equity:</b>			
<b>Risk Adjusted Models</b>			
	CAPM	8.46%	Page 5
<b>Dividend Growth Models</b>			
	DGM or DCF Model (Dividend Growth)	8.50%	Page 7
	DGM or DCF Model (Earnings Growth)	8.75%	Page 7
	DGM or DCF Model (b * ROE = Growth)	7.00%	Page 7
<b>Estimated Cost of Equity Capital</b>		<b>8.75%</b>	
<b>Debt:</b>			
<b>Estimated Cost of Debt Capital</b>		<b>3.31%</b>	Page 3
<b>Cost of Capital Summary</b>			
<b>Capital Component</b>	<b>Market Capital Structure</b>	<b>Cost of Capital</b>	<b>Before-Tax Weighted Average Cost of Capital</b>
Debt	35.00%	3.31%	1.16%
Equity	65.00%	8.75%	5.69%
<b>Total</b>	<b>100.00%</b>		<b>6.85%</b>
		Rounded	<b>6.75%</b>

# Cost of Capital Study

## January 1, 2022

### Staff Recommendation

Electric Industry (SIC 4911)				Reference
<b>Direct Rate</b>				
<b>Equity</b>				
	<u>Estimated Cost of Equity Capital</u>			Page 8
		<b>4.35%</b>		
<b>Debt</b>				
	<u>Estimated Cost of Debt Capital</u>			Page 9
		<b>3.55%</b>		
<b>Cost of Capital Summary</b>				
<u>Capital Component</u>	<u>Market Capital Structure</u>	<u>Cost of Capital</u>	<u>Before-Tax Weighted Average Cost of Capital</u>	
Debt	35.00%	3.55%	1.24%	
Equity	<u>65.00%</u>	4.35%	<u>2.83%</u>	
<b>Total</b>	<b><u>100.00%</u></b>		<b><u>4.07%</u></b>	
		Rounded	<b><u>4.00%</u></b>	

**Cost of Capital Study**  
**January 1, 2022**  
**Analysis of Debt Capital**

Electric Industry (SIC 4911)				
Ratings				
Company	Ticker		Moody's	S&P
ALLETE	ALE		Baa1	BBB
Alliant Energy	LNT		Baa2	A-
American Electric Power	AEP		Baa2	A-
Ameren Corp.	AEE		Baa1	BBB+
Centerpoint	CNP		Baa2	BBB+
CMS Energy Corp.	CMS		Baa2	BBB+
DTE Energy Co.	DTE		Baa2	BBB+
Entergy Corp.	ETR		Baa2	BBB+
Evergy Inc.	EVRG		Baa2	A-
Fortis Inc.	FTS.TO		Baa3	A-
MGE Energy	MGEE		NR	NR
OGE Energy	OGE		Baa1	BBB+
Otter Tail Corp.	OTTR		Baa2	BBB
WEC Energy Group	WEC		Baa1	A-
Average Rating			<b>Baa</b>	<b>BBB</b>
Mergent Bond Record, January 2022				
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>Average</b>	<b>2.67%</b>	<b>2.82%</b>	<b>3.00%</b>	<b>3.33%</b>
Public Utilities	Aaa	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>Average</b>	<b>-</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>Average</b>	<b>2.67%</b>	<b>2.66%</b>	<b>2.93%</b>	<b>3.35%</b>
<b>Debt Yield Rate Estimate</b>				<b>3.31%</b>
<b>Data Source:</b> <a href="https://www.moodys.com">https://www.moodys.com</a> <a href="https://standardandpoors.com">https://standardandpoors.com</a> Mergent Bond Record, January 2022				

Ratings			
Agency	Dispersions & Averages Number of Companies		
<b>S&amp;P</b>			
AAA	1		
AA	2		
A	3	5	15
BBB	4	8	32
BB	5		
B	6		
CCC	7		
C	9		
D	10		
Total		13	47
Average Rating			<b>3.62</b>
<b>Moody's</b>			
Aaa	1		
Aa	2		
A	3	0	0
Baa	4	13	52
Ba	5		
B	6		
Caa	7		
Ca	8		
C	9		
Total		13	52
Average Rating			<b>4.00</b>

