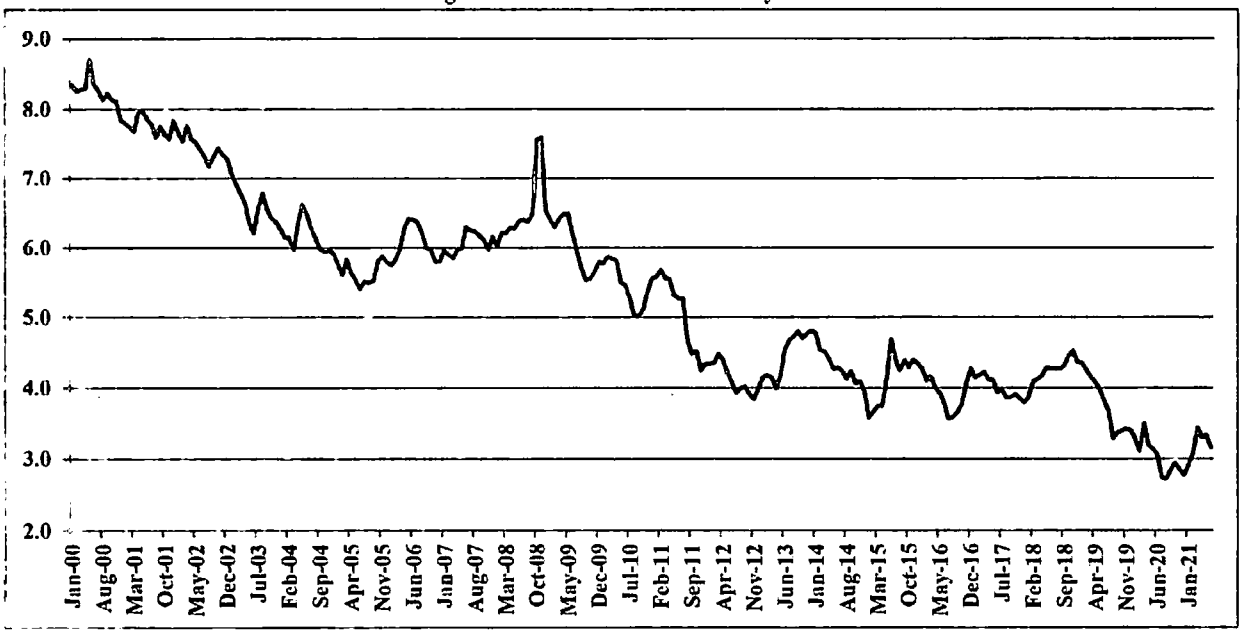
PART 3

Virginia State Corporation Commission
eFiling CASE Document Cover Sheet

Case Number (if already assigned)	PUR-2021-00058
Case Name (if known)	Application of Virginia Electric and Power Company, For a 2021 triennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia
Document Type	EXTE
Document Description Summary	Testimony and exhibits of Dr. J. Randall Woolridge, Mr. D. Scott Norwood, and Mr. Ralph C. Smith, C.P.A. on behalf of the Office of Attorney General, Division of Consumer Counsel. More than 100 pages per CLK-2020-00005
Total Number of Pages	100
Submission ID	22746
eFiling Date Stamp	9/3/2021 2:39:26PM

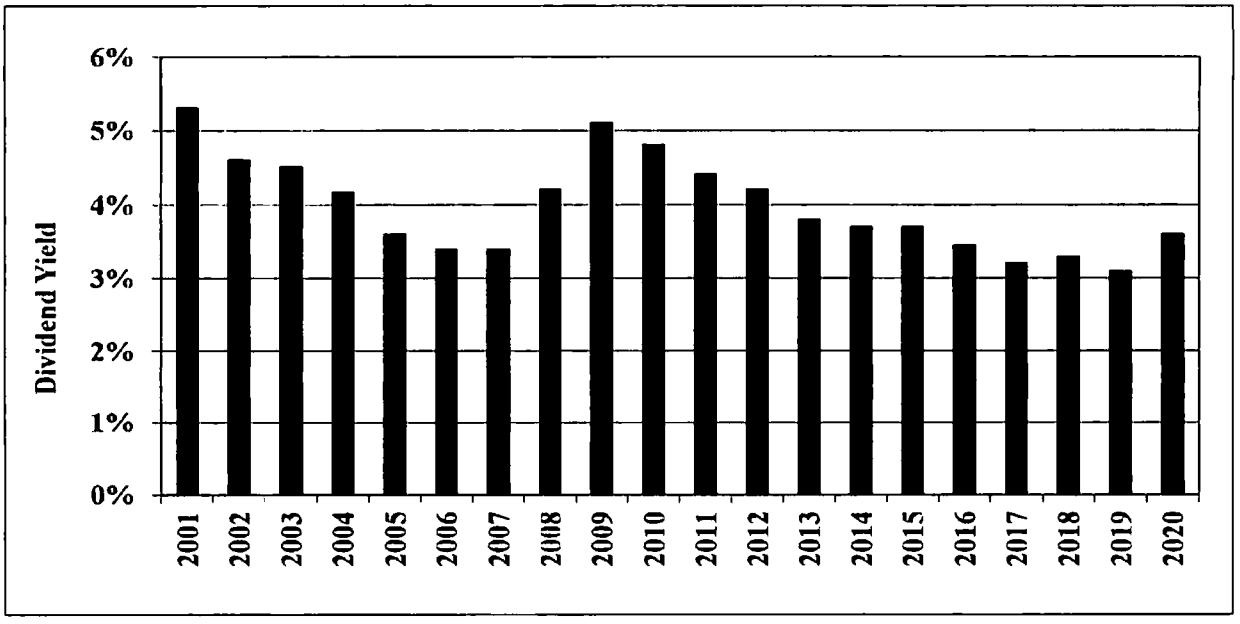
Exhibit JRW-2

Exhibit JRW-2
Long-Term 'A' Rated Public Utility Bonds



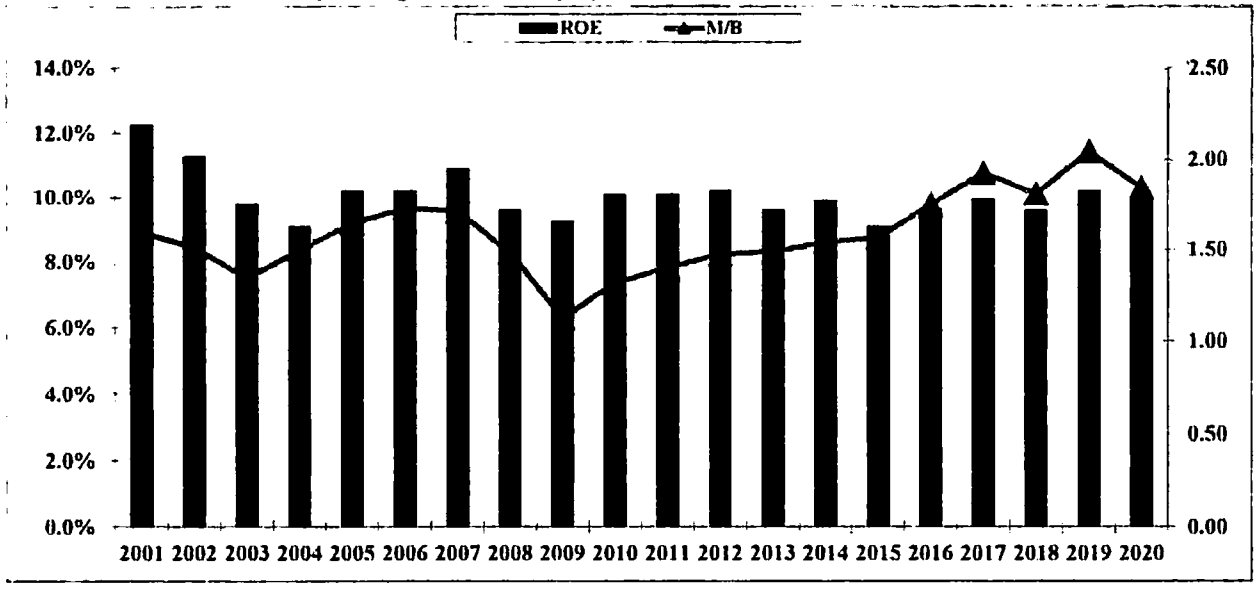
Data Source: Mergent Bond Record

Electric Utility Average Dividend Yield



Data Source: *Value Line Investment Survey.*

Electric Utility Average Return on Equity and Market-to-Book Ratios



Data Source: *Value Line Investment Survey.*

Exhibit JRW-3

Summary Financial Statistics for Proxy Groups

Panel A
Electric Proxy Group

Company	Operating Revenue ($mil)	Percent Reg Elec Revenue	Percent Reg Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Issuer Credit Rating	Moody's Long Term Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
ALLETE, Inc. (NYSE-ALE)	$1,240.5	84%	0%	$4,405.6	$3,983.2	BBB	Baa1	2.89x	MN, WI	56.1%	8.5%	1.78
Alliant Energy Corporation (NYSE-LNT)	$3,647.7	84%	12%	$13,527.1	$14,177.5	A-	Baa2	2.63x	WI,IA,IL,MN	43.6%	11.4%	2.72
Ameren Corporation (NYSE-AEE)	$5,646.0	80%	13%	$24,412.0	$21,439.4	BBB+	Baa1	3.56x	IL,MO	44.7%	10.6%	2.66
American Electric Power Co. (NYSE-AEP)	$15,561.4	96%	0%	$61,095.5	$49,306.3	A-	Baa2	2.67x	10 States	38.6%	9.9%	2.51
Avista Corporation (NYSE-AVA)	$1,345.6	64%	22%	$4,944.9	$3,488.8	BBB	Baa2	2.21x	WA,OR,AK,ID	45.7%	10.6%	1.80
CMS Energy Corporation (NYSE-CMS)	$6,845.0	65%	28%	$18,973.0	$19,402.5	BBB+	NA	2.54x	MI	27.3%	13.9%	3.87
Consolidated Edison, Inc. (NYSE-ED)	$12,574.0	64%	17%	$44,747.0	$29,375.6	A-	Baa2	2.58x	NY,PA	44.2%	7.7%	1.62
Dominion Energy Inc. (NYSE-D)	$16,572.0	67%	34%	$69,581.0	$74,607.2	BBB+	NA	2.49x	VA,NC,SC,OH,WV,UT	40.5%	5.4%	2.52
Duke Energy Corporation (NYSE-DUK)	$24,658.0	91%	7%	$102,339.0	$74,542.2	BBB+	Baa2	2.59x	NC,OH,FL,SC,KY	40.5%	8.3%	1.66
Edison International (NYSE-EIX)	$12,347.0	100%	0%	$44,849.0	$25,437.9	BBB	Baa3	2.54x	CA	37.9%	10.8%	1.91
Entergy Corporation (NYSE-ETR)	$10,878.7	88%	0%	$35,515.6	$25,636.9	BBB+	Baa2	2.15x	LA,AR,MS,TX	33.4%	13.0%	2.50
Evergy, Inc. (NYSE-EVRG)	$5,147.8	100%	0%	$19,216.9	$16,564.2	A-	NA	3.07x	KS,MO	46.0%	7.2%	1.93
Eversource Energy (NYSE-ES)	$8,526.5	82%	12%	$27,635.4	$32,513.5	A-	Baa1	3.49x	CT,NH,MA	44.4%	7.5%	2.57
Hawaiian Electric Industries (NYSE-HE)	$2,874.6	89%	0%	$5,308.8	$5,109.8	BBB	Baa1	3.73x	HI	47.7%	9.8%	2.24
IDACORP, Inc. (NYSE-IDA)	$1,346.4	100%	0%	$4,531.5	$5,372.7	BBB	Baa1	2.96x	ID	57.2%	9.6%	2.18
MGE Energy, Inc. (NYSE-MGEE)	$555.0	70%	30%	$1,643.4	$2,631.0	AA-	A1	4.95x	WI	60.3%	10.4%	3.07
NextEra Energy, Inc. (NYSE-NEE)	$19,204.0	71%	0%	$82,010.0	$137,996.0	A-	Baa1	2.43x	FL	43.8%	10.6%	3.73
NorthWestern Corporation (NYSE-NWE)	$1,257.9	78%	22%	$4,704.6	$3,932.3	BBB	NA	2.83x	MT,SD,NE	47.5%	10.2%	1.93
OGE Energy Corp. (NYSE-OGE)	$2,231.6	100%	0%	$8,964.8	$8,015.1	BBB+	NA	3.36x	OK,AR	55.2%	10.6%	1.94
Otter Tail Corporation (NDQ-OTTR)	$919.5	50%	0%	$1,775.7	$2,065.4	BBB	Baa2	4.16	MN,ND,SD	52.1%	11.5%	2.64
Pinnacle West Capital Corp. (NYSE-PNW)	$3,471.2	95%	0%	$14,254.3	$11,273.2	A-	A3	2.95x	AZ	47.8%	10.1%	2.08
Portland General Electric Company (NYSE-POR)	$2,123.0	100%	0%	$6,820.0	$5,325.9	BBB+	A3	2.62x	OR	48.1%	8.4%	2.06
Sempra Energy (NYSE-SRE)	$10,829.0	56%	44%	$37,043.0	$43,210.1	BBB+	Baa2	2.31x	CA,TX	36.5%	10.4%	2.44
Southern Company (NYSE-SO)	$21,419.0	73%	14%	$84,420.0	$71,408.9	BBB+	Baa1	3.20x	GA,FL,NJ,IL,VA,TN,MS	34.1%	18.1%	2.60
WEC Energy Group (NYSE-WEC)	$7,523.1	58%	42%	$23,661.5	$32,871.4	A-	Baa1	3.12x	WI,IL,MN,MI	43.9%	11.4%	3.25
Xcel Energy Inc. (NYSE-XEL)	$11,529.0	83%	16%	$40,781.0	$36,307.1	A-	Baa1	2.69x	MN,WI,ND,SD,MI	39.2%	10.8%	2.74
Mean	$8,087.4	80%	12%	$30,275.4	$29,076.7	BBB+	Baa1	2.95		44.5%	10.3%	2.42
Median	$6,245.5	82%	10%	$21,439.2	$20,421.0	BBB+	Baa1	2.76		44.3%	10.4%	2.47

Data Source: Company 2020 SEC 10-K filings, S&P Capital IQ; *Value Line Investment Survey*, 2021.

Panel B
Coyne Proxy Group

Company	Operating Revenue ($mil)	Percent Reg Elec Revenue	Percent Reg Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Issuer Credit Rating	Moody's Long Term Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
ALLETE, Inc. (NYSE-ALE)	$1,240.5	84%	0%	$4,405.6	$3,983.2	BBB	Baa1	2.89x	MN, WI	56.1%	8.5%	1.78
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Xcel Energy Inc. (NYSE-XEL)	$11,529.0	83%	16%	$40,781.0	$36,307.1	A-	Baa1	2.69x	MN,WI,ND,SD,MI	39.2%	10.8%	2.74
Mean	$8,127.1	91%	3%	$31,202.1	$29,365.8	BBB+	Baa1	2.86		45.3%	10.0%	2.31
Median	$5,147.8	91%	0%	$19,216.9	$16,564.2	BBB+	Baa1	2.69		44.7%	10.1%	2.18

Data Source: Company 2020 SEC 10-K filings, S&P Capital IQ; *Value Line Investment Survey*, 2021.

