# **MISSOURI PUBLIC SERVICE COMMISSION**

# **STAFF REPORT**

# **COST OF SERVICE**

# **APPENDIX 2**

**Support for Staff** 

**Cost of Capital** 

THE EMPIRE DISTRICT ELECTRIC COMPANY d/b/a Liberty

CASE NO. ER-2021-0312

Jefferson City, Missouri October 2021

# AN ANALYSIS OF COST OF CAPITAL FOR THE EMPIRE DISTRICT ELECTRIC COMPANY CASE NO. ER-2021-0312 APPENDIX 2

## **SCHEDULES**

By

Peter Chari

**Financial Analysis** 

## MISSOURI PUBLIC SERVICE COMMISSION

October 29, 2021

#### The Empire District Electri Company Case No. ER-2021-0312

List of Schedules

Schedule	Description of Schedule

- 1 List of Schedules
- 2-1 Federal Reserve Discount Rate and Federal Reserve Funds Rate Changes
- 2-2 Graph of Federal Reserve Discount Rates and Federal Funds Rates Changes
- 3-1 Inflation Rate
- 3-2 Graph of Inflation Rate
- 4-1 Average Yields on Moody's Public Utility Bonds
- 4-2 Graph of Average Yields on Moody's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds
- 4-3 Spread Between Public Utility Bond and 30-Year Treasury Bond Yields
- 5-1 Criteria for Selecting Comparable Utility Companies
- 5-2 Credit Ratings of Companies in the Comparable Group
- 6-1 Pro Forma Capital Structure of Empire District Electric Company
- 6-2 Pro Forma Capital Structure of Liberty Utilities Company
- 6-3 Pro Forma Capital Structure of Algonquin Power and Utilities Corp.
- 6-4 Staff Recommended Capital Structure
- 7-1 Survey of Growth Rates
- 7-2 Staff Recommended Growth Rates
- 8-1 Discounted Cash Flow Cost of Equity Estimates for the Ameren Missouri Proxy Group of Companies
- 8-2 Discounted Cash Flow Cost of Equity Estimates for the Empire Rate Case Proxy Group of Companies
- 9 Capital Asset Pricing Model Cost of Equity Estimate for the Ameren Missouri Proxy Group of Companies
- 10 Summaries of Cost of Equity and Authorized Return on Equity
- 11 Rate of Return

#### Empire District Electric Company Case No. ER-2021-0312

### Federal Reserve Discount Rates Changes and Federal Reserve Funds Rates Changes

Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate	Date	Federal Reserve Discount Rate	Federal Reser Funds Rate
01/01/83	8.50%	Fullus Nate	01/04/01	5.50%	6.00%
12/31/83	8.50%		01/31/01	5.00%	5.50%
04/09/84	9.00%		03/20/01	4.50%	5.00%
			03/20/01	4.00%	
11/21/84	8.50%				4.50%
12/24/84	8.00%		05/15/01	3.50%	4.00%
05/20/85	7.50%		06/27/01	3.25%	3.75%
03/07/86	7.00%		08/21/01	3.00%	3.50%
04/21/86	6.50%		09/17/01	2.50%	3.00%
07/11/86	6.00%		10/02/01	2.00%	2.50%
08/21/86	5.50%		11/06/01	1.50%	2.00%
09/04/87	6.00%		12/11/01	1.25%	1.75%
08/09/88	6.50%		11/06/02	0.75%	1.25%
02/24/89	7.00%		01/09/03	2.25% *	* 1.25%
07/13/90		8.00% *	06/25/03	2.00%	1.00%
10/29/90		7.75%	06/30/04	2.25%	1.25%
11/13/90		7.50%	08/10/04	2.50%	1.50%
12/07/90		7.25%	09/21/04	2.75%	1.75%
12/18/90		7.00%	11/10/04	3.00%	2.00%
12/19/90	6.50%		12/14/04	3.25%	2.25%
01/09/91		6.75%	02/02/05	3.50%	2.50%
02/01/91	6.00%	6.25%	03/22/05	3.75%	2.75%
03/08/91		6.00%	05/03/05	4.00%	3.00%
04/30/91	5.50%	5.75%	06/30/05	4.25%	3.25%
08/06/91		5.50%	08/09/05	4.50%	3.50%
09/13/91	5.00%	5.25%	09/20/05	4.75%	3.75%
10/31/91	0.0070	5.00%	11/01/05	5.00%	4.00%
11/06/91	4.50%	4.75%	12/13/05	5.25%	4.25%
12/06/91	4.50 %	4.50%	01/31/06	5.50%	4.50%
12/20/91	3.50%	4.00%	03/28/06	5.75%	4.75%
	3.50%				
04/09/92	0.000/	3.75%	05/10/06	6.00%	5.00%
07/02/92	3.00%	3.25%	06/29/06	6.25%	5.25%
09/04/92		3.00%	08/17/07	5.75%	5.25%
01/01/93			09/18/07	5.25%	4.75%
12/31/93	No Changes	No Changes	10/31/07	5.00%	4.50%
02/04/94		3.25%	12/11/07	4.75%	4.25%
03/22/94		3.50%	01/22/08	4.00%	3.50%
04/18/94		3.75%	01/30/08	3.50%	3.00%
05/17/94	3.50%	4.25%	03/16/08	3.25%	2.25%
08/16/94	4.00%	4.75%	03/18/08	2.50%	2.25%
11/15/94	4.75%	5.50%	04/30/08	2.25%	2.00%
02/01/95	5.25%	6.00%	10/08/08	1.75%	1.50%
07/06/95		5.75%	10/28/08	1.25%	1.00%
12/19/95		5.50%	12/30/08	0.50%	0%25%
01/31/96	5.00%	5.25%	02/19/10	0.75%	0%25%
03/25/97		5.50%	12/17/15	1.00%	0.38%
12/12/97	5.00%		12/15/16	1.25%	0.54%
01/09/98	5.00%		03/16/17	1.50%	0.79%
03/06/98	5.00%		06/15/17	1.75%	1.04%
09/29/98		5.25%	12/14/17	2.00%	1.30%
10/15/98	4.75%	5.00%	03/22/18	2.25%	1.51%
11/17/98	4.50%	4.75%	06/14/18	2.50%	1.82%
06/30/99	4.50%	5.00%	09/27/18	2.75%	1.95%
08/24/99 11/16/99	4.75% 5.00%	5.25% 5.50%	12/20/18 08/01/19	3.00% 2.75%	<u>2.27%</u> 2.13%
02/02/00	5.25%	5.75%	09/19/19	2.50%	2.04%
03/21/00	5.50%	6.00%	10/31/19	2.25%	1.83%
05/19/00	6.00%	6.50%	03/04/20	1.75%	0.65%
01/03/01	5.75%	6.00%	03/16/20	0.25%	0.05%

\* Staff began tracking the Federal Funds Rate.

\*Revised discount window program begins. Reflects rate on primary credit. This revised discount window policy results in incomparability of the discount rates after January 9, 2003 to discount rates before January 9, 2003.

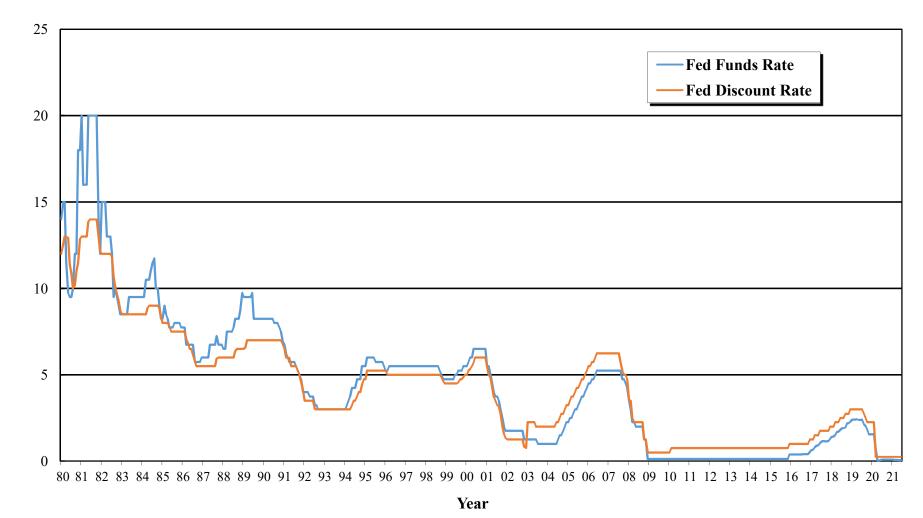
Source: Federal Reserve Discount rate Federal Reserve Funds rate

https://fred.stlouisfed.org/series/INTDSRUSM193N https://fred.stlouisfed.org/series/FEDFUNDS

Note: Interest rates as of December 31 for each year are underlined.

## The Empire District Electric Company Case No. ER-2021-0312

Federal Reserve Discount Rates and Federal Funds Rates 1980 - 2021



**SCHEDULE PC-2-2** 

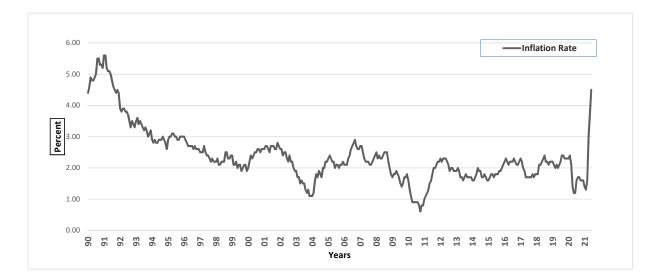
#### The Empire District Electric Company ER-2021-0312 Rate of Inflation (CPI)

InternerIntern	Consumer P	rice Index (CPI) Ra	ate of Inflation									
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Feb 3.00 Feb 2.70 Feb 2.70 Feb 2.00 Feb 2.10   Mar 3.00 Mar 2.70 Mar 2.50 Mar 1.90 Mar 2.00   Apr 3.10 Apr 2.60 Apr 2.30 Apr 1.70 Apr 2.10   May 3.10 Apr 2.60 Apr 2.30 Apr 1.70 Apr 2.10   May 3.10 May 2.50 May 2.20 May 2.10 2.10   Jun 3.00 Jun 2.70 Jun 2.20 Jun 1.60 Jun 2.10   Jul 3.00 Jul 2.70 Jul 2.20 Jul 1.70 Jul 2.20   Aug 2.90 Aug 2.70 Aug 2.10 Aug 1.80 Aug 2.40   Sep 2.90 Sep 2.60 Sep 2.70 1.70 Oct	Dec	2.60	Dec	2.60	Dec	2.60	Dec	1.90	Dec			
Mar 3.00 Mar 2.70 Mar 2.50 Mar 1.90 Mar 2.00   Apr 3.10 Apr 2.60 Apr 2.30 Apr 1.70 Apr 2.10   May 3.10 May 2.50 May 2.20 May 1.70 May 2.00   Jun 3.00 Jun 2.70 Jun 2.20 May 1.70 May 2.00   Jun 3.00 Jun 2.70 Jun 2.20 Jun 1.60 Jun 2.10   Jul 3.00 Jul 2.70 Jul 2.20 Jul 1.70 May 2.10   Aug 2.90 Aug 2.70 Jul 2.20 Jul 1.70 Jul 2.20   Sep 2.90 Sep 2.60 Sep 2.10 Sep 1.70 Sep 2.40   Oct 3.00 Oct 2.60 Oct 2.20 Oct 1	Jan 1995	2.90	Jan 2001	2.60	Jan 2007	2.70	Jan 2013	1.90	Jan 2019	2.20		
Apr3.10Apr2.60Apr2.30Apr1.70Apr2.10May3.10May2.50May2.20May1.70May2.00Jun3.00Jun2.70Jun2.20Jun1.60Jun2.10Jul3.00Jul2.70Jul2.20Jun1.60Jun2.20Aug2.90Aug2.70Aug2.10Aug1.80Aug2.40Sep2.90Sep2.60Sep2.10Sept1.70Sep2.40Oct3.00Oct2.60Oct2.20Oct1.70Nov2.30Nov3.00Nov2.80Nov2.30Nov1.70Nov2.30												
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Jun3.00Jun2.70Jun2.20Jun1.60Jun2.10Jul3.00Jul2.70Jul2.20Jul1.70Jul2.20Aug2.90Aug2.70Aug2.10Aug1.80Aug2.40Sep2.90Sep2.60Sep2.10Sept1.70Sep2.40Oct3.00Oct2.60Oct2.20Oct1.70Oct2.30Nov3.00Nov2.80Nov2.30Nov1.70Nov2.30												
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Sep 2.90 Sep 2.60 Sep 2.10 Sept 1.70 Sep 2.40   Oct 3.00 Oct 2.60 Oct 2.20 Oct 1.70 Oct 2.30   Nov 3.00 Nov 2.80 Nov 2.30 Nov 1.70 Nov 2.30												
Oct 3.00 Oct 2.60 Oct 2.20 Oct 1.70 Oct 2.30   Nov 3.00 Nov 2.80 Nov 2.30 Nov 1.70 Nov 2.30												
Nov 3.00 Nov 2.80 Nov 2.30 Nov 1.70 Nov 2.30												

Source: U.S. Dept of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers,

Change for 12-Month Period, Bureau of Labor Statistics, http://www.bls.gov/schedule/archives/cpi\_nr.htm

#### The Empire District Electric Company Case No. ER-2021-0312



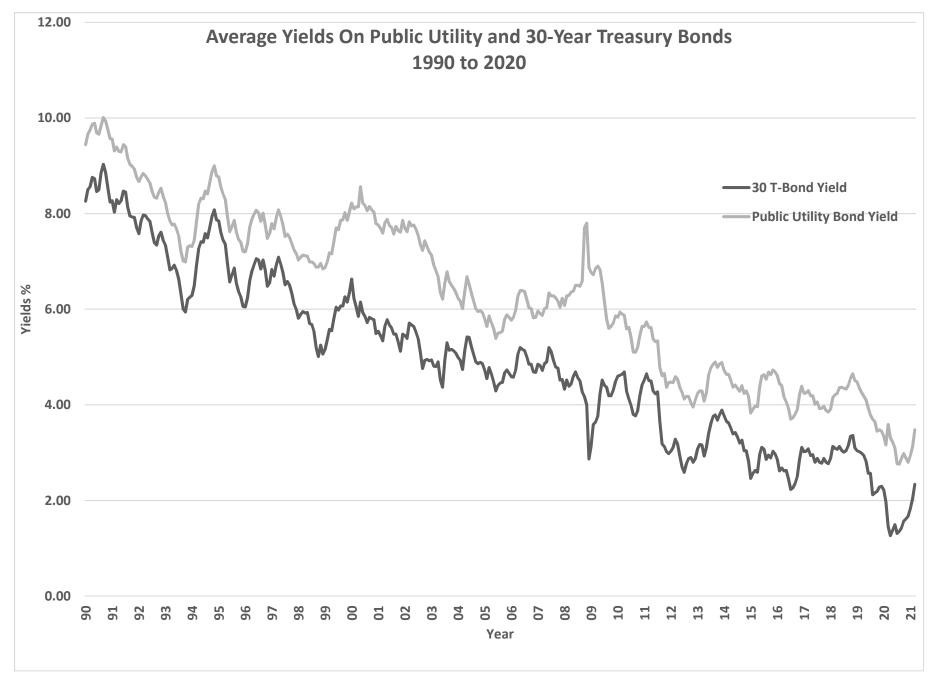
## The Empire District Electric Company Case No. ER-2021-0312

Average Yields on Public Utility Bonds

