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STC APPROVED 6-26-2014

Cost of Capital Study

January 1, 2014

Staff Recommendation

Industry: Electric Utility Industry			SIC: 4912
Equity:			Reference
Risk Adjusted Models			
	CAPM	9.32%	Page 5
Dividend Growth Models			
	DGM or DCF Model (Dividend Growth)	9.00%	Page 7
	DGM or DCF Model (Earnings Growth)	10.00%	Page 7
	DGM or DCF Model (b * ROE = Growth)	8.25%	Page 7
Estimated Cost of Equity Capital		9.75%	
Debt:			
Estimated Cost of Debt Capital		5.40%	Page 3
Cost of Capital Summary			
Capital Component	Market Capital Structure	Cost of Capital	Before-Tax Weighted Average Cost of Capital
Debt	38.00%	5.40%	2.05%
Equity	62.00%	9.75%	6.05%
TOTAL	100.00%		8.10%
		Rounded	8.00%

Cost of Capital Study

January 1, 2014

Staff Recommendation

Industry: Electric Utility Industry			SIC: 4912
Equity:	Direct Rate		Reference
	Estimated Cost of Equity Capital	6.45%	Page 8
Debt:			
	Estimated Cost of Debt Capital	5.10%	Page 9
<hr/> Cost of Capital Summary <hr/>			
Capital Component	Market Capital Structure	Cost of Capital	Before-Tax Weighted Average Cost of Capital
Debt	38.00%	5.10%	1.94%
Equity	62.00%	6.45%	4.00%
TOTAL	100.00%		5.94%
		Rounded	6.00%

Cost of Capital Study
January 1, 2014
Analysis of the Market Capital Structure

Industry: Electric Utilities - Central									SIC: 4912
Company Name	Stock Symbol	Debt (\$ mil)	Debt %	Stock Price	Shares Outstanding	Equity (\$ mil)	Equity %	Total Capital (\$ mil)	
ALLETE	ALE	1,083.0	35.38%	47.78	41.4	1,978	64.62%	3,061.0	
Alliant Energy	LNT	3,136.6	36.45%	49.27	111	5,469	63.55%	8,605.8	
Amer. Elec. Power	AEP	15,586.0	41.60%	45.05	485.7	21,881	58.40%	37,467.3	
Ameren Corp.	AEE	6,626.0	44.75%	33.72	242.6	8,180	55.25%	14,806.4	
CenterPoint Energy	CNP	7,817.0	44.48%	22.75	429	9,759	55.52%	17,575.6	
Cleco Corp.	CNL	1,257.3	31.62%	45.01	60.4	2,719	68.38%	3,975.8	
CMS Energy Corp.	CMS	7,239.0	50.61%	26.55	266.1	7,065	49.39%	14,304.2	
DTE Energy	DTE	7,014.0	38.06%	66.20	172.4	11,413	61.94%	18,426.5	
Empire Dist. Elec.	EDE	743.4	44.46%	21.59	43	929	55.54%	1,671.9	
Entergy Corp.	ETR	11,954.9	51.28%	63.87	177.8	11,356	48.72%	23,310.8	
G't Plains Energy	GXP	3,515.7	50.44%	22.44	153.9	3,454	49.56%	6,969.6	
Integrus Energy	TEG	2,956.2	40.02%	55.79	79.4	4,430	59.98%	7,386.2	
ITC Holdings	ITC	2,495.3	28.18%	40.58	156.7	6,359	71.82%	8,854.4	
MGE Energy	MGEE	399.4	22.51%	39.61	34.7	1,375	77.49%	1,774.0	
OGE Energy	OGE	2,300.1	22.54%	39.82	198.5	7,904	77.46%	10,204.3	
Otter Tail Corp.	OTTR	389.6	27.53%	28.25	36.3	1,026	72.47%	1,415.1	
Vectren Corp.	VVC	1,777.1	39.18%	33.48	82.4	2,759	60.82%	4,536.2	
Westar Energy	WR	3,042.0	43.69%	31.00	126.5	3,921	56.31%	6,963.4	
Wisconsin Energy	WEC	4,453.8	32.39%	40.59	229	9,296	67.61%	13,749.6	
Mean:			38.17%			6,383	61.83%	10,793	
Median:			39.18%				60.82%		
Market Capital Structure:		Debt:	38.00%			Equity:	62.00%		

Stock Price = 2013 Average Closing Price

Data Source: Value Line Investment Survey

Cost of Capital Study
January 1, 2014
Capital Asset Pricing Model (CAPM)

CAPM ==> $K_e = R_f + (\beta * ERP)$

Industry: Electric Utilities - Central	SIC: 4912
Risk-Free Rate (R_f)	3.75%
Beta (β)	0.80
Equity Risk Premium (ERP): ($R_m - R_f$)	6.96%
Adjusted Equity Risk Premium: ($\beta * ERP$)	5.57%
Cost of Equity Capital - CAPM	9.32%
Ibbotson SBBI 2014 Classic Yearbook	
Long-Term Government Bonds - Income Return ¹	5.90%
Intermediate Term US Treasury Coupon Note Yield (5-Year) ¹	5.40%
Short-Term US Treasury Bill Yield (30-Day) ¹	3.50%
Long-Term US Treasury Coupon Bond Yield (20-Year) ²	3.67%
Long-Term Horizon Expected Equity Risk Premium ³ (Large Compay Stock Total Return - Long-Term US Government Bond Income)	6.96%
¹ Table 2-1: Basic Series, Summary Statistics of Annual Total Returns, Arithmetic Mean, p. 40	
² Table 11-1: Building Blocks for Expected Return Construction, p. 142	
³ Table 11.4: Long-Horizon Expected Equity Risk Premium, p. 152	
Federal Interest Rates - IRS.gov, January 2014 Weighted Average Rates	
Long Term Treasury (30 year) ¹	3.46%
Composite Corporate Bonds ²	4.69%
¹ http://www.irs.gov/Retirement-Plans/Weighted-Average-Interest-Rate-Table	
² http://www.irs.gov/Retirement-Plans/Composite-Corporate-Bond-Rate-Table	
The ValueLine Investment Survey, Selected Yields, Page 553, January 10, 2014	
U.S. Treasury Securities:	
5-year	1.75%
10-year	3.03%
30-year	3.96%
30-year Zero	4.24%
Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/20140106/) 1/6/2014	
Treasury constant Maturities:	
5-year	1.73%
10-year	3.01%
20-year	3.69%
30-year	3.93%
Risk-Free Rate of Return R_f Estimate:	3.75%

Cost of Capital Study
January 1, 2014
Beta (β) Analysis

Industry: Electric Utilities - Central		SIC: 4912
Company Name	Stock Symbol	Beta "β"
ALLETE	ALE	0.80
Alliant Energy	LNT	0.80
Amer. Elec. Power	AEP	0.70
Ameren Corp.	AEE	0.85
CenterPoint Energy	CNP	0.85
Cleco Corp.	CNL	0.70
CMS Energy Corp.	CMS	0.70
DTE Energy	DTE	0.85
Empire Dist. Elec.	EDE	0.75
Energy Corp.	ETR	0.75
Gt Plains Energy	GXP	0.90
Integrus Energy	TEG	1.05
ITC Holdings	ITC	0.70
MGE Energy	MGEE	0.70
OGE Energy	OGE	0.85
Otter Tail Corp.	OTTR	0.95
Vectren Corp.	VVC	0.75
Westar Energy	WR	0.80
Wisconsin Energy	WEC	0.70
Mean:		0.80
Median:		0.80
Beta (β) Estimate:		0.80

NMF = Not Meaningful

Data Source: Value Line Investment Survey

Cost of Capital Study
January 1, 2014
Dividend Growth Model (DGM or DCF)

$$\text{DGM or DCF Model} \implies K_c = \frac{D_1}{P_0} + g$$

where
K_c = Cost of Equity
D₁ = Expected Dividends
P₀ = Current Price
g = Sustainable Growth