Value Line Risk Metrics for Proxy Groups

Panel A
Electric Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.90	A	2	90	90
Alliant Energy Corporation (NYSE-LNT)	0.85	A	2	95	95
Ameren Corporation (NYSE-AEE)	0.80	A	2	95	95
American Electric Power Co. (NYSE-AEP)	0.75	A+	1	95	100
Avista Corporation (NYSE-AVA)	0.95	B++	2	60	65
CMS Energy Corporation (NYSE-CMS)	0.80	B++	2	90	95
Consolidated Edison, Inc. (NYSE-ED)	0.75	A+	1	100	85
Dominion Energy Inc. (NYSE-D)	0.85	B++	2	55	90
Duke Energy Corporation (NYSE-DUK)	0.85	A	2	90	95
Edison International (NYSE-EIX)	0.95	B+	3	5	80
Entergy Corporation (NYSE-ETR)	0.95	B++	2	65	90
Evergy, Inc. (NYSE-EVRG)	0.95	B++	2	NMF	70
Eversource Energy (NYSE-ES)	0.90	A	1	100	85
Hawaiian Electric Industries (NYSE-HE)	0.80	A	2	70	85
IDACORP, Inc. (NYSE-IDA)	0.85	A	1	100	100
MGE Energy, Inc. (NYSE-MGEE)	0.75	A+	1	100	95
NextEra Energy, Inc. (NYSE-NEE)	0.90	A+	1	75	95
NorthWestern Corporation (NYSE-NWE)	0.95	B++	2	85	90
OGE Energy Corp. (NYSE-OGE)	1.05	A	2	90	80
Otter Tail Corporation (NDQ-OTTR)	0.90	A	2	95	100
Pinnacle West Capital Corp. (NYSE-PNW)	0.90	A+	1	100	90
Portland General Electric Company (NYSE-POR)	0.90	B++	3	90	90
Sempra Energy (NYSE-SRE)	0.95	A	2	80	90
Southern Company (NYSE-SO)	0.95	A	2	90	90
WEC Energy Group (NYSE-WEC)	0.80	A+	1	95	85
Xcel Energy Inc. (NYSE-XEL)	0.80	A+	1	100	95
Mean	0.88	A	1.7	84	89

Data Source: *Value Line Investment Survey*, 2021.

Panel B
Coyne Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.90	A	2	90	90
Alliant Energy Corporation (NYSE-LNT)	0.85	A	2	95	95
Ameren Corporation (NYSE-AEE)	0.80	A	2	95	95
American Electric Power Co. (NYSE-AEP)	0.75	A+	1	95	100
Duke Energy Corporation (NYSE-DUK)	0.85	A	2	90	95
Edison International (NYSE-EIX)	0.95	B+	3	5	75
Entergy Corporation (NYSE-ETR)	0.95	B++	2	65	90
Evergy, Inc. (NYSE-EVRG)	0.95	B++	2	NMF	70
Hawaiian Electric Industries (NYSE-HE)	0.80	A	2	70	85
IDACORP, Inc. (NYSE-IDA)	0.80	A	2	100	100
NextEra Energy, Inc. (NYSE-NEE)	0.90	A+	1	75	95
OGE Energy Corp. (NYSE-OGE)	1.05	A	2	90	80
Pinnacle West Capital Corp. (NYSE-PNW)	0.90	A+	1	95	90
Portland General Electric Company (NYSE-POR)	0.90	B++	3	90	90
Xcel Energy Inc. (NYSE-XEL)	0.80	A+	1	100	95
Mean	0.88	A	1.9	83	90

Data Source: *Value Line Investment Survey*, 2021.

Value Line Risk Metrics for Proxy Groups

Beta

A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The ''coefficient'' is derived from a regression analysis of the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. Betas are adjusted for their long-term tendency to converge toward 1.00.

Financial Strength

A relative measure of the companies reviewed by *Value Line* . The relative ratings range from A++ (strongest) down to C (weakest).

Safety Rank

A measurement of potential risk associated with individual common stocks. The Safety Rank is computed by averaging two other *Value Line* indexes the Price Stability Index and the Financial strength Rating. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit their purchases to equities ranked 1 (Highest) and 2 (Above Average) for Safety.

Earnings Predictability

A measure of the reliability of an earnings forecast. Earnings Predictability is based upon the stability of year-to-year comparisons, with recent years being weighted more heavily than earlier ones. The most reliable forecasts tend to be those with the highest rating (100); the least reliable, the lowest (5). The earnings stability is derived from the standard deviation of percentage changes in quarterly earnings over an eight-year period. Special adjustments are made for comparisons around zero and from plus to minus.

Stock Price Stability

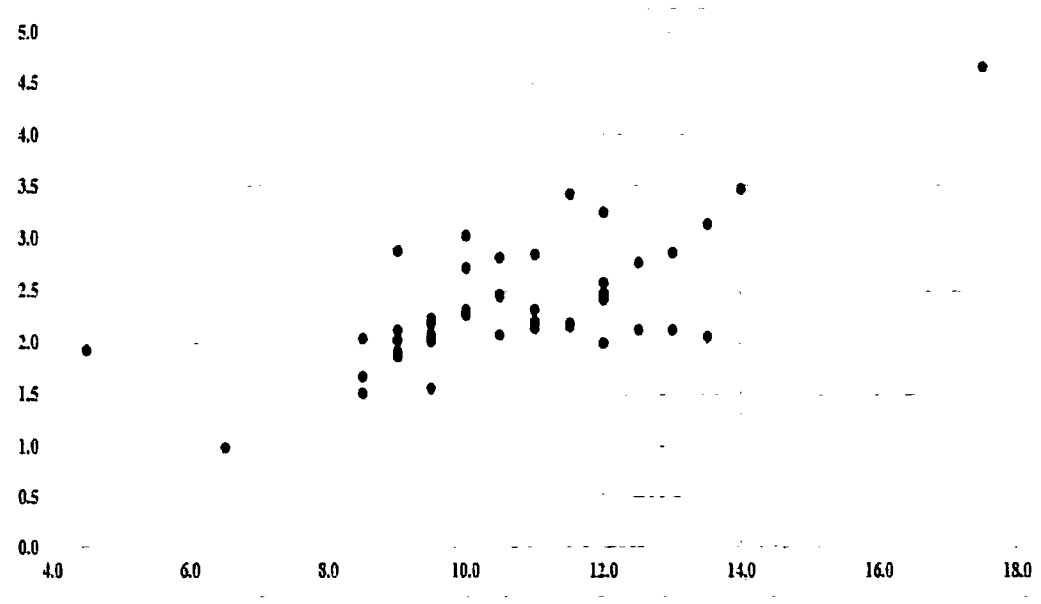
A measure of the stability of a stock's price. It includes sensitivity to the market (see Beta as well as the stock's inherent volatility. *Value Line's* Stability ratings range from 1 (highest) to 5 (lowest).

Source: *Value Line Investment Analyzer* .

Exhibit JRW-4

The Relationship Between Expected ROE and Market-to-Book Ratios

Electric Utilities and Gas Distribution Companies



Source: *Value Line Investment Survey*, 2019.

Exhibit JRW-5

Industry Average Betas

Value Line Investment Survey Betas**

28-Jan-21

Rank	Industry	Beta	Rank	Industry	Beta	Rank	Industry	Beta
1	Oilfield Svcs/Equip.	1.49	34	Bank (Midwest)	1.20	67	Investment Co.	1.01
2	Homebuilding	1.47	35	Restaurant	1.19	68	Med Supp Non-Invasive	1.00
3	Insurance (Life)	1.47	36	Machinery	1.19	69	Environmental	1.00
4	Petroleum (Integrated)	1.42	37	Electrical Equipment	1.18	70	Telecom. Equipment	1.00
5	Hotel/Gaming	1.42	38	Bank	1.18	71	Investment Co.(Foreign)	1.00
6	Petroleum (Producing)	1.41	39	Medical Services	1.17	72	E-Commerce	0.99
7	Apparel	1.39	40	Electronics	1.17	73	Retail Store	0.98
8	Air Transport	1.37	41	Maritime	1.17	74	Cable TV	0.96
9	Shoe	1.37	42	Heavy Truck & Equip	1.15	75	Drug	0.96
10	Retail (Hardlines)	1.36	43	Toiletrics/Cosmetics	1.15	76	Telecom. Services	0.95
11	Building Materials	1.33	44	R.E.I.T.	1.15	77	Healthcare Information	0.94
12	Office Equip/Supplies	1.33	45	Automotive	1.15	78	Computer Software	0.94
13	Aerospace/Defense	1.31	46	Reinsurance	1.14	79	Tobacco	0.94
14	Metals & Mining (Div.)	1.30	47	Publishing	1.11	80	Trucking	0.94
15	Metal Fabricating	1.30	48	Computers/Peripherals	1.10	81	Telecom. Utility	0.93
16	Pipeline MLPs	1.30	49	Semiconductor Equip	1.10	82	Electric Utility (West)	0.90
17	Auto Parts	1.29	50	Industrial Services	1.09	83	Foreign Electronics	0.90
18	Steel	1.28	51	Precision Instrument	1.09	84	Biotechnology	0.90
19	Retail Automotive	1.27	52	Packaging & Container	1.09	85	Beverage	0.89
20	Oil/Gas Distribution	1.26	53	Railroad	1.08	86	Electric Utility (East)	0.89
21	Paper/Forest Products	1.25	54	Power	1.07	87	Natural Gas Utility	0.89
22	Furn/Home Furnishings	1.25	55	Wireless Networking	1.07	88	Electric Util. (Central)	0.89
23	Public/Private Equity	1.24	56	Med Supp Invasive	1.06	89	Household Products	0.81
24	Natural Gas (Div.)	1.24	57	Retail Building Supply	1.06	90	Retail/Wholesale Food	0.81
25	Advertising	1.23	58	Educational Services	1.06	91	Water Utility	0.79
26	Financial Svcs. (Div.)	1.22	59	Semiconductor	1.06	92	Entertainment Tech	0.79
27	Recreation	1.21	60	Internet	1.05	93	Food Processing	0.77
28	Engineering & Const	1.21	61	Insurance (Prop/Cas.)	1.05	94	Precious Metals	0.68
29	Retail (Softlines)	1.21	62	Human Resources	1.04			
30	Chemical (Specialty)	1.21	63	Information Services	1.03			
31	Chemical (Diversified)	1.21	64	Entertainment	1.03			
32	Diversified Co.	1.20	65	Thrift	1.02			
33	Chemical (Basic)	1.20	66	IT Services	1.01		Mean	1.12

* Industry averages for 94 industries using *Value Line*'s database of 1,700 companies - Updated 1-28-21.

** *Value Line* computes betas using monthly returns regressed against the New York Stock Exchange Index for five years. These betas are then adjusted as follows: *VL* Beta = [{(2/3) * Regressed Beta} + {(1/3) * (1.0)}] to account to tendency for Betas to regress toward average of 1.0. See M. Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971.

Exhibit JRW-6

DCF Model

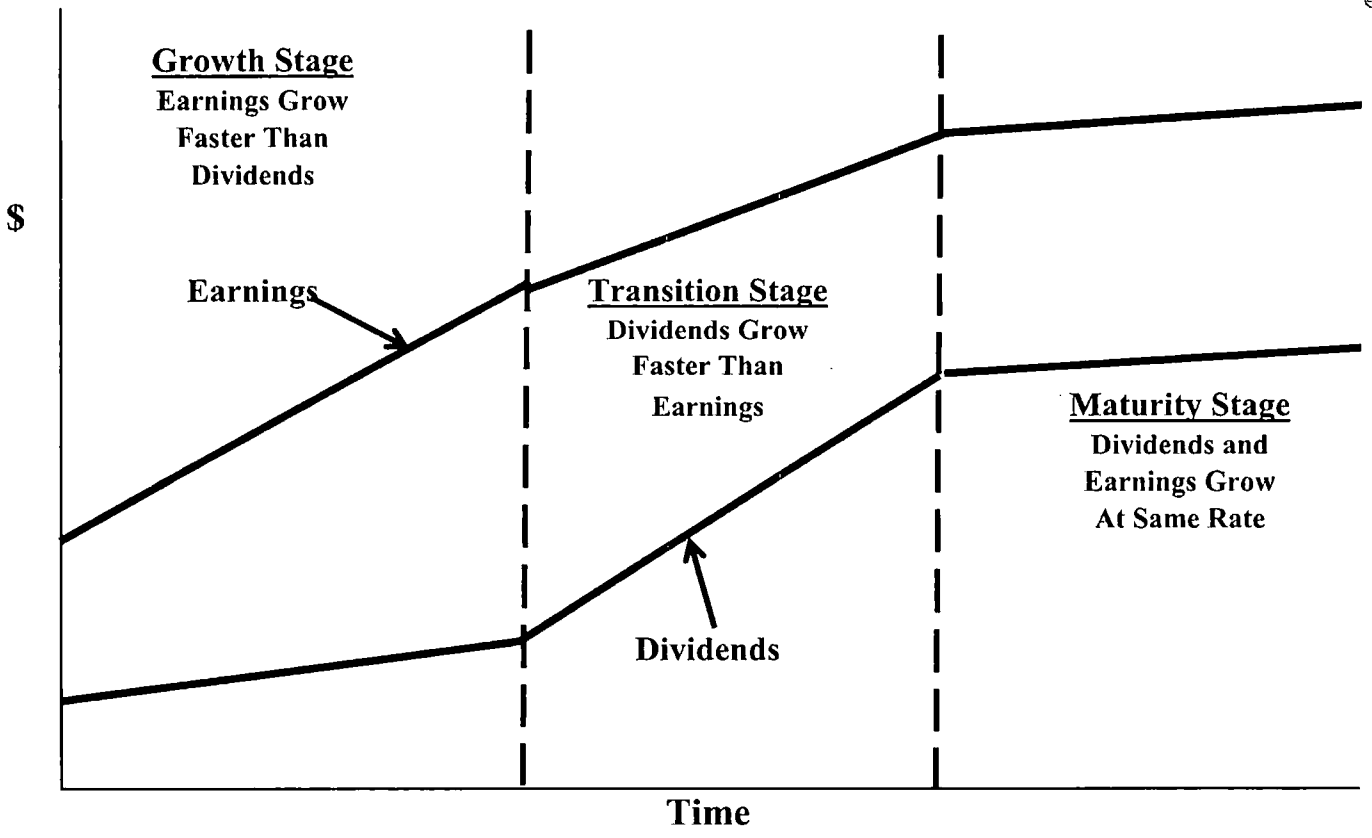


Exhibit JRW-7

DCF Study

Panel A
Electric Proxy Group

Dividend Yield*	3.40%
Adjustment Factor	1.0275
Adjusted Dividend Yield	3.49%
Growth Rate**	5.50%
Equity Cost Rate	9.00%

* Page 2 of Exhibit JRW-7

** Based on data provided on pages 3, 4, 5, and 6 of Exhibit JRW-7

Panel B
Coyne Proxy Group

Dividend Yield*	3.40%
Adjustment Factor	1.02625
Adjusted Dividend Yield	3.49%
Growth Rate**	5.25%
Equity Cost Rate	8.75%

* Page 2 of Exhibit JRW-7

** Based on data provided on pages 3, 4, 5, and 6 of Exhibit JRW-7

DCF Study
Dividend Yields

Panel A
Electric Proxy Group

Company		Annual Dividend	Dividend Yield 30 Day	Dividend Yield 90 Day	Dividend Yield 180 Day
ALLETE, Inc. (NYSE-ALE)	ALE	2.52	3.6%	3.6%	3.9%
Alliant Energy Corporation (NYSE-LNT)	LNT	1.52	2.7%	2.7%	2.8%
Ameren Corporation (NYSE-AEE)	AEE	2.2	2.6%	2.7%	2.8%
American Electric Power Co. (NYSE-AEP)	AEP	2.96	3.5%	3.5%	3.5%
Avista Corporation (NYSE-AVA)	AVA	1.69	3.9%	3.7%	4.0%
CMS Energy Corporation (NYSE-CMS)	CMS	1.74	2.9%	2.8%	2.9%
Consolidated Edison, Inc. (NYSE-ED)	ED	3.1	4.1%	4.1%	4.2%
Dominion Energy Inc. (NYSE-D)	D	2.52	3.3%	3.3%	3.3%
Duke Energy Corporation (NYSE-DUK)	DUK	3.86	3.8%	3.9%	4.0%
Edison International (NYSE-EIX)	EIX	2.65	4.6%	4.5%	4.5%
Entergy Corporation (NYSE-ETR)	ETR	3.8	3.6%	3.7%	3.7%
Evergy, Inc. (NYSE-EVRG)	EVRG	2.14	3.4%	3.5%	3.7%
Eversource Energy (NYSE-ES)	ES	2.41	2.9%	2.9%	2.8%
Hawaiian Electric Industries (NYSE-HE)	HE	1.36	3.2%	3.2%	3.5%
IDACORP, Inc. (NYSE-IDA)	IDA	2.84	2.9%	2.8%	3.0%
MGE Energy, Inc. (NYSE-MGEE)	MGEE	1.48	2.0%	2.0%	2.1%
NextEra Energy, Inc. (NYSE-NEE)	NEE	1.54	2.1%	2.1%	2.0%
NorthWestern Corporation (NYSE-NWE)	NWE	2.48	4.0%	3.9%	4.1%
OGE Energy Corp. (NYSE-OGE)	OGE	1.61	4.7%	4.8%	4.9%
Otter Tail Corporation (NDQ-OTTR)	OTTR	1.56	3.2%	3.3%	3.5%
Pinnacle West Capital Corp. (NYSE-PNW)	PNW	3.32	3.9%	4.0%	4.1%
Portland General Electric Company (NYSE-POR)	POR	1.63	3.4%	3.4%	3.6%
SEMPRA Energy (NYSE-SRE)	SRE	4.4	3.2%	3.3%	3.4%
Southern Company (NYSE-SO)	SO	2.56	4.1%	4.1%	4.2%
WEC Energy Group (NYSE-WEC)	WEC	2.71	3.0%	2.9%	2.9%
Xcel Energy Inc. (NYSE-XEL)	XEL	1.83	2.7%	2.7%	2.7%
Mean			3.4%	3.4%	3.5%
Median			3.4%	3.3%	3.5%

Data Sources: S&P Cap IQ., May, 2021.

Panel B
Coyne Proxy Group

Company		Annual Dividend	Dividend Yield 30 Day	Dividend Yield 90 Day	Dividend Yield 180 Day
ALLETE, Inc. (NYSE-ALE)	ALE	2.52	3.6%	3.6%	3.9%
Alliant Energy Corporation (NYSE-LNT)	LNT	1.52	2.7%	2.7%	2.8%
Ameren Corporation (NYSE-AEE)	AEE	2.2	2.6%	2.7%	2.8%
American Electric Power Co. (NYSE-AEP)	AEP	2.96	3.5%	3.5%	3.5%
Duke Energy Corporation (NYSE-DUK)	DUK	3.86	3.8%	3.9%	4.0%
Edison International (NYSE-EIX)	EIX	2.65	4.6%	4.5%	4.5%
Entergy Corporation (NYSE-ETR)	ETR	3.8	3.6%	3.7%	3.7%
Evergy, Inc. (NYSE-EVRG)	EVRG	2.14	3.4%	3.5%	3.7%
Hawaiian Electric Industries (NYSE-HE)	HE	1.36	3.2%	3.2%	3.5%
IDACORP, Inc. (NYSE-IDA)	IDA	2.84	2.9%	2.8%	3.0%
NextEra Energy, Inc. (NYSE-NEE)	NEE	1.54	2.1%	2.1%	2.0%
OGE Energy Corp. (NYSE-OGE)	OGE	1.61	4.7%	4.8%	4.9%
Pinnacle West Capital Corp. (NYSE-PNW)	PNW	3.32	3.9%	4.0%	4.1%
Portland General Electric Company (NYSE-POR)	POR	1.63	3.4%	3.4%	3.6%
Xcel Energy Inc. (NYSE-XEL)	XEL	1.83	2.7%	2.7%	2.7%
Mean			3.4%	3.4%	3.5%
Median			3.4%	3.5%	3.6%

Data Sources: S&P Cap IQ., May, 2021.

DCF Study

DCF Equity Cost Growth Rate Measures
Value Line Historic Growth Rates

Panel A
Electric Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)	4.0	3.0	5.0	2.5	3.5	4.5
Alliant Energy Corporation (NYSE-LNT)	6.0	7.0	4.5	6.0	7.0	5.5
Ameren Corporation (NYSE-AEE)	2.0	0.5		8.0	3.5	3.5
American Electric Power Co. (NYSE-AEP)	4.0	5.0	4.0	4.0	5.5	3.0
Avista Corporation (NYSE-AVA)	4.0	6.5	4.0	4.5	4.0	4.0
CMS Energy Corporation (NYSE-CMS)	7.5	11.5	5.0	7.0	7.0	5.5
Consolidated Edison, Inc. (NYSE-ED)	2.5	2.5	4.0	1.5	3.0	4.5
Dominion Energy Inc. (NYSE-D)	-1.5	7.5	5.0	-5.0	7.5	9.0
Duke Energy Corporation (NYSE-DUK)	2.5	3.0	2.0	1.5	3.5	1.0
Edison International (NYSE-EIX)	-8.0	7.0	1.5	-18.5	10.5	1.5
Entergy Corporation (NYSE-ETR)		1.5	1.0	3.0	2.0	-1.0
Evergy, Inc. (NYSE-EVRG)						
Eversource Energy (NYSE-ES)	5.5	8.5	6.5	5.5	6.5	4.0
Hawaiian Electric Industries (NYSE-HE)	6.0	0.5	3.0	3.5	0.5	3.5
IDACORP, Inc. (NYSE-IDA)	6.0	7.0	5.0	4.0	8.0	4.5
MGE Energy, Inc. (NYSE-MGEE)	5.0	3.5	5.5	3.0	4.5	6.0
Nextera Energy, Inc. (NYSE-NEE)	6.0	10.0	9.0	6.5	12.0	10.5
NorthWestern Corporation (NYSE-NWE)	5.5	5.5	6.0	3.5	6.5	5.5
OGE Energy Corp. (NYSE-OGE)	4.5	7.5	6.0	3.0	9.5	4.0
Otter Tail Corporation (NDQ-OTTR)	11.5	1.5	0.5	8.0	3.0	5.0
Pinnacle West Capital Corp. (NYSE-PNW)	6.5	4.0	3.5	5.0	5.5	4.0
Portland General Electric Company (NYSE-POR)	4.0	4.0	3.0	1.5	6.0	3.5
Sempra Energy (NYSE-SRE)	3.0	10.0	5.5	5.0	8.0	6.0
Southern Company (NYSE-SO)	3.0	3.5	3.5	2.5	3.5	3.0
WEC Energy Group (NYSE-WEC)	8.0	13.5	7.5	7.5	8.5	8.0
Xcel Energy Inc. (NYSE-XEL)	6.0	5.5	4.5	5.5	6.0	5.0
Mean	4.3	5.6	4.4	3.1	5.8	4.5
Median	4.8	5.5	4.5	4.0	6.0	4.5
Data Source: *Value Line Investment Survey.*	Average of Median Figures =			4.9		

Panel B
Coyne Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)	4.0	3.0	5.0	2.5	3.5	4.5
Alliant Energy Corporation (NYSE-LNT)	6.0	7.0	4.5	6.0	7.0	5.5
Ameren Corporation (NYSE-AEE)	2.0	0.5		8.0	3.5	3.5
American Electric Power Co. (NYSE-AEP)	4.0	5.0	4.0	4.0	5.5	3.0
Duke Energy Corporation (NYSE-DUK)	2.5	3.0	2.0	1.5	3.5	1.0
Edison International (NYSE-EIX)	-8.0	7.0	1.5	-18.5	10.5	1.5
Entergy Corporation (NYSE-ETR)		1.5	1.0	3.0	2.0	-1.0
Evergy, Inc. (NYSE-EVRG)						
Hawaiian Electric Industries (NYSE-HE)	6.0	0.5	3.0	3.5	0.5	3.5
IDACORP, Inc. (NYSE-IDA)	6.0	7.0	5.0	4.0	8.0	4.5
Nextera Energy, Inc. (NYSE-NEE)	6.0	10.0	9.0	6.5	12.0	10.5
OGE Energy Corp. (NYSE-OGE)	4.5	7.5	6.0	3.0	9.5	4.0
Pinnacle West Capital Corp. (NYSE-PNW)	6.5	4.0	3.5	5.0	5.5	4.0
Portland General Electric Company (NYSE-POR)	4.0	4.0	3.0	1.5	6.0	3.5
Xcel Energy Inc. (NYSE-XEL)	6.0	5.5	4.5	5.5	6.0	5.0
Mean	3.8	4.7	4.0	2.5	5.9	3.8
Median	4.5	4.5	4.0	3.8	5.8	3.8
Data Source: *Value Line Investment Survey.*	Average of Median Figures =			4.4		

DCF Study

DCF Equity Cost Growth Rate Measures
Value Line Projected Growth Rates

Panel A
Electric Proxy Group

Company	*Value Line* Projected Growth Est'd. '18-'20 to '24-'26			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	5.0	3.5	3.0	9.0%	37.0%	3.3%
Alliant Energy Corporation (NYSE-LNT)	5.5	6.0	6.0	10.5%	37.0%	3.9%
Ameren Corporation (NYSE-AEE)	6.5	7.0	6.5	10.5%	42.0%	4.4%
American Electric Power Co. (NYSE-AEP)	6.5	5.5	5.5	11.0%	36.0%	4.0%
Avista Corporation (NYSE-AVA)	3.0	4.5	3.0	8.5%	29.0%	2.5%
CMS Energy Corporation (NYSE-CMS)	7.5	7.0	7.5	13.5%	39.0%	5.3%
Consolidated Edison, Inc. (NYSE-ED)	4.0	3.0	3.0	8.5%	36.0%	3.1%
Dominion Energy Inc. (NYSE-D)	12.0	-1.5	4.0	12.0%	32.0%	3.8%
Duke Energy Corporation (NYSE-DUK)	7.0	2.0	2.0	9.5%	34.0%	3.2%
Edison International (NYSE-EIX)	NMF	3.5	5.0	11.5%	39.0%	4.5%
Entergy Corporation (NYSE-ETR)	3.0	4.5	5.0	11.0%	36.0%	4.0%
Evergy, Inc. (NYSE-EVRG)	8.0	5.5	3.0	9.0%	38.0%	3.4%
Eversource Energy (NYSE-ES)	5.5	6.0	4.5	9.5%	37.0%	3.5%
Hawaiian Electric Industries (NYSE-HE)	5.0	3.0	3.5	9.5%	37.0%	3.5%
IDACORP, Inc. (NYSE-IDA)	4.0	6.5	3.5	9.5%	35.0%	3.3%
MGE Energy, Inc. (NYSE-MGEE)	4.5	5.5	5.0	10.0%	43.0%	4.3%
Nextera Energy, Inc. (NYSE-NEE)	10.5	10.5	6.0	12.0%	30.0%	3.6%
NorthWestern Corporation (NYSE-NWE)	3.0	3.5	3.0	8.5%	32.0%	2.7%
OGE Energy Corp. (NYSE-OGE)	4.0	4.5	1.5	13.0%	30.0%	3.9%
Otter Tail Corporation (NDQ-OTTR)	7.0	5.5	5.5	12.5%	41.0%	5.1%
Pinnacle West Capital Corp. (NYSE-PNW)	5.0	5.5	4.0	10.5%	35.0%	3.7%
Portland General Electric Company (NYSE-POR)	8.5	5.5	3.0	10.0%	40.0%	4.0%
Sempra Energy (NYSE-SRE)	10.0	6.0	8.0	11.0%	48.0%	5.3%
Southern Company (NYSE-SO)	5.0	3.0	4.0	13.5%	30.0%	4.1%
WEC Energy Group (NYSE-WEC)	6.5	6.5	4.0	13.0%	35.0%	4.6%
Xcel Energy Inc. (NYSE-XEL)	6.0	6.0	5.0	11.0%	39.0%	4.3%
Mean	6.1	4.9	4.4	10.7%	36.4%	3.9%
Median	5.5	5.5	4.0	10.5%	36.5%	3.9%
Average of Median Figures =		5.0			Median =	3.9%

* 'Est'd. '18-'20 to '24-'26' is the estimated growth rate from the base period 2018 to 2020 until the future period 2024 to 2026.
Data Source: *Value Line Investment Survey.*

Panel B
Coyne Proxy Group

Company	*Value Line* Projected Growth Est'd. '18-'20 to '24-'26			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	6.0	3.5	3.0	9.0%	38.0%	3.4%
Alliant Energy Corporation (NYSE-LNT)	5.5	6.0	6.0	10.5%	37.0%	3.9%
Ameren Corporation (NYSE-AEE)	6.5	7.0	6.5	10.5%	42.0%	4.4%
American Electric Power Co. (NYSE-AEP)	6.5	5.5	5.5	11.0%	36.0%	4.0%
Duke Energy Corporation (NYSE-DUK)	7.0	2.0	2.0	9.5%	34.0%	3.2%
Edison International (NYSE-EIX)	NMF	3.5	5.0	11.5%	39.0%	4.5%
Entergy Corporation (NYSE-ETR)	3.0	4.5	5.0	11.0%	36.0%	4.0%
Evergy, Inc. (NYSE-EVRG)	8.0	5.5	3.0	9.0%	38.0%	3.4%
Hawaiian Electric Industries (NYSE-HE)	5.0	3.0	3.5	9.5%	37.0%	3.5%
IDACORP, Inc. (NYSE-IDA)	4.0	6.5	3.5	9.5%	35.0%	3.3%
Nextera Energy, Inc. (NYSE-NEE)	10.5	10.5	6.0	12.0%	30.0%	3.6%
OGE Energy Corp. (NYSE-OGE)	4.0	4.5	1.5	13.0%	30.0%	3.9%
Pinnacle West Capital Corp. (NYSE-PNW)	5.0	5.5	4.0	10.5%	35.0%	3.7%
Portland General Electric Company (NYSE-POR)	8.5	5.5	3.0	10.0%	40.0%	4.0%
Xcel Energy Inc. (NYSE-XEL)	6.0	6.0	5.0	11.0%	39.0%	4.3%
Mean	6.1	5.3	4.2	10.5%	36.4%	3.8%
Median	6.0	5.5	4.0	10.5%	37.0%	3.9%
Average of Median Figures =		5.2			Median =	3.9%

* 'Est'd. '18-'20 to '24-'26' is the estimated growth rate from the base period 2018 to 2020 until the future period 2024 to 2026.
Data Source: *Value Line Investment Survey.*

DCF Study

DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Panel A
Electric Proxy Group

Company	Yahoo	Zacks	S&P	Mean
ALLETE, Inc. (NYSE-ALE)	7.0%	6.0%	6.0%	6.3%
Alliant Energy Corporation (NYSE-LNT)	5.5%	5.5%	6.0%	5.7%
Ameren Corporation (NYSE-AEE)	7.7%	7.3%	7.3%	7.4%
American Electric Power Co. (NYSE-AEP)	6.2%	5.9%	6.0%	6.0%
Avista Corporation (NYSE-AVA)	6.9%	5.4%	5.0%	5.8%
CMS Energy Corporation (NYSE-CMS)	6.6%	6.9%	7.0%	6.9%
Consolidated Edison, Inc. (NYSE-ED)	3.0%	2.0%	3.5%	2.8%
Dominion Energy Inc. (NYSE-D)	6.8%	6.7%	7.0%	6.8%
Duke Energy Corporation (NYSE-DUK)	5.0%	5.2%	6.0%	5.4%
Edison International (NYSE-EIX)	3.4%	3.4%	3.3%	3.4%
Entergy Corporation (NYSE-ETR)	5.8%	5.1%	5.8%	5.6%
Evergy, Inc. (NYSE-EVRG)	5.8%	5.9%	6.5%	6.1%
Eversource Energy (NYSE-ES)	6.8%	6.5%	6.5%	6.6%
Hawaiian Electric Industries (NYSE-HE)	1.3%	7.4%	7.4%	5.4%
IDACORP, Inc. (NYSE-IDA)	3.2%	3.9%	3.1%	3.4%
MGE Energy, Inc. (NYSE-MGEE)	5.9%	5.9%	5.9%	5.9%
Nextera Energy, Inc. (NYSE-NEE)	8.0%	7.8%	8.0%	7.9%
NorthWestern Corporation (NYSE-NWE)	4.5%	4.9%	5.1%	4.8%
OGE Energy Corp. (NYSE-OGE)	3.8%	4.4%	3.1%	3.8%
Otter Tail Corporation (NDQ-OTTR)	9.0%	4.7%	5.5%	6.4%
Pinnacle West Capital Corp. (NYSE-PNW)	3.4%	4.0%	3.2%	3.5%
Portland General Electric Company (NYSE-POR)	7.1%	8.6%	4.7%	6.8%
Sempra Energy (NYSE-SRE)	4.3%	4.9%	3.3%	4.2%
Southern Company (NYSE-SO)	6.5%	4.9%	6.0%	5.8%
WEC Energy Group (NYSE-WEC)	6.2%	6.0%	6.3%	6.2%
Xcel Energy Inc. (NYSE-XEL)	6.2%	6.1%	6.2%	6.2%
Mean	5.6%	5.6%	5.5%	5.6%
Median	6.1%	5.7%	6.0%	5.9%

Data Sources: www.zacks.com, http://quote.yahoo.com, S&P Cap IQ, July, 2021.

Panel B
Coyne Proxy Group

Company	Yahoo	Zacks	S&P	Mean
ALLETE, Inc. (NYSE-ALE)	7.0%	6.0%	6.0%	6.3%
Alliant Energy Corporation (NYSE-LNT)	5.5%	5.5%	6.0%	5.7%
Ameren Corporation (NYSE-AEE)	7.7%	7.3%	7.3%	7.4%
American Electric Power Co. (NYSE-AEP)	6.2%	5.9%	6.0%	6.0%
Duke Energy Corporation (NYSE-DUK)	5.0%	5.2%	6.0%	5.4%
Edison International (NYSE-EIX)	3.4%	3.4%	3.3%	3.4%
Entergy Corporation (NYSE-ETR)	5.8%	5.1%	5.8%	5.6%
Evergy, Inc. (NYSE-EVRG)	5.8%	5.9%	6.5%	6.1%
Hawaiian Electric Industries (NYSE-HE)	1.3%	7.4%	7.4%	5.4%
IDACORP, Inc. (NYSE-IDA)	3.2%	3.9%	3.1%	3.4%
Nextera Energy, Inc. (NYSE-NEE)	8.0%	7.8%	8.0%	7.9%
OGE Energy Corp. (NYSE-OGE)	3.8%	4.4%	3.1%	3.8%
Pinnacle West Capital Corp. (NYSE-PNW)	3.4%	4.0%	3.2%	3.5%
Portland General Electric Company (NYSE-POR)	7.1%	8.6%	4.7%	6.8%
Xcel Energy Inc. (NYSE-XEL)	6.2%	6.1%	6.2%	6.2%
Mean	5.3%	5.8%	5.5%	5.5%
Median	5.8%	5.9%	6.0%	5.7%

Data Sources: www.zacks.com, http://quote.yahoo.com, S&P Cap IQ, July, 2021.

DCF Study

DCF Growth Rate Indicators

Electric and Coyne Proxy Groups

Growth Rate Indicator	Electric Proxy Group	Coyne Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	4.9%	4.4%
Projected *Value Line* Growth in EPS, DPS, and BVPS	5.0%	5.2%
Sustainable Growth ROE * Retention Rate	3.9%	3.9%
Projected EPS Growth from Yahoo and Zacks - Mean/Median	5.6%/5.9%	5.5%/5.7%

Exhibit JRW-8

Capital Asset Pricing Model

Panel A
Electric Proxy Group

Risk-Free Interest Rate	2.50%
Beta*	0.90
Ex Ante Equity Risk Premium**	6.00%
CAPM Cost of Equity	7.9%

* See page 3 of Exhibit JRW-8

** See pages 5 and 6 of Exhibit JRW-8

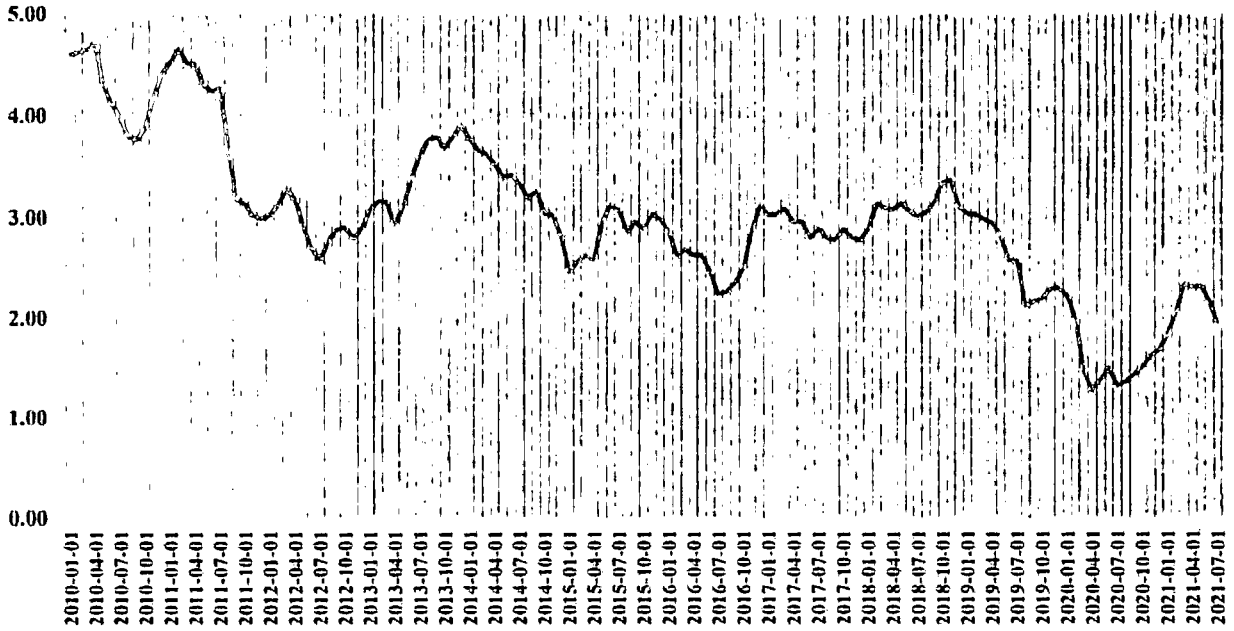
Panel B
Coyne Proxy Group

Risk-Free Interest Rate	2.50%
Beta*	0.90
Ex Ante Equity Risk Premium**	6.00%
CAPM Cost of Equity	7.9%

* See page 3 of Exhibit JRW-8

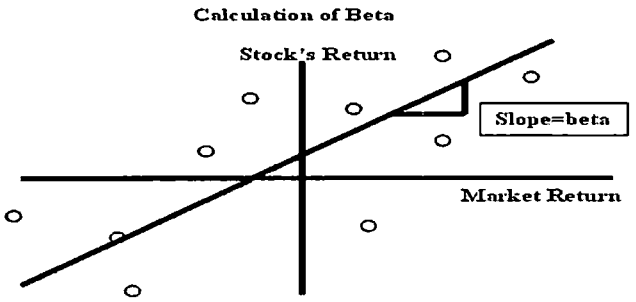
** See pages 5 and 6 of Exhibit JRW-8

Thirty-Year U.S. Treasury Yields
2010-2021



Source: Federal Reserve Bank of St. Louis, FRED Database.

CAPM Study



Panel A
Electric Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.90
Alliant Energy Corporation (NYSE-LNT)	0.85
Ameren Corporation (NYSE-AEE)	0.80
American Electric Power Co. (NYSE-AEP)	0.75
Avista Corporation (NYSE-AVA)	0.95
CMS Energy Corporation (NYSE-CMS)	0.80
Consolidated Edison, Inc. (NYSE-ED)	0.75
Dominion Energy Inc. (NYSE-D)	0.85
Duke Energy Corporation (NYSE-DUK)	0.85
Edison International (NYSE-EIX)	0.95
Entergy Corporation (NYSE-ETR)	0.95
Evergy, Inc. (NYSE-EVRG)	0.95
Eversource Energy (NYSE-ES)	0.90
Hawaiian Electric Industries (NYSE-HE)	0.80
IDACORP, Inc. (NYSE-IDA)	0.80
MGE Energy, Inc. (NYSE-MGEE)	0.75
NextEra Energy, Inc. (NYSE-NEE)	0.90
NorthWestern Corporation (NYSE-NWE)	0.95
OGE Energy Corp. (NYSE-OGE)	1.05
Otter Tail Corporation (NDQ-OTTR)	0.90
Pinnacle West Capital Corp. (NYSE-PNW)	0.90
Portland General Electric Company (NYSE-POR)	0.90
Sempra Energy (NYSE-SRE)	0.95
Southern Company (NYSE-SO)	0.95
WEC Energy Group (NYSE-WEC)	0.80
Xcel Energy Inc. (NYSE-XEL)	0.80
Mean	0.87
Median	0.90

Data Source: *Value Line Investment Survey*, 2021.

Panel B
Coyne Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.90
Alliant Energy Corporation (NYSE-LNT)	0.85
Ameren Corporation (NYSE-AEE)	0.80
American Electric Power Co. (NYSE-AEP)	0.75
Duke Energy Corporation (NYSE-DUK)	0.85
Edison International (NYSE-EIX)	0.95
Entergy Corporation (NYSE-ETR)	0.95
Evergy, Inc. (NYSE-EVRG)	0.95
Hawaiian Electric Industries (NYSE-HE)	0.80
IDACORP, Inc. (NYSE-IDA)	0.80
NextEra Energy, Inc. (NYSE-NEE)	0.90
OGE Energy Corp. (NYSE-OGE)	1.05
Pinnacle West Capital Corp. (NYSE-PNW)	0.90
Portland General Electric Company (NYSE-POR)	0.90
Xcel Energy Inc. (NYSE-XEL)	0.80
Mean	0.88
Median	0.90

Data Source: *Value Line Investment Survey*, 2021.

CAPM Study

Risk Premium Approaches

	Historical Ex Post Returns	**Surveys**	**Expected Return Models and Market Data**
Means of Assessing The Market Risk Premium	Historical Average Stock Minus Bond Returns	Surveys of CFOs, Financial Forecasters, Companies, Analysts on Expected Returns and Market Risk Premiums	Use Market Prices and Market Fundamentals (such as Growth Rates) to Compute Expected Returns and Market Risk Premiums
Problems/Debated Issues	Time Variation in Required Returns, Measurement and Time Period Issues, and Biases such as Market and Company Survivorship Bias	Questions Regarding Survey Histories, Responses, and Representativeness Surveys may be Subject to Biases, such as Extrapolation	Assumptions Regarding Expectations, Especially Growth

Source: Adapted from Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management*, (Winter 2003).

CAPM Study

Market Risk Premium Results - 2000-2021

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range		Midpoint of Range	Mean	Median
						Low	High			
Historical Risk Premium										
	Ibbotson	2016	1928-2015	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
					Geometric				4.40%	
	Damodaran	2021	1928-2020	Historical Stock Returns - Bond Returns	Arithmetic				6.44%	
					Geometric				4.83%	
	Dimson, Marsh, Staunton _Credit Suisse Report	2019	1900-2018	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
					Geometric					
	Bate	2008	1900-2007	Historical Stock Returns - Bond Returns	Geometric				4.50%	
	Shiller	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				7.00%	
					Geometric				5.50%	
	Siegel	2005	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.10%	
					Geometric				4.60%	
	Dimson, Marsh, and Staunton	2006	1900-2005	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
	Goyal & Welch	2006	1872-2004	Historical Stock Returns - Bond Returns					4.77%	
	Median									5.50%
Ex Ante Models (Puzzle Research)										
	Claus Thomas	2001	1985-1998	Abnormal Earnings Model					3.00%	
	Arnott and Bernstein	2002	1810-2001	Fundamentals - Div Yld + Growth					2.40%	
	Constantinides	2002	1872-2000	Historical Returns & Fundamentals - P/D & P/E					6.90%	
	Cornell	1999	1926-1997	Historical Returns & Fundamental GDP/Earnings		3.50%	5.50%	4.50%	4.50%	
	Easton, Taylor, et al	2002	1981-1998	Residual Income Model					5.30%	
	Fama French	2002	1951-2000	Fundamental DCF with EPS and DPS Growth		2.55%	4.32%		3.44%	
	Harris & Marston	2001	1982-1998	Fundamental DCF with Analysts' EPS Growth					7.14%	
	McKinsey	2002	1962-2002	Fundamental (P/E, D/P, & Earnings Growth)		3.50%	4.00%		3.75%	
	Siegel	2005	1802-2001	Historical Earnings Yield					2.50%	
	Grabowski	2006	1926-2005	Historical and Projected		3.50%	6.00%	4.75%	4.75%	
	Maheu & McCurdy	2006	1885-2003	Historical Excess Returns, Structural Breaks,		4.02%	5.10%	4.56%	4.56%	
	Bostock	2004	1960-2002	Bond Yields, Credit Risk, and Income Volatility		3.90%	1.30%	2.60%	2.60%	
	Bakshi & Chen	2005	1982-1998	Fundamentals - Interest Rates					7.31%	
	Donaldson, Kamstra, & Kramer	2006	1952-2004	Fundamental, Dividend yld., Returns,, & Volatility		3.00%	4.00%	3.50%	3.50%	
	Campbell	2008	1982-2007	Historical & Projections (D/P & Earnings Growth)		4.10%	5.40%		4.75%	
	Best & Byrne	2001	Projection	Fundamentals - Div Yld + Growth					2.00%	
	Fernandez	2007	Projection	Required Equity Risk Premium					4.00%	
	DeLong & Magin	2008	Projection	Earnings Yield - TIPS					3.22%	
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	Duff & Phelps	2021	Projection	Normalized with 2.5% Long-Term Treasury Yield					5.50%	
	Mschchowski - VL - 2014	2014	Projection	Fundamentals - Expected Return Minus 10-Year Treasury Rate					5.50%	
	American Appraisal Quarterly ERP	2015	Projection	Fundamental Economic and Market Factors					6.00%	
	Market Risk Premia	2021	Projection	Fundamental Economic and Market Factors					3.42%	
	KPMG	2021	Projection	Fundamental Economic and Market Factors					5.75%	
	Damodaran -8-21	2021	Projection	Fundamentals - Implied from FCF to Equity Model (Trailing 12 month, with adjusted payout)					4.31%	
	Social Security									
	Office of Chief Actuary		1900-1995							
	John Campbell	2001	1860-2000	Historical & Projections (D/P & Earnings Growth)	Arithmetic	3.00%	4.00%	3.50%	3.50%	
			Projected for 75 Years		Geometric	1.50%	2.50%	2.00%	2.00%	
	Peter Diamond	2001	Projected for 75 Years	Fundamentals (D/P, GDP Growth)		3.00%	4.80%	3.90%	3.90%	
	John Shoven	2001	Projected for 75 Years	Fundamentals (D/P, P/E, GDP Growth)		3.00%	3.50%	3.25%	3.25%	
	Median									4.00%
Surveys										
	New York Fed	2015	Five-Year	Survey of Wall Street Firms					5.70%	
	Survey of Financial Forecasters	2020	10-Year Projection	About 20 Financial Forecastsers					3.36%	
	Duke - CFO Magazine Survey	2020	10-Year Projection	Approximately 200 CFOs					4.05%	
	Welch - Academics	2008	30-Year Projection	Random Academics		5.00%	5.74%	5.37%	5.37%	
	Fernandez - Academics, Analysts, and Companie	2021	Long-Term	Survey of Academics, Analysts, and Companies					5.50%	
	Median									5.37%
Building Block										
	Ibbotson and Chen	2015	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.22%	5.21%	
					Geometric			4.20%		
	Chen - Rethink ERP	2010	20-Year Projection	Combination Supply Model (Historic and Projection)	Geometric				4.00%	
	Ilmanen - Rethink ERP	2010	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				3.00%	
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projection	Current Supply Model (D/P & Earnings Growth)	Arithmetic			4.63%	4.12%	
					Geometric			3.60%		
	Median									4.06%
Mean										4.73%
Median										4.83%

CAPM Study

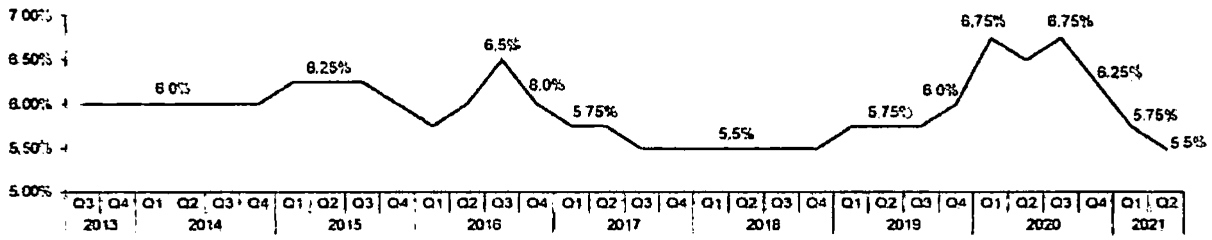
Market Risk Premium Results - 2010-2021

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Average
Historical Risk Premium										
	Ibbotson	2016	1928-2015	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
					Geometric				4.40%	
	Damodaran	2021	1928-2020	Historical Stock Returns - Bond Returns	Arithmetic				6.44%	
					Geometric				4.83%	
	Dimson, Marsh, Staunton _Credit Suisse Report	2019	1900-2018	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
					Geometric					
	Median									5.43%
Ex Ante Models (Puzzle Research)										
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	Duff & Phelps	2021	Projection	Normalized with 2.5% Long-Term Treasury Yield					5.50%	
	Mschchowski - VL - 2014	2014	Projection	Fundamentals - Expected Return Minus 10-Year Treasury Rate					5.50%	
	American Appraisal Quarterly ERP	2015	Projection	Fundamental Economic and Market Factors					6.00%	
	Market Risk Premia	2021	Projection	Fundamental Economic and Market Factors					3.42%	
	KPMG	2021	Projection	Fundamental Economic and Market Factors					5.75%	
	Damodaran -8-21	2021	Projection	Fundamentals - Implied from FCF to Equity Model (Trailing 12 month, with adjusted payout)					4.31%	
	Median									5.50%
Surveys										
	New York Fed	2015	Five-Year	Survey of Wall Street Firms					5.70%	
	Survey of Financial Forecasters	2020	10-Year Projection	About 20 Financial Forecasters					3.36%	
	Duke - CFO Magazine Survey	2020	10-Year Projection	Approximately 200 CFOs					4.05%	
	Fernandez - Academics, Analysts, and Companies	2021	Long-Term	Survey of Academics, Analysts, and Companies					5.50%	
	Median									4.78%
Building Block										
	Ibbotson and Chen	2015	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.22%	5.21%	
					Geometric			4.20%		
	Chen - Rethink ERP	2010	20-Year Projection	Combination Supply Model (Historic and Projection)	Geometric				4.00%	
	Ilmanen - Rethink ERP	2010	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				3.00%	
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projection	Current Supply Model (D/P & Earnings Growth)	Arithmetic			4.63%	4.12%	
					Geometric			3.60%		
	Median			d						4.06%
Mean										4.94%
Median										5.10%

CAPM Study

KPGM and Duff & Phelps Equity Risk Premium Estimates

KPGM Equity Risk Premium Estimates



Duff & Phelps Risk-Free Rate and Equity Risk Premium Estimates

DUFF & PHELPS

Table: Equity Risk Premium & Risk-free Rates

Duff & Phelps Recommended U.S. Equity Risk Premium (ERP) and Corresponding Risk-free Rates (R_f): January 2008–Present

Date	Risk-free Rate (R_f)	R_f (%)	Duff & Phelps Recommended ERP (%)	What Changed
Current Guidance:				
[illegible] – UNTIL FURTHER NOTICE	Normalized 20-year U.S. Treasury yield	2.50	5.50	ERP
[illegible]	Normalized 20-year U.S. Treasury yield	2.50	6.00	R_f
March [illegible]	Normalized 20-year U.S. Treasury yield	3.00	6.00	ERP
December [illegible] – March [illegible], 2020	Normalized 20-year U.S. Treasury yield	[illegible]	6.00	ERP
September [illegible], 2019 – December 18, 2019	Normalized 20-year U.S. Treasury yield	3.00	5.50	R_f
December [illegible] – September [illegible], 2019	Normalized 20-year U.S. Treasury yield	3.50	5.50	ERP
September [illegible] – December [illegible], 2018	Normalized 20-year U.S. Treasury yield	[illegible]	[illegible]	ERP
November 15, [illegible] – September [illegible]	Normalized 20-year U.S. Treasury yield	3.50	5.50	R_f
January 31, 2016 – November 14, 2016	Normalized 20-year U.S. Treasury yield	4.00	5.50	ERP
[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	
February [illegible] – January [illegible], 2016	Normalized 20-year U.S. Treasury yield	4.00	5.00	ERP
[illegible]	[illegible]	[illegible]	[illegible]	
January 15, [illegible] – February [illegible]	Normalized 20-year U.S. Treasury yield	4.00	5.50	ERP
[illegible]	[illegible]	[illegible]	[illegible]	
September 30, 2011 – January [illegible], 2012	Normalized 20-year U.S. Treasury yield	4.00	6.00	ERP
July 1, 2011 – September [illegible], 2011	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
June [illegible], 2011 – June [illegible], 2011	Spot 20-year U.S. Treasury yield	Spot	5.50	R_f
May [illegible], 2011 – May [illegible], 2011	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
[illegible]	[illegible]	[illegible]	[illegible]	
December [illegible], 2010 – April [illegible], 2011	Spot 20-year U.S. Treasury yield	Spot	5.50	R_f
June 1, 2010 – November 30, 2010	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
[illegible]	[illegible]		[illegible]	
December [illegible] – May 31, 2010	Spot 20-year U.S. Treasury yield	Spot	5.50	ERP
June 1, 2009 – November [illegible], 2009	Spot 20-year U.S. Treasury yield	Spot	6.00	R_f
[illegible]	[illegible]	[illegible]	[illegible]	
November 1, [illegible] – May [illegible], 2009	Normalized 20-year U.S. Treasury yield	4.50	6.00	R_f
October [illegible] – October 31, [illegible]	Spot 20-year U.S. Treasury yield	Spot	6.00	ERP
January 1, [illegible] – October [illegible]	Spot 20-year U.S. Treasury yield	Spot	5.00	Initialized

"Normalized" in [illegible] months where the risk-free rate is deemed to be abnormally low, a proxy for a longer-term [illegible] risk-free rate [illegible] used.

To [illegible] and to ensure that you are using the most recent Duff & Phelps Recommended ERP, [illegible]

This and other related resources can also be found in the online Cost of Capital Navigator platform. To learn more about the Cost of Capital Navigator and other Duff & Phelps valuation and industry data products, [illegible]

Exhibit JRW-9

VEPCO's Recommended Cost of Capital

Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	46.22%	4.32%	2.00%
Short-Term Debt	1.42%	0.27%	0.00%
Common Equity	51.82%	10.80%	5.60%
Inv. Tax Credits	0.54%	7.75%	0.04%
Total Capital	100.00%		7.64%

COMBINED DCF, CAPM, RISK PREMIUM AND EXPECTED EARNINGS RESULTS - CURRENT INTEREST RATES

Company		30-Day DCF	90-Day DCF	180-Day DCF	CAPM VL Beta	CAPM BB Beta	AVG DCF	AVG CAPM	Risk Premium	Expected Earnings	4-model Average
ALLETE, Inc.	ALE	9.75%	10.04%	10.22%	13.68%	14.40%	10.00%	14.04%	9.53%	8.69%	10.57%
Alliant Energy Corporation	LNT	9.06%	8.87%	8.87%	13.68%	13.92%	8.93%	13.80%	9.53%	10.70%	10.74%
Ameren Corporation	AEE	9.38%	9.22%	9.21%	13.68%	12.98%	9.27%	13.33%	9.53%	10.40%	10.63%
American Electric Power Company, Inc.	AEP	9.75%	9.58%	9.59%	12.30%	13.67%	9.64%	12.99%	9.53%	10.89%	10.76%
Duke Energy Corporation	DUK	9.41%	9.37%	9.57%	13.68%	13.29%	9.45%	13.48%	9.53%	8.61%	10.27%
Edison International	EIX	12.29%	12.11%	12.36%	15.08%	14.82%	12.25%	14.94%	9.53%	11.30%	12.00%
Entergy Corporation	ETR	8.59%	8.31%	8.34%	15.08%	15.30%	8.41%	15.18%	9.53%	11.31%	11.11%
Evergy, Inc.	EVRG	10.59%	10.54%	10.49%	15.75%	13.87%	10.54%	14.81%	9.53%	9.12%	11.00%
Hawaiian Electric Industries, Inc.	HE	5.77%	5.68%	5.68%	12.99%	11.86%	5.71%	12.43%	9.53%	8.68%	9.09%
IDACORP, Inc.	IDA	6.50%	6.42%	6.47%	12.99%	14.09%	6.46%	13.54%	9.53%	9.68%	9.80%
NextEra Energy, Inc.	NEE	10.96%	11.06%	11.18%	14.37%	13.41%	11.06%	13.89%	9.53%	12.97%	11.86%
OGE Energy Corp.	OGE	8.14%	8.01%	8.06%	17.12%	16.40%	8.07%	16.76%	9.53%	12.50%	11.71%
Pinnacle West Capital Corporation	PNW	8.23%	8.02%	8.11%	14.37%	14.85%	8.12%	14.61%	9.53%	10.75%	10.75%
Portland General Electric Company	POR	14.31%	14.36%	14.45%	13.68%	14.00%	14.37%	13.84%	9.53%	9.63%	11.84%
Xcel Energy Inc.	XEL	8.92%	8.76%	8.73%	12.99%	13.42%	8.80%	13.21%	9.53%	10.85%	10.60%
PROXY GROUP MEAN		9.44%	9.36%	9.42%	14.09%	14.02%	9.41%	14.06%	9.53%	10.41%	10.85%
PROXY GROUP MEDIAN		9.38%	9.22%	9.21%	13.68%	13.92%	9.27%	13.84%	9.53%	10.70%	10.75%
Range - Low		5.77%	5.68%	5.68%	12.30%	11.86%	5.71%	12.43%	9.53%	8.61%	9.09%
Range - High		14.31%	14.36%	14.45%	17.12%	16.40%	14.37%	16.76%	9.53%	12.97%	12.00%

COMBINED DCF, CAPM, RISK PREMIUM AND EXPECTED EARNINGS RESULTS - PROJECTED INTEREST RATES

Company		30-Day DCF	90-Day DCF	180-Day DCF	CAPM VL Beta	CAPM BB Beta	AVG DCF	AVG CAPM	Risk Premium	Expected Earnings	4-model Average
ALLETE, Inc.	ALE	9.75%	10.04%	10.22%	13.80%	14.48%	10.00%	14.14%	9.88%	8.69%	10.88%
Alliant Energy Corporation	LNT	9.06%	8.87%	8.87%	13.80%	14.03%	8.93%	13.92%	9.88%	10.70%	10.86%
Ameren Corporation	AEE	9.38%	9.22%	9.21%	13.80%	13.15%	9.27%	13.48%	9.88%	10.40%	10.76%
American Electric Power Company, Inc.	AEP	9.75%	9.58%	9.59%	12.51%	13.80%	9.64%	13.15%	9.88%	10.89%	10.89%
Duke Energy Corporation	DUK	9.41%	9.37%	9.57%	13.80%	13.43%	9.45%	13.62%	9.88%	8.61%	10.39%
Edison International	EIX	12.29%	12.11%	12.36%	15.10%	14.87%	12.25%	14.99%	9.88%	11.30%	12.10%
Entergy Corporation	ETR	8.59%	8.31%	8.34%	15.10%	15.32%	8.41%	15.21%	9.88%	11.31%	11.20%
Evergy, Inc.	EVRG	10.59%	10.54%	10.49%	15.75%	13.88%	10.54%	14.87%	9.88%	9.12%	11.10%
Hawaiian Electric Industries, Inc.	HE	5.77%	5.68%	5.68%	13.16%	12.09%	5.71%	12.83%	9.88%	8.68%	9.22%
IDACORP, Inc.	IDA	6.50%	6.42%	6.47%	13.18%	14.19%	6.46%	13.67%	9.88%	9.68%	9.92%
NextEra Energy, Inc.	NEE	10.96%	11.06%	11.18%	14.45%	13.55%	11.06%	14.00%	9.88%	12.97%	11.98%
OGE Energy Corp.	OGE	8.14%	8.01%	8.06%	17.04%	16.36%	8.07%	16.70%	9.88%	12.50%	11.79%
Pinnacle West Capital Corporation	PNW	8.23%	8.02%	8.11%	14.45%	14.91%	8.12%	14.68%	9.88%	10.75%	10.86%
Portland General Electric Company	POR	14.31%	14.36%	14.45%	13.80%	14.10%	14.37%	13.95%	9.88%	9.63%	11.96%
Xcel Energy Inc.	XEL	8.92%	8.76%	8.73%	13.16%	13.56%	8.80%	13.36%	9.88%	10.85%	10.72%
PROXY GROUP MEAN		9.44%	9.36%	9.42%	14.19%	14.12%	9.41%	14.16%	9.88%	10.41%	10.96%
PROXY GROUP MEDIAN		9.38%	9.22%	9.21%	13.80%	14.03%	9.27%	13.95%	9.88%	10.70%	10.86%
Range - Low		5.77%	5.68%	5.68%	12.51%	12.09%	5.71%	12.83%	9.88%	8.61%	9.22%
Range - High		14.31%	14.36%	14.45%	17.04%	16.36%	14.37%	16.70%	9.88%	12.97%	12.10%

Exhibit JRW-10

GDP and S&P 500 Growth Rates

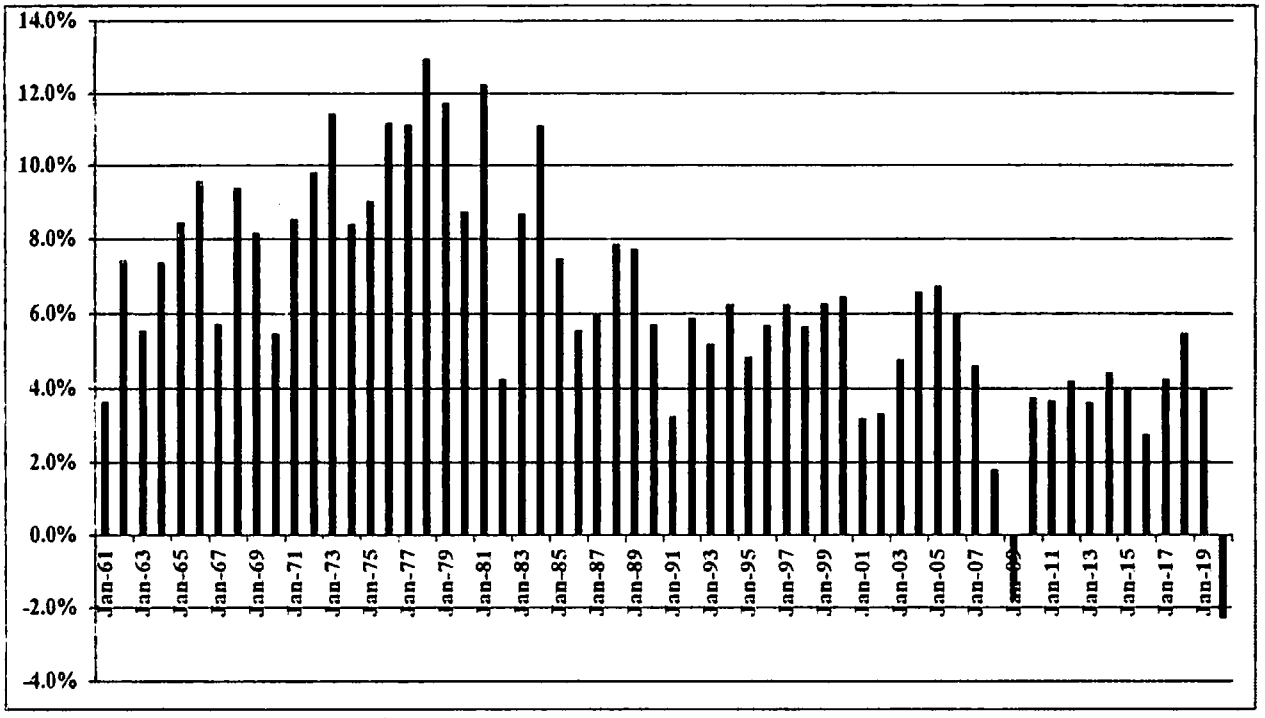
Growth Rates
GDP, S&P 500 Price, EPS, and DPS

	GDP	S&P 500	S&P 500 EPS	S&P 500 DPS
1960	542.382	58.11	3.10	1.98
1961	562.210	71.55	3.37	2.04
1962	603.921	63.1	3.67	2.15
1963	637.451	75.02	4.13	2.35
1964	684.460	84.75	4.76	2.58
1965	742.289	92.43	5.30	2.83
1966	813.414	80.33	5.41	2.88
1967	859.958	96.47	5.46	2.98
1968	940.651	103.86	5.72	3.04
1969	1017.615	92.06	6.10	3.24
1970	1073.303	92.15	5.51	3.19
1971	1164.850	102.09	5.57	3.16
1972	1279.110	118.05	6.17	3.19
1973	1425.376	97.55	7.96	3.61
1974	1545.243	68.56	9.35	3.72
1975	1684.904	90.19	7.71	3.73
1976	1873.412	107.46	9.75	4.22
1977	2081.826	95.1	10.87	4.86
1978	2351.599	96.11	11.64	5.18
1979	2627.334	107.94	14.55	5.97
1980	2857.307	135.76	14.99	6.44
1981	3207.042	122.55	15.18	6.83
1982	3343.789	140.64	13.82	6.93
1983	3634.038	164.93	13.29	7.12
1984	4037.613	167.24	16.84	7.83
1985	4338.979	211.28	15.68	8.20
1986	4579.631	242.17	14.43	8.19
1987	4855.215	247.08	16.04	9.17
1988	5236.438	277.72	24.12	10.22
1989	5641.580	353.4	24.32	11.73
1990	5963.144	330.22	22.65	12.35
1991	6158.129	417.09	19.30	12.97
1992	6520.327	435.71	20.87	12.64
1993	6858.559	466.45	26.90	12.69
1994	7287.236	459.27	31.75	13.36
1995	7639.749	615.93	37.70	14.17
1996	8073.122	740.74	40.63	14.89
1997	8577.552	970.43	44.09	15.52
1998	9062.817	1229.23	44.27	16.20
1999	9630.663	1469.25	51.68	16.71
2000	10252.347	1320.28	56.13	16.27
2001	10581.822	1148.09	38.85	15.74
2002	10936.418	879.82	46.04	16.08
2003	11458.246	1111.91	54.69	17.88
2004	12213.730	1211.92	67.68	19.407
2005	13036.637	1248.29	76.45	22.38
2006	13814.609	1418.3	87.72	25.05
2007	14451.860	1468.36	82.54	27.73
2008	14712.845	903.25	65.39	28.05
2009	14448.932	1115.10	59.65	22.31
2010	14992.052	1257.64	83.66	23.12
2011	15542.582	1257.60	97.05	26.02
2012	16197.007	1426.19	102.47	30.44
2013	16784.851	1848.36	107.45	36.28
2014	17527.258	2058.90	113.01	39.44
2015	18238.301	2043.94	106.32	43.16
2016	18745.075	2238.83	108.86	45.03
2017	19542.980	2673.61	124.94	49.73
2018	20611.861	2506.85	148.34	53.61
2019	21433.226	3230.78	*162.35*	*58.80*
2020	20934.850	3756.07	138.12	56.70
Growth Rates	6.28	7.20	6.53	5.75

Data Sources: GDPA -http://research.stlouisfed.org/fred2/series/GDPA/downloaddata
S&P 500, EPS and DPS - http://pages.stern.nyu.edu/~adamodar/

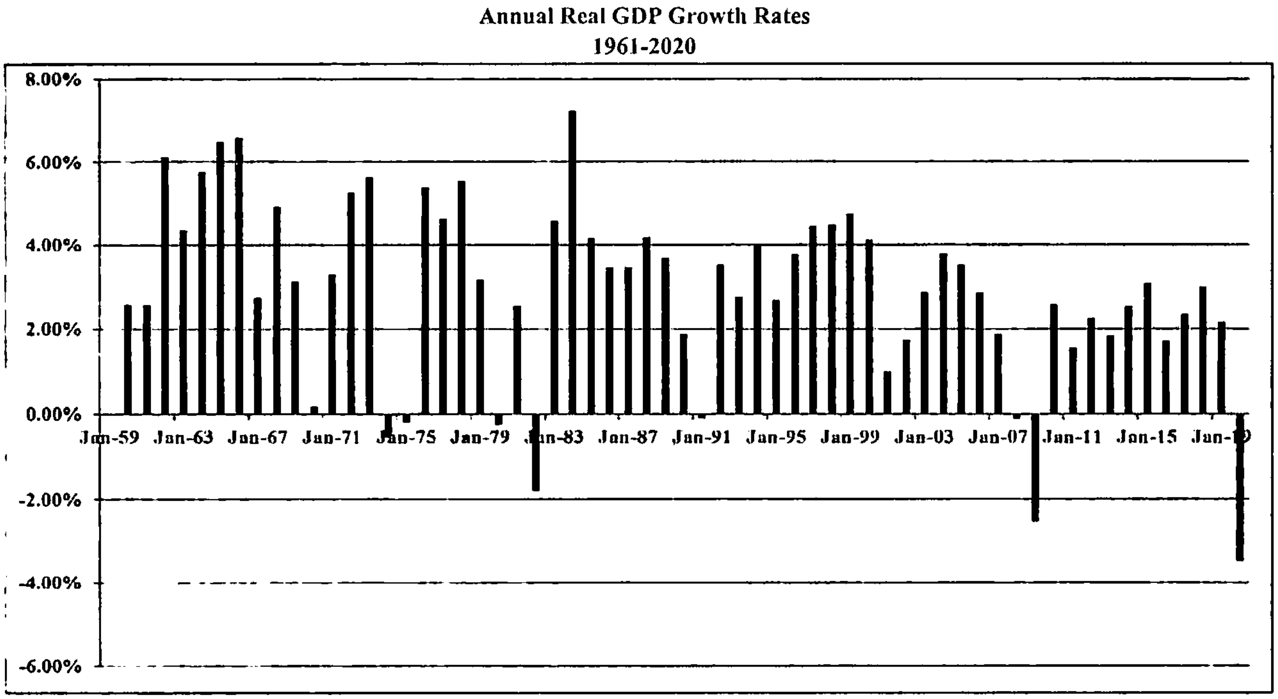
Annual Nominal GDP Growth Rates

Annual Growth Rates - 1961-2020



Data Sources: GDPA -https://fred.stlouisfed.org/series/GDPA

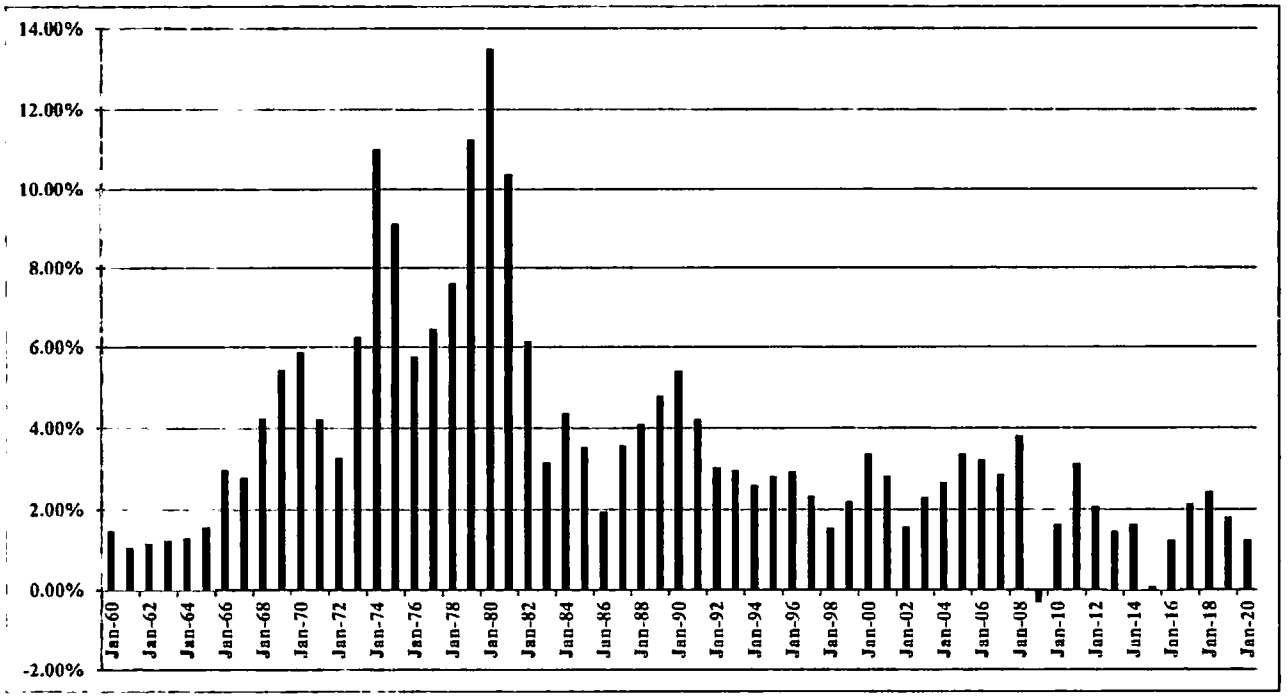
Real GDP Growth Rates



Data Sources: GDPC1 - https://fred.stlouisfed.org/series/GDPCA

Inflation Rates

Annual Inflation Rates
1961-2020



Data Sources: CPIAUCSL - https://fred.stlouisfed.org/series/CPIAUCSL

Projected Nominal GDP Growth Rates

Panel A
Historic GDP Growth Rates

10-Year Average		3.40%
20-Year Average		3.63%
30-Year Average		4.27%
40-Year Average		5.10%
50-Year Average		6.12%

Calculated using GDP data on Page 1 of Exhibit JRW-10

Panel B
Projected GDP Growth Rates

	Time Frame	Projected Nominal GDP Growth Rate
Congressional Budget Office	2019-29	3.8%
Survey of Financial Forecasters	Ten Year	4.3%
Social Security Administration	2020-2095	4.1%
Energy Information Administration	2019-2050	4.2%

Sources:

Congressional Budget Office,The *2020 Long-Term Budget Outlook*, June 25, 2020.
U.S. Energy Information Administration, *Annual Energy Outlook 2020*, Table: Macroeconomic Indicators,
Social Security Administration, 2020 Annual Report of the Board of Trustees of the Old-Age,
Survivors, and Disability Insurance (OASDI) Program, Table VI.G4, p. 211(July 15, 2020),
The 4.1% growth rate is the growth in projected GDP from $22,341 trillion in 2020 to $450,425 trillion in 2095.
https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/

GDP and S&P 500 Growth Rates

Long-Term Growth of GDP, S&P 500, S&P 500 EPS, and S&P 500 DPS

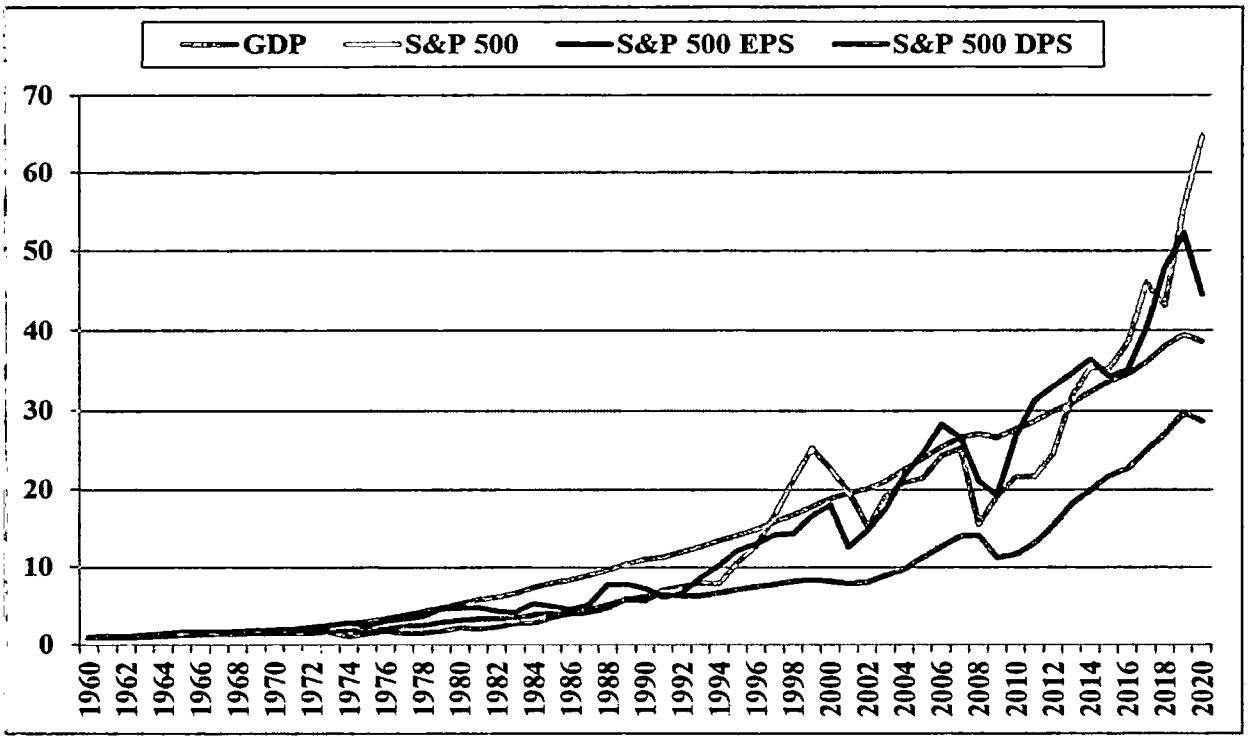


Exhibit JRW-11

Panel A
Statutory Peer Group Floor Return on Equity
Return on Average Common Equity

	Electric Utility	Annual Return on Equity for 2020	Annual Return on Equity for 2019	Annual Return on Equity for 2018	Average of Annual Return on Equity for 2018, 2019, 2020	High/ Low Exclusions
1	Alabama Power Co.	12.26%	13.02%	13.00%	12.76%	H
2	Florida Power & Light Co.	11.74%	11.01%	11.41%	11.39%	H
3	Mississippi Power Co.	8.96%	8.52%	15.84%	11.11%	
4	Tampa Electric Co.	10.72%	10.57%	10.86%	10.72%	
5	Duke Energy Florida, LLC	10.73%	10.74%	9.46%	10.31%	
6	Duke Energy Carolinas, LLC	7.36%	11.46%	9.30%	9.37%	
7	Georgia Power Co.	9.98%	11.71%	6.04%	9.24%	
8	Entergy Mississippi Inc.	8.75%	8.46%	10.14%	9.12%	
9	Louisville Gas & Electric Co.	8.55%	8.52%	8.94%	8.67%	
10	Appalachain Power Company	8.68%	7.49%	9.42%	8.53%	
11	Kentucky Utilities Co.	7.61%	8.35%	8.41%	8.13%	L
12	Duke Energy Progress, LLC	4.49%	9.10%	8.14%	7.24%	L
				Min 5	8.99%	

Panel B
Statutory Peer Group Floor Return on Equity
Return on Year-End Common Equity

	Electric Utility	Annual Return on Equity for 2020	Annual Return on Equity for 2019	Annual Return on Equity for 2018	Average of Annual Return on Equity for 2018, 2019, 2020	High/ Low Exclusions
1	Alabama Power Co.	11.72%	11.95%	12.44%	12.04%	H
2	Florida Power & Light Co.	11.16%	10.91%	10.33%	10.80%	H
3	Mississippi Power Co.	8.73%	8.41%	14.61%	10.58%	
4	Tampa Electric Co.	10.06%	10.01%	10.32%	10.13%	
5	Duke Energy Florida, LLC	10.16%	10.19%	9.09%	9.81%	
6	Duke Energy Carolinas, LLC	7.27%	10.95%	9.17%	9.13%	
7	Georgia Power Co.	9.54%	11.42%	5.54%	8.83%	
8	Entergy Mississippi Inc.	8.40%	7.78%	9.69%	8.62%	
9	Louisville Gas & Electric Co.	8.28%	8.40%	8.67%	8.45%	
10	Appalachain Power Company	8.51%	7.34%	9.18%	8.34%	
11	Kentucky Utilities Co.	7.40%	8.20%	8.31%	7.97%	L
12	Duke Energy Progress, LLC	4.48%	8.71%	7.90%	7.03%	L
				Min 5	8.68%	

Exhibit JRW-12

APPALACHIAN POWER
An AEP Company

FACT SHEET

TOP CUSTOMERS

WEST VIRGINIA

1. Marathon Petroleum Company
2. Murray Energy Corporation
3. Alpha Natural Resources Inc.
4. Westlake Chemical Corporation
5. Blue Racer Midstream LLC

VIRGINIA

1. CNX Resources Corporation
2. Steel Dynamics Inc.
3. Greif
4. Koch Industries, Inc.
5. Coronado Coal LLC

TENNESSEE

1. Domtar Energy
2. Air Products & Chemicals
3. Eastman Chemical Company
4. City of Kingsport
5. Federal Government

APPALACHIAN LEADERSHIP

Chris Beam	President and COO
Brad Hall	VP, External Affairs
Debra Osborne	VP, Generation
Phil Wright	VP, Distribution Operations
Steven Ferguson	VP, Regulatory and Finance
Archie Pugh	Managing Director, Transmission Field Operations

APPALACHIANPOWER.COM

OPERATING INFORMATION

2018 electric sales in megawatt hours	WV	17,465,815
	VA	15,287,431
	TN	2,086,994
Average use per residential customer	WV	14,949 kWh per year
	VA	14,142 kWh per year
	TN	16,351 kWh per year
Average cost per kilowatt-hour *(residential)*	WV	11.75 cents
	VA	11.68 cents
	TN	9.06 cents
Size of service area *(operational)*	WV	9,196 square miles
	VA	11,031 square miles
	TN	297 square miles
2018 net plant in service	APCO	$10.7 billion
	KINGSPORT	$153 million
	WHEELING	$912 million
Size of distribution system	WV	21,871 miles
	VA	31,033 miles
	TN	1,580 miles
Size of transmission system	WV	3,413 miles
	VA	2,922 miles
	TN	278 miles
Total AEP Employees	WV	2,066
	VA	1,052
	TN	79

Revised 4/2019

Source: https://www.appalachianpower.com/info/facts/Facts.aspx

APPALACHIAN POWER
An AEP Company

FACT SHEET

[redacted]

For power outages, local service issues, power plants and public safety issues, please call:

Charleston

Phil Moye
Office: (304) 348-4188
Cell: (304) 550-0568

Northern Panhandle

Joelle Morey
Office: (304) 234-3109
Cell: (740) 359-1364

For West Virginia public policy, regulatory, environmental and other statewide issues, please call:

Jeri Matheney
Office: (304) 348-4130
Cell: (304) 543-1377

[redacted]

For power outages, local service issues and public safety issues, please call:

Teresa Hamilton Hall
Office: (540) 985-2497
Cell: (540) 266-8580

For Virginia or Tennessee public policy, regulatory, environmental, power plants, hydro and other statewide issues, please call:

John Shepelwich
Office: (540) 985-2968
Cell: (540) 613-7460

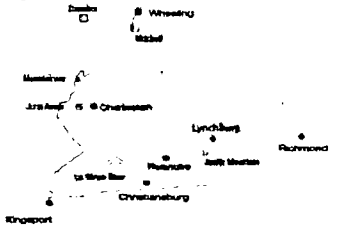
Tennessee	1-800-967-4237
Virginia	1-800-956-4237
West Virginia	1-800-982-4237
Wheeling	1-800-852-6942

APPALACHIANPOWER.COM

GENERATION INFORMATION

PLANT	CAPACITY (MW)	LOCATION	FUEL
John E. Amos	2,900	Winfield, WV	Coal
*Mitchell	1,560	Moundsville, WV	Coal
Mountaineer	1,300	New Haven, WV	Coal
Smith Mountain	586	Sandy Level, VA	Pumped Storage
Dresden Plant	580	Dresden, OH	Natural Gas
Ceredo	523	Ceredo, WV	Natural Gas
Clinch River	484	Carbo, VA	Natural Gas
^Bluff Point	120	Jay County, IN	Wind
^Beech Ridge	101	Rupert, WV	Wind
^Grand Ridge	101	Marseilles, IL	Wind
^Fowler Ridge	100	Fowler, IL	Wind
^Summersville	80	Summersville, WV	Hydro
^Camp Grove	75	Marshall County, IL	Wind
Claytor	75	Radford, VA	Hydro
Leesville	50	Leesville, VA	Hydro
Byllesby	21.6	Byllesby, VA	Hydro
Winfield	14.7	Winfield, WV	Hydro
London	14.4	Montgomery, WV	Hydro
Marmet	14.4	Marmet, WV	Hydro
Buck	8.5	Ivanhoe, VA	Hydro
Niagara	2.4	Roanoke, VA	Hydro
Total	**8,711.5 MW**		

*Mitchell Plant is owned by Kentucky Power and Wheeling Power.
^Power Purchase Agreements (PPA).



Source: https://www.appalachianpower.com/info/facts/Facts.aspx

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY CASE NO. PUR-2021-00058

For a 2021 Triennial Review of the Rates,
Terms and Conditions for the Provision of
Generation, Distribution, and Transmission Services
pursuant to § 56-585.1 A of the Code of Virginia

DIRECT TESTIMONY OF SCOTT NORWOOD

ON BEHALF OF
THE OFFICE OF THE ATTORNEY GENERAL
DIVISION OF CONSUMER COUNSEL

SEPTEMBER 3, 2021

Summary of Direct Testimony of Scott Norwood

Mr. Norwood's testimony presents his findings and recommendations regarding: 1) the reasonableness of Dominion's deployment costs associated with Advanced Metering Infrastructure ("AMI"); and 2) Dominion's distribution plant capital additions funded under capital blanket projects during the Triennial Review Period.

Mr. Norwood recommends that AMI deployment costs incurred in 2019 and 2020 be excluded from the earnings tests, consistent with three prior orders from the Commission finding that AMI deployment was not reasonable or prudent over the time period involved. Mr. Norwood further recommends that AMI deployment costs included in the prospective rate year analysis be excluded from the going forward cost of service.

Additionally, Mr. Norwood found that approximately $1.68 billion, or nearly 94% of Dominion's total distribution plant capital additions during the earnings test period, were funded under capital blanket projects. The Company's policies and practices for approval of capital additions funded under distribution capital blanket projects, however, are inadequate with respect to maintaining basic information establishing the reasonableness and prudence of projects funded under capital blanket projects. That is, the Company seeks to include $1.68 billion in the earnings test without basic information demonstrating the need or prudence of these capital additions.

While a disallowance in light of these facts is justified, Mr. Norwood has no basis to quantify a disallowance due to the lack of information regarding these capital additions. Mr. Norwood is aware that the Company is seeking a performance-based increase to its authorized ROE in this case. Mr. Norwood recommends a countervailing downward performance adjustment to account for the operational failure to maintain basic documentation necessary to support the prudence of the $1.68 billion of blanket-funded distribution capital additions. Going forward, Mr. Norwood recommends that the Commission require the Company to provide basic information to support major capital investments funded under blanket projects in all future base rate proceedings.

CASE NO. PUR-2021-00058

DIRECT TESTIMONY OF SCOTT NORWOOD

TABLE OF CONTENTS

EXHIBITS

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Scott Norwood. I am President of Norwood Energy Consulting, L.L.C. My business address is P.O. Box 30197, Austin, Texas 78755-3197.

Q. WHAT IS YOUR OCCUPATION?

A. I am an energy consultant specializing in the areas of electric utility regulation, resource planning, and energy procurement.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I am an electrical engineer with over 35 years of experience in the electric utility industry. I began my career as a power plant engineer for the City of Austin's Electric Utility Department where I was responsible for electrical maintenance and design projects for the City's three gas-fired power plants. In January 1984, I joined the staff of the Public Utility Commission of Texas, where I was responsible for addressing resource planning, fuel, and purchased power cost issues in electric rate and plant certification proceedings before the Texas Commission. Since 1986 I have provided utility regulatory consulting, resource planning, and power procurement services to public utilities, electric consumers, industrial interests, municipalities, and state government clients. I have testified in over 200 utility regulatory proceedings over the last 20 years, before state regulatory commissions in Alaska, Arkansas, Florida, Georgia, Illinois, Iowa, Kentucky, Louisiana, Michigan, Missouri, New Jersey, Ohio, Oklahoma, Texas, Virginia, Washington, and Wisconsin.[1]

[1] See Exhibit SN-1 for additional details on my background and experience.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?

A. I am testifying on behalf of the Office of the Attorney General, Division of Consumer Counsel ("Consumer Counsel" or "AG").

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE STATE CORPORATION COMMISSION?

A. Yes. I have testified on behalf of Consumer Counsel in numerous past regulatory proceedings before the Virginia State Corporation Commission ("Commission"), including cases that involved electric restructuring, base rate, fuel recovery, power plant certification, and demand-side management matters. I have testified on behalf of Consumer Counsel in such cases involving Virginia Electric and Power Company, d/b/a Dominion Energy Virginia ("Dominion" or "Company").

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to present my findings and recommendations regarding: 1) the reasonableness of Dominion's proposed deployment of Advanced Metering Infrastructure ("AMI"); and 2) Dominion's distribution plant capital additions funded under capital blanket projects during the Triennial Review Period ("TRP").

Q. HAVE YOU PREPARED ANY EXHIBITS TO SUPPORT YOUR TESTIMONY?

A. Yes. I have prepared 13 exhibits, which are attached to my testimony.

II. AMI DEPLOYMENT COSTS

Q. WHAT IS ADVANCED METERING INFRASTRUCTURE?

A. Advanced Metering Infrastructure, or "AMI," refers to digital "smart" meters and the associated communications infrastructure that allows two-way transfer of information between the Company and the customer's smart meter. AMI facilitates remote metering of customer usage and the ability of the Company to send signals to remotely control the metering function and to interrupt or connect electricity service to customers.

Q. WHAT IS DOMINION'S AMI DEPLOYMENT PLAN?

A. Dominion's proposed AMI deployment project includes the replacement of all existing Automatic Meter Reading, or "AMR," meters on the Company's system with digital smart meters and the associated communications network infrastructure at a total estimated cost of $548 million over a five-year period. The planned Phase I deployment of AMI was initially expected to add approximately 1.4 million new smart meters at an estimated total cost of $341.5 million over the 2019-2021 period.

Q. WHAT ARE THE ESTIMATED BENEFITS OF AMI DEPLOYMENT ON DOMINION'S SYSTEM?

A. The Company's testimony identifies several non-quantified AMI benefits related to reduced truck rolls, reduced bad debt and energy diversion expense, reduced "found ons"[2] during outage events, unspecified time-varying rate benefits, and quicker and easier remote connect/disconnect capability.[3] The Company has not provided any economic analysis

[2] See Dominion witness Johnson's Direct Testimony, page 10. "Found ons" are premises that have had power restored but that the system still shows to be on outage.

[3] See Dominion witness Johnson's Direct Testimony, page 10.

that demonstrates that its AMI deployment plan represents the lowest reasonable cost alternative for Virginia customers. Moreover, a cost/benefit analysis that was provided by the Company in the 2019 Grid Transformation ("GT Plan") case does not evaluate the potentially lower cost option of delaying AMI deployment until existing AMR meters reach the end of their useful life.

Q. HAS DOMINION INCLUDED AMI DEPLOYMENT COSTS IN ITS EARNINGS TEST ANALYSES FOR THE TRIENNIAL REVIEW PERIOD AND IN ITS PROPOSED RATE YEAR REVENUE REQUIREMENT?

A. Yes. As summarized in Table 1, DVP has included approximately $65 million of AMI deployment costs in its 2019 and 2020 TRP earnings test analyses, plus another $227 million of AMI deployment costs in the Company's pro forma Rate Year revenue requirement.[4]

Table 1
Dominion's Requested TRP and Rate Year AMI Deployment Costs
($Millions)

	2017	2018	2019	2020	2021	2022
GTP AMI Cap	$0.0	$0.0	$14.3	$47.8	$109.0	$112.0
GTP AMI Exp***	$0.0	$0.0	$1.1	$1.9	$4.6	$6.0
Total AMI	$0.0	$0.0	$15.3	$49.7	$113.6	$118.0

2019-20 AMI Total:	$65.0
2021-22 AMI Total:	$227.0

Q. IS IT YOUR UNDERSTANDING THAT ONLY REASONABLE AND PRUDENT INVESTMENT IS PERMITTED FOR INCLUSION IN THE EARNINGS TEST?

[4] See Exhibit SN-2, Dominion's response to AG 2-52.

A. Yes. On advice of counsel, I understand that the Commission must determine the Company's reasonable revenues, expenses, and rate base for the earnings test period. The law does not require the Commission to include items in the earnings test that it determined to be neither reasonable nor prudent.

Q. DID THE COMMISSION REJECT DOMINION'S PROPOSED AMI DEPLOYMENT PLANS FOR THE RELEVANT PERIOD IN THE COMPANY'S 2018 AND 2019 GT PLAN CASES?

A. Yes. On three occasions, the Commission has rejected the proposed AMI deployment plans. In its January 17, 2019 Final Order in Dominion's 2018 GT Plan case, the Commission rejected Dominion's deployment of AMI during the 2019-2021 period, finding that the Company failed to demonstrate that the proposed AMI projects were reasonable and prudent, and had not shown that it had a plan to maximize benefits of AMI.[5]

The Commission *again* rejected Dominion's plan to deploy AMI on its system over the same period in a March 26, 2020 Final Order in the Company's 2019 GT Plan case and its April 27, 2020 Order on Reconsideration. In deciding to reject Dominion's AMI deployment project, the Commission stated that "we once again find the Petition contains an insufficient plan to maximize the potential of AMI, and that the substantial cost to customers of AMI is not reasonable and prudent based on the record established herein."[6] The Commission's Order on Reconsideration found that it would "simply not commit

[5] Case No. PUR-2018-00100, Final Order (Jan. 17, 2019), pages 10-11.

[6] Case No. PUR-2019-00154, Final Order (Mar. 26, 2020), page 9.

customers to pay for such an expensive investment based on this type of speculative evidence of future benefits that will not begin to accrue for many years, if at all."[7]

Q. DID THE COMMISISON'S REJECTION OF AMI DEPLOYMENT COVER THE SAME PERIOD OF TIME AND SAME COSTS THAT ARE AT ISSUE IN THE EARNINGS TEST?

A. Yes. It is the same AMI deployment costs that were rejected in the GT Plan cases that the Company now seeks to include in the earnings test in this case. This is consistent with the Company's plan – announced to the Commission in prior GT Plan cases – that it would seek cost recovery of AMI deployment in base rates.

Q. HOW DO THE PHASE I AMI DEPLOYMENT COSTS REQUESTED IN THIS CASE COMPARE TO AMOUNTS INCLUDED IN DOMINION'S AMI DEPLOYMENT PLANS PRESENTED IN PAST GT PLAN CASES?

A. As summarized in Table 2 below, the Phase I (2019-2021) AMI deployment costs requested by Dominion in this case are somewhat lower than the Phase I AMI deployment plan costs requested in the Company's 2018 and 2019 GT Plan proceedings, Case Nos. PUR-2018-00100 and PUR-2019-00154.

[7] Case No. PUR-2019-00154, Order on Reconsideration (Apr. 27, 2020), page 4.

Table 2
Dominion Phase 1 Requested and Approved AMI Deployment Costs
($Millions)

	Dominion Phase I Request
Case No. PUR-2018-00100	$341.5
Case No. PUR-2019-00154	$196.6
Case No. PUR-2021-00058	$178.7

Q. ARE THE FACTORS RELATED TO THE REMAINING LIFE OF AMR METERS IN THIS CASE DISTINGUISHABLE FROM THE FACTS RELATED TO THE REMAINING LIFE OF AMR METERS REVIEWED IN THE GT PLAN CASES?

A. No, the facts remain the same as the time periods involved necessarily overlap. At the time of deployment, the average remaining life of AMR meters on Dominion's system was approximately 8.5 years, which is nearly half of the forecasted total service life for AMR meters (18 years).[8] Moreover, Dominion indicates that it does not maintain records of the remaining service lives of AMR meters that have been replaced by AMI meters;[9] therefore it appears that the actual remaining service life of individual AMR meters was not a major consideration in the Company's decision to replace an existing AMR meter with an AMI meter.

[8] See Exhibit SN-3, Dominion's responses to AG 2-54 and AG 4-101.

[9] See Exhibit SN-4, Dominion's response to AG 8-217.

Q. ARE THE FACTORS RELATED TO AMR METER FAILURES AND THEIR IMPACT ON DOMINION'S CUSTOMERS DISTINGUISHABLE FROM THE FACTS RELATED TO AMR METER FAILURE RATES REVIEWED IN THE GT PLAN CASES?

A. No. As summarized in Table 3 below, the failure rates of Dominion's AMR meters have been low, averaging 0.33% of the total installed AMR meters each year over the 2017-2020 TRP, with no discernible trend in failure rates.

Table 3
Dominion AMR Meter Failure Rates during TRP[10]

	AMR Failures	Total AMR Meters	AMR Failures % of Total Meters
2017	4,993	1,980,093	0.25%
2018	8,267	1,963,183	0.42%
2019	7,472	1,933,228	0.39%
2020	4,356	1,750,847	0.25%
2017-20 Average	6,272	1,906,838	0.33%

Moreover, Dominion indicates that the "AMR meter failures" presented in Table 3 primarily involve failure of the AMR meter encoder receiver transmitter ("ERT") modules, which facilitate electronic transfer of meter data to allow remote meter reading, and *not* a failure of the actual AMR metering function.[11] Therefore, the true AMR meter failure rate for Dominion is even lower than the 0.33% rate indicated in Table 3 above.

Q. HAS DOMINION EXPERIENCED PROBLEMS WITH REPAIR OR REPLACEMENT OF AMR METERS?

[10] See Exhibit SN-5, Dominion's responses to AG 4-68 and AG 4-70.

[11] See Exhibit SN-5, Dominion's response to AG 4-70.

A. No. In fact, Dominion indicates that during the TRP "there were no AMI meters installed to replaced failed AMR meters as failed AMR meters are replaced with functioning AMR meters as part of normal operations." [12] As summarized in Table 4 below, due to Dominion's normal policy of replacing failed AMR meters with functioning AMR meters, 91% of the total 340,336 AMI meters installed by the Company during the TRP replaced existing functioning AMR meters, while none of the AMI meters installed by Dominion during this period replaced AMR meters that had failed.

Table 4
Deployment of Dominion AMI Meters during the TRP[13]

	2017	2018	2019	2020	Total TRP	% of Total
Total AMI Meters Installed	15,190	41,481	58,019	225,646	340,336	
AMI Installed for New Customers	6,777	4,824	7,397	10,936	29,934	8.8%
AMI Installed to Replace Functioning ARM Meters	8,413	36,657	50,622	214,710	310,402	91.2%
AMI Installed to replace failed AMRs	0	0	0	0	0	

Q. WHAT DOES THE DATA IN TABLES 3 AND 4 ABOVE INDICATE REGARDING DOMINION'S REPLACEMENT OF AMR METERS?

A. The data in Tables 3 and 4 indicate that Dominion has not experienced significant AMR meter failure and replacement concerns.

[12] See Exhibit SN-6, Dominion's response to AG 11-247.

[13] See Exhibit SN-6 for source data.

Q. HAVE THERE BEEN ANY CHANGES IN FACTS SINCE DOMINION'S 2018 AND 2019 GT PLAN CASES THAT MIGHT JUSTIFY REVERSAL OF THE COMMISSION'S REJECTIONS OF DOMINION'S AMI DEPLOYMENT PLAN FOR THE 2019-2021 PERIOD?

A. Not to my knowledge.

Q. WAS IT REASONABLE FOR DOMINION TO PROCEED WITH AMI DEPLOYMENT AFTER THE COMMISSION REJECTED THE COMPANY'S PLAN IN TWO CONSECUTIVE GT PLAN CASES?

A. No. Dominion's decision to proceed with more than $171 million of new investment for AMR deployment in 2019 and 2020, *after* the Commission twice rejected the Company's Phase I AMI deployment plan is concerning and calls into question the integrity of the regulatory process.

Q. WHAT IS YOUR RECOMMENDATION ON THIS ISSUE?

A. I recommend that the Commission reject Dominion's requests to include approximately $178 million of AMI deployment costs incurred in 2019 and 2020 in the earnings tests for those years because the Commission's 2018 and 2019 GT Plan case orders concluded that the Company's Phase I AMI deployment plan, including years 2018 and 2019, was imprudent.

I further recommend that the Commission reject Dominion's request to include the $109 million of actual and forecasted capital additions for AMI deployment for 2021, which the Company has included in determining its requested Rate Year (2022) revenue requirement, because the Commission's 2018 and 2019 GT Plan case orders found that the Company's Phase I AMI deployment plan including year 2021 was imprudent.

I also recommend that the Commission reject the forecasted capital and O&M costs for AMI deployment for 2022, which is included in the Company's requested Rate Year revenue requirement, because the reasonableness of these forecasted 2022 deployment costs have not previously been approved by the Commission and are currently under review in Dominion's pending 2021 GT Plan case, Case No. PUR-2021-00127. The costs cannot be reasonably predicted to be approved, and therefore cannot be included in the rate year.

The impacts of my recommended AMI disallowance on Dominion's 2019 and 2020 earnings tests and the Company's requested 2022 Rate Year revenue requirement are quantified and addressed in the Direct Testimony of AG witness Ralph Smith.

III. DISTRIBUTION PLANT CAPITAL BLANKET PROJECTS

Q. WHAT ARE DISTRIBUTION CAPITAL BLANKET PROJECTS?

A. Distribution capital blanket projects are projects that capture the cost for distribution related activities that close to plant in service on a monthly basis.

Q. WHAT LEVEL OF DOMINION'S TOTAL DISTRIBUTION CAPITAL ADDITIONS WERE FUNDED UNDER DISTRIBUTION CAPITAL BLANKETS DURING THE TRIENNIAL REVIEW PERIOD?

A. Approximately $1.68 billion, or nearly 94% of Dominion's total distribution plant capital additions during the TRP, were funded under capital blanket projects. [14]

Q. WHAT DOES IT MEAN WHEN A PROJECT IS FUNDED UNDER A CAPITAL BLANKET PROJECT?

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[14] See Exhibit SN-7, Dominion's response to AG 8-214.

A. A capital blanket project is a generally defined category of work, such as "Capital Maintenance" which the Company uses for budgeting purposes. As projects that meet the Capital Maintenance designation are performed, they are assigned to and funded by the approved budget for the Capital Maintenance blanket project.

Q. WHAT ARE YOUR CONCERNS REGARDING THE $1.68 BILLION OF DISTRIBUTION CAPITAL INVESTMENT FUNDING UNDER CAPITAL BLANKET PROJECTS DURING THE TRP?

A. I am concerned that Dominion has provided no cost/benefit analyses or information describing the specific scope of major capital expenditures that were funded under Distribution Blanket Projects during the TRP. It is my understanding that the Company maintains the burden of proof to demonstrate that costs that are included in the TRP earnings tests and in the Rate Year revenue requirement are reasonably and prudently incurred. However, the Company simply has not provided information necessary for the Commission or any interested party to determine the reasonableness and prudence of distribution capital additions funded under blanket projects during the TRP.

Q. HAS DOMINION PROVIDED INFORMATION REGARDING THE SPECIFIC SCOPE OF THE MAJOR RELIABILITY PROJECTS THAT ARE FUNDED UNDER DOMINION'S DISTRIBUTION CAPITAL BLANKET PROJECTS?

A. No. Dominion refuses to provide any specific information regarding major reliability projects, other than that they include "labor, materials, equipment and other costs related to the installation of new facilities and replacements or upgrades of existing facilities for the purpose of delivering safe and reliable service to customers." [15] This description is so

[15] See Exhibit SN-8, Dominion's response to AG 4-93.

generic that it could apply to almost any investment and provides no useful information to verify the reasonableness of the investments.

Q. HAS DOMINION PROVIDED INFORMATION REQUIRED TO VERIFY THE REASONABLENESS OF THE LARGER DISTRIBUTION CAPITAL ADDITIONS FUNDED FROM CAPITAL BLANKET PROJECTS?

A. No. Dominion objected to Consumer Counsel's discovery requests for cost/benefit analyses and other basic information required to evaluate the reasonableness of major projects funded under distribution capital blankets, such as project descriptions, in-service dates, project purpose and project costs.[16]

Q. DO OTHER UTILITIES MAINTAIN DETAILED INFORMATION TO SUPPORT MAJOR CAPITAL PROJECTS?

A. Yes. In reviewing utility requests for approval of major capital additions in regulatory proceedings I frequently request basic information to understand the scope, purpose and expected benefits of proposed projects, as well as alternatives considered. For example, in Appalachian Power Company's ("APCo") most recent Triennial Review proceeding, I requested information describing capital investments of more than $10 million, including project descriptions and cost/benefit summaries. In response to this discovery request, APCo provided a summary of each major project along with Capital Improvement Requisition Forms with other details necessary to understand the scope of major projects, why they are being done, what the expected cost of the project is, and assessment of benefits, as well as alternatives considered by the Company.[17] This is the type of

[16] See Exhibit SN-9, Dominion's response to AG 11-253.

[17] See Exhibit SN-10.

information that I expected Dominion to provide to support the major capital projects funded through the Company's Distribution Capital Blanket projects that are included in the TRP earnings test analyses and Rate Year revenue requirement; however, the Company indicates that this information does not exist. Without such information, it is not possible to determine the nature, purpose or expected benefits of major projects that contribute to the $1.68 billion of Distribution capital investment requested by Dominion in this case, or to determine whether the requested costs are reasonable and prudent.

Q. WHY DOES DOMINION NOT HAVE DOCUMENTATION OF COST/BENEFIT ANALYSES FOR ANY DISTRIBUTION CAPITAL ADDITIONS FUNDED UNDER CAPITAL BLANKET PROJECTS?

A. The Company indicates that "due to the nature of these projects as well as the sheer volume and magnitude of these projects, no formal cost benefit analysis is undertaken, but the Company studies different solution options and applies engineering judgment to make decisions based on good utility practice."[18] In essence, Dominion's stated position on this issue appears to be that the Company's $1.68 billion of distribution capital additions funded under capital blanket projects are not subject to normal regulatory review, but rather should be approved without any documentary evidence demonstrating need or prudence. This is incompatible with Dominion's status as a rate-regulated monopoly utility and unsettling given the enormous level of spending at issue. As the situation stands, to the extent that there are inefficiencies in investments funded under blanket capital projects, such inefficiencies will not be controlled by the pressures of competition and cannot even be identified – let alone reviewed – by the regulator.

[18] See Exhibit SN-11, Dominion's response to AG 11-255.

Q. HAS DOMINION PROVIDED THE COMPANY'S POLICIES AND CRITERIA FOR MANAGEMENT APPROVAL OF DISTRIBUTION CAPITAL ADDITIONS FUNDED UNDER CAPITAL BLANKETS?

A. No. The Company has not provided any formal policies governing the review or approval of projects funded under capital blankets, but indicates that projects that are designed to cost more than $50,000 and up to $100,000 are reviewed and approved by the local design supervisor, while projects costing more than $100,000 are reviewed and approved by the local design manager.[19] In my experience, it is unusual that the Company does not have a more detailed formal policy for approval of distribution capital additions funded under blanket projects and that the Company does not require senior level management review and approval of major capital projects.

Q. HAS DOMINION CONDUCTED ANY AUDITS OF THE $1.68 BILLION OF CAPITAL ADDITIONS FUNDED THROUGH DISTRIBUTION CAPITAL BLANKET PROJECTS DURING THE TRP TO ENSURE THE REASONABLENESS AND ACCURACY OF SUCH COSTS?

A. No.[20]

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS REGARDING DOMINION'S DISTRIBUTION CAPITAL ADDITIONS DURING THE TRP THAT WERE FUNDED UNDER CAPITAL BLANKET PROJECTS?

A. Dominion has refused to provide the most basic information necessary to demonstrate the prudence of the $1.68 billion of distribution capital additions during the TRP that were

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[19] See Exhibit SN-12, Dominion's response to AG 8-201.

[20] See Exhibit SN-13, Dominion's response to AG 11-254.

funded under capital blanket projects. There is virtually no transparency regarding the nature or reasonableness of these costs, which makes it impossible to determine that the underlying investments meet the normal standard for approval in Virginia and most other regulatory jurisdictions. Although it is my understanding that the Company maintains the burden to demonstrate the reasonableness of capital additions and other costs that are included in its earnings test analyses, which ultimately determines the level of costs collected through rates charged to Virginia customers, it has not provided even the most basic information necessary to meet that burden with regard to the $1.68 billion of blanket funded distribution capital additions at issue in this case. Under these circumstances, a disallowance for the Company's failure to adequately support its requested costs is justified, but I have no basis for quantifying a specific adjustment due to the lack of information regarding these investments.

Q. HAS THE COMPANY SOUGHT TO INTRODUCE ISSUES OF OPERATIONAL PERFORMANCE AS A REASON TO INCREASE ITS AUTHORIZED ROE?

A. Yes. Company witness Reed reviewed data provided by the Company, including data on distribution operations, and suggests that it is appropriate to increase Dominion's authorized Return on Equity ("ROE") based on performance. On advice of counsel, I understand that the Commission may increase or decrease the authorized ROE based on the Commission's consideration of performance.

Q. DO YOU AGREE THAT THE COMPANY'S AUTHORIZED ROE SHOULD BE ADJUSTED BASED ON PERFORMANCE?

A. Yes. For the above reasons, I recommend that the Commission consider a downward performance adjustment to Dominion's authorized ROE to reflect the Company's

operational failure to maintain documentation necessary to support the prudence of the $1.68 billion of blanket funded distribution capital additions incurred during the TRP, or support for new projects which are included in the Company's Rate Year revenue requirement.

In addition, going forward, I recommend that the Commission instruct Dominion to provide the basic information necessary to support major capital investments funded under blanket projects in all future base rate proceedings, including but not limited to documentation submitted to Company management to obtain approval of the 10 largest capital additions in each blanket funded project, any supporting cost/benefit analyses, other information that demonstrates that each such project represents the lowest reasonable cost alternative, and results of annual audits that demonstrate that costs of all major projects funded under capital blankets were reasonably incurred, accurately recorded, and properly classified.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes. However, I reserve the right to present oral surrebuttal testimony at the hearing to respond to any new issues that may be raised by Dominion in its rebuttal testimony.