**Cost of Capital Study**  
**January 1, 2022**  
**Analysis of the Market Capital Structure**

Electric Industry (SIC 4911)								
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Company Name	Stock Symbol	Debt (\$ mil)	Debt %	Stock Price	Shares (mil) Outstanding	Equity (\$ mil)	Equity %	Total Capital (\$ mil)
ALLETE	ALE	1,763	33.39%	66.35	53	3,517	66.61%	5,280
Alliant Energy	LNT	6,735	30.47%	61.47	250	15,368	69.53%	22,103
American Electric Power	AEP	31,301	41.11%	88.97	504	44,841	58.89%	76,142
Ameren Corp.	AEE	12,562	35.36%	89.01	258	22,965	64.64%	35,527
Centerpoint	CNP	15,558	46.98%	27.91	629	17,555	53.02%	33,113
CMS Energy Corp.	CMS	12,092	39.06%	65.05	290	18,865	60.94%	30,957
DTE Energy Co.	DTE	14,531	38.52%	119.54	194	23,191	61.48%	37,722
Entergy Corp.	ETR	24,842	52.07%	112.65	203	22,868	47.93%	47,710
Evergy Inc.	EVRG	9,298	37.18%	68.61	229	15,712	62.82%	25,010
Fortis Inc.	FTS.TO	24,040	45.33%	61.03	475	28,989	54.67%	53,029
MGE Energy	MGEE	632	17.59%	82.25	36	2,961	82.41%	3,593
OGE Energy	OGE	4,496	36.94%	38.38	200	7,676	63.06%	12,172
Otter Tail Corp.	OTTR	734	19.66%	71.42	42	3,000	80.34%	3,734
WEC Energy Group	WEC	13,524	30.67%	97.07	315	30,577	69.33%	44,101
<b>Mean</b>		<b>12,293</b>	<b>36.02%</b>			<b>18,435</b>	<b>63.98%</b>	<b>30,728</b>
<b>Median</b>		<b>12,327</b>	<b>37.06%</b>			<b>18,210</b>	<b>62.94%</b>	<b>32,035</b>
<b>Market Capital Structure Estimate</b>		<b>Debt</b>	<b>35.00%</b>			<b>Equity</b>	<b>65.00%</b>	
<b>Data Source:</b>								
Columns (1) & (4), Value Line Industry Summary & Index, 03-11-2022								
Column (2) = Column (1) / Column (7)								
Column (3), Yahoo Finance, 12-31-2021								
Column (5) = Column (3) * Column (4)								
Column (7) = Column (1) + Column (5)								

**Cost of Capital Study**  
**January 1, 2022**  
**Capital Asset Pricing Model (CAPM)**

$$\text{CAPM} \implies K_e = R_f + (\beta * \text{ERP})$$

<b>Electric Industry (SIC 4911)</b>	
Spot Risk-Free Rate	1.90%
Beta ( $\beta$ )	0.88
Equity Risk Premium (ERP): $(R_m - R_f)^*$	7.46%
Adjusted Equity Risk Premium: $(\beta * \text{ERP})$	6.56%
<b>Cost of Equity Capital - CAPM</b>	<b>8.46%</b>
<b>U.S. Department of the Treasury, Daily Treasury Yield Curve Rates, Selected Yields, December, 31 2021</b>	
U.S. Treasury Securities:	
5-year	1.26%
10-year	1.52%
30-year	1.90%
<b>Risk-Free Rate of Return <math>R_f</math>, 30-year Treasury Rate, December 31, 2021</b>	<b>1.90%</b>
* Arithmetic average long term return on equities - arithmetic average long term return on bonds.	

**Cost of Capital Study**  
**January 1, 2022**  
**Beta ( $\beta$ ) Analysis**

<b>Electric Industry (SIC 4911)</b>		
<b>Company Name</b>	<b>Stock Symbol</b>	<b>Beta "<math>\beta</math>"</b>
ALLETE	ALE	0.90
Alliant Energy	LNT	0.85
American Electric Power	AEP	0.75
Ameren Corp.	AEE	0.8
Centerpoint	CNP	1.15
CMS Energy Corp.	CMS	0.8
DTE Energy Co.	DTE	0.95
Entergy Corp.	ETR	0.95
Evergy Inc.	EVRG	0.95
Fortis Inc.	FTS.TO	0.75
MGE Energy	MGEE	0.75
OGE Energy	OGE	1.05
Otter Tail Corp.	OTTR	0.85
WEC Energy Group	WEC	0.8
	<b>Mean</b>	0.88
	<b>Median</b>	0.85
	<b>Beta (<math>\beta</math>) Estimate</b>	<b>0.88</b>
<b>Data Source:</b> Value Line Industry Summary & Index, 03-11-2022		

**Cost of Capital Study**  
**January 1, 2022**  
**Dividend Growth Model (DGM or DCF)**

DGM or DCF Model  $\implies K_e =$

$$\frac{D_1}{P_0} + g$$

where  
 $K_e$  = Cost of Equity  
 $D_1$  = Expected Div  
 $P_0$  = Current Price  
 $g$  = Sustainable Growth Rate