Industry: Electric Utilities - Central												SIC: 4912	
Company Name	Stock Symbol	Stock Price P ₀	Expected Dividend D ₁	Dividend Yield (D ₁ / P ₀)	Dividend Growth g	Earnings Growth g				(Dividends) K _c	(Earnings) K _c	g=(b * ROE) K _c	
							b	ROE	g=(b * ROE)				
ALLETE	ALE	47.78	1.98	4.14%	4.00%	6.00%	28.18%	7.79%	2.20%	8.14%	10.14%	6.34%	
Alliant Energy	LNT	49.27	2.04	4.14%	5.00%	5.00%	36.29%	10.26%	3.72%	9.14%	9.14%	7.86%	
Amer. Elec. Power	AEP	45.05	2.04	4.53%	4.50%	4.50%	36.52%	9.47%	3.46%	9.03%	9.03%	7.99%	
Ameren Corp.	AEE	33.72	1.61	4.77%	2.00%	2.50%	34.13%	8.81%	3.01%	6.77%	7.27%	7.78%	
CenterPoint Energy	CNP	22.75	0.96	4.22%	6.00%	2.50%	33.77%	12.38%	4.18%	10.22%	6.72%	8.40%	
Cleco Corp.	CNL	45.01	1.55	3.44%	8.50%	5.00%	51.82%	10.91%	5.65%	11.94%	8.44%	9.10%	
CMS Energy Corp.	CMS	26.55	1.10	4.14%	6.00%	6.50%	39.87%	13.08%	5.21%	10.14%	10.64%	9.36%	
DTE Energy	DTE	66.20	2.76	4.17%	5.50%	5.00%	9.00%	9.03%	0.81%	9.67%	9.17%	4.98%	
Empire Dist. Elec.	EDE	21.59	1.03	4.77%	4.50%	4.00%	32.21%	8.45%	2.72%	9.27%	8.77%	7.49%	
Entergy Corp.	ETR	63.87	3.32	5.20%	0.50%	-2.50%	43.99%	11.62%	5.11%	5.70%	2.70%	10.31%	
G't Plains Energy	GXP	22.44	0.95	4.23%	7.00%	6.00%	45.12%	7.15%	3.23%	11.23%	10.23%	7.46%	
Integrus Energy	TEG	55.79	2.72	4.88%	1.50%	3.50%	41.24%	10.64%	4.39%	6.38%	8.38%	9.26%	
ITC Holdings	ITC	40.58	0.62	1.53%	10.00%	15.50%	60.00%	13.27%	7.96%	11.53%	17.03%	9.49%	
MGE Energy	MGEE	39.61	1.10	2.78%	4.00%	8.00%	50.46%	12.13%	6.12%	6.78%	10.78%	8.90%	
OGE Energy	OGE	39.82	0.95	2.39%	9.00%	5.50%	57.30%	12.76%	7.31%	11.39%	7.89%	9.70%	
Otter Tail Corp.	OTTR	28.25	1.21	4.28%	1.50%	15.00%	12.67%	9.28%	1.18%	5.78%	19.28%	5.46%	
Vectren Corp.	VVC	33.48	1.45	4.33%	1.50%	8.50%	14.13%	8.78%	1.24%	5.83%	12.83%	5.57%	
Westar Energy	WR	31.00	1.40	4.52%	3.00%	5.50%	42.51%	9.44%	4.01%	7.52%	10.02%	8.53%	
Wisconsin Energy	WEC	40.59	1.59	3.92%	11.00%	6.00%	49.31%	13.21%	6.51%	14.92%	9.92%	10.43%	
Mean:				4.02%	5.00%	5.89%	37.82%	10.45%	4.11%	9.02%	9.91%	8.13%	
Median:				4.22%	4.50%	5.50%	39.87%	10.26%	4.01%	9.14%	9.17%	8.40%	
Cost of Equity Capital - DCF K_c Estimate:										9.00%	#	10.00%	8.25%

NMF = Not Meaningful
b = (1 - payout ratio) = Retention Ratio
ROE = Return on Book Equity
Stock Price = 2013 Average Closing Price

Data Source: Value Line Investment Survey

Support for Market Multiples
Electric Utilities - Central
2014 Assessment Year

Industry Overall				
Company Name	Ticker	\$Stock\$ Average	Earnings Average	P/E Multiple
ALLETE	ALE	47.78	2.82	16.94
Alliant Energy	LNT	49.27	3.4	14.49
Amer. Elec. Power	AEP	45.05	3.4	13.25
Ameren Corp.	AEE	33.72	2.44	13.82
CenterPoint Energy	CNP	22.75	1.18	19.28
Cleco Corp.	CNL	45.01	2.76	16.31
CMS Energy Corp.	CMS	26.55	1.87	14.20
DTE Energy	DTE	66.20	4.2	15.76
Empire Dist. Elec.	EDE	21.59	1.55	42.71
Entergy Corp.	ETR	63.87	4.9	4.41
Gt Plains Energy	GXP	22.44	1.68	38.02
Integrus Energy	TEG	55.79	4.28	5.24
ITC Holdings	ITC	40.58	1.85	30.16
MGE Energy	MGEE	39.61	2.26	17.96
OGE Energy	OGE	39.82	2.09	18.95
Otter Tail Corp.	OTTR	28.25	1.5	26.55
Vectren Corp.	VVC	33.48	2.2	12.84
Westar Energy	WR	31.00	2.32	14.43
Wisconsin Energy	WEC	40.59	2.66	11.65
Total:		753.37	49.36	
Mean:				18.26
Median:				15.76
Weighted Mean:				15.26
Estimated:				15.5
Equity Rate:				6.45%

Stock Price = 2013 Average Closing Price

Note: Units per share comparisons

Data Source: ValueLine Investment Survey

Cost of Capital Study
January 1, 2014
Direct Debt Rate Calculation

Industry: Electric Utilities - Central		
Direct Capitalization Debt Rate		
Interest Expense		\$ 4,274.5
Total Value of Debt (TVD)		\$ 83,786.4
Current Yield = Interest Expense/TVD		5.10%

\$ (millions)

Data Source: ValueLine Investment Survey