Electric Industry (SIC 4911)													
Company Name	Stock Symbol	(1)	(2)	Dividend Yield ( $D_1 / P_0$ )	(3)	(4)	(5)			(6)	(Dividends) $K_e$	(Earnings) $K_e$	$g=(b * ROE)$ $K_e$
		Stock Price $P_0$	Expected Dividend $D_1$		Dividend Growth $g$	Earnings Growth $g$	b	ROE	$g=(b * ROE)$				
ALLETE	ALE	66.35	2.60	3.92%	3.50%	6.00%	22.00%	7.00%	1.54%	7.42%	9.92%	5.46%	
Alliant Energy	LNT	61.47	1.71	2.78%	6.00%	4.50%	38.00%	11.00%	4.18%	8.78%	7.28%	6.96%	
American Electric Power	AEP	88.97	3.17	3.56%	6.00%	6.50%	39.00%	11.10%	4.33%	9.56%	10.06%	7.89%	
Ameren Corp.	AEE	89.01	2.36	2.65%	7.00%	6.50%	43.00%	10.20%	4.39%	9.65%	9.15%	7.04%	
Centerpoint	CNP	27.91	0.71	2.54%	2.50%	5.00%	28.00%	6.70%	1.88%	5.04%	7.54%	4.42%	
CMS Energy Corp.	CMS	65.05	1.84	2.83%	6.00%	6.50%	32.00%	11.60%	3.71%	8.83%	9.33%	6.54%	
DTE Energy Co.	DTE	119.54	3.60	3.01%	3.00%	4.50%	1.00%	9.10%	0.09%	6.01%	7.51%	3.10%	
Energy Corp.	ETR	112.65	4.09	3.63%	3.00%	3.00%	43.00%	11.90%	5.12%	6.63%	6.63%	8.75%	
Evergy Inc.	EVRG	68.61	2.33	3.40%	7.00%	7.50%	43.00%	9.50%	4.09%	10.40%	10.90%	7.49%	
Fortis Inc.	FTS.TO	61.03	2.21	3.62%	6.00%	5.00%	48.00%	7.00%	3.36%	9.62%	8.62%	6.98%	
MGE Energy	MGEE	82.25	1.59	1.93%	4.50%	4.50%	48.00%	5.00%	2.40%	6.43%	6.43%	4.33%	
OGE Energy	OGE	38.38	1.66	4.33%	3.00%	6.50%	31.00%	11.60%	3.60%	7.33%	10.83%	7.93%	
Otter Tail Corp.	OTTR	71.42	1.65	2.31%	6.00%	4.50%	63.00%	17.80%	11.21%	8.31%	6.81%	13.52%	
WEC Energy Group	WEC	97.07	2.91	3.00%	7.00%	6.00%	34.00%	11.90%	4.05%	10.00%	9.00%	7.05%	
<b>Mean</b>				<b>3.11%</b>	<b>5.04%</b>	<b>5.46%</b>	<b>36.64%</b>	<b>10.10%</b>	<b>3.85%</b>	<b>8.14%</b>	<b>8.57%</b>	<b>6.96%</b>	
<b>Median</b>				<b>3.01%</b>	<b>6.00%</b>	<b>5.50%</b>	<b>38.50%</b>	<b>10.60%</b>	<b>3.88%</b>	<b>8.55%</b>	<b>8.81%</b>	<b>7.01%</b>	
<b>Cost of Equity Capital - DCF <math>K_e</math> Estimate</b>										<b>8.50%</b>	<b>8.75%</b>	<b>7.00%</b>	

b = (1 - payout ratio) = Retention Ratio  
 ROE = Return on Book Equity  
**Data Source:**  
 Column (1), Yahoo Finance, 12-31-2021  
 Columns (2) - (6), Value Line Industry Summary & Index, 03-11-2022

**Cost of Capital Study**  
**January 1, 2022**  
**Support for Market Multiples**

<b>Electric Industry (SIC 4911)</b>				
		<b>(1)</b>	<b>(2)</b>	
<b>Company Name</b>	<b>Ticker</b>	<b>Stock Price</b>	<b>Earnings</b>	<b>P/E Multiple</b>
ALLETE	ALE	66.35	3.23	20.54
Alliant Energy	LNT	61.47	2.63	23.37
American Electric Powe	AEP	88.97	4.96	17.94
Ameren Corp.	AEE	89.01	3.84	23.18
Centerpoint	CNP	27.91	0.94	29.69
CMS Energy Corp.	CMS	65.05	2.58	25.21
DTE Energy	DTE	119.54	4.10	29.16
Entergy Corp.	ETR	112.65	6.87	16.40
Evergy Inc.	EVRG	68.61	3.83	17.91
Fortis Inc.	FTS.TO	61.03	2.61	23.38
MGE Energy	MGEE	82.25	2.92	28.17
OGE Energy	OGE	38.38	2.36	16.26
Otter Tail Corp.	OTTR	71.42	4.23	16.88
WEC Energy Group	WEC	97.07	4.11	23.62
<b>Mean</b>				<b>22.27</b>
<b>Median</b>				<b>23.28</b>
<b>P/E Estimate</b>				<b>23.00</b>
<b>Equity Rate</b>				<b>4.35%</b>
<b>Data Source:</b>				
Column (1) Yahoo Finance, 12-31-2021				
Coulmn (2) Value Line Industry Summay & Index, 03-11-2022				



**Cost of Capital Study**  
**January 1, 2022**  
**Direct Debt Rate Calculation**

<b>Electric Industry (SIC 4911)</b>	
<b>Direct Capitalization Debt Rate</b>	
Interest Expense (\$ mil)	6,106
Total Value of Debt (TVD) (\$ mil)	172,108
<b>Current Yield = Interest Expense/TVD</b>	<b>3.55%</b>
<b>Data Source:</b> Value Line Investment Survey, 03-11-2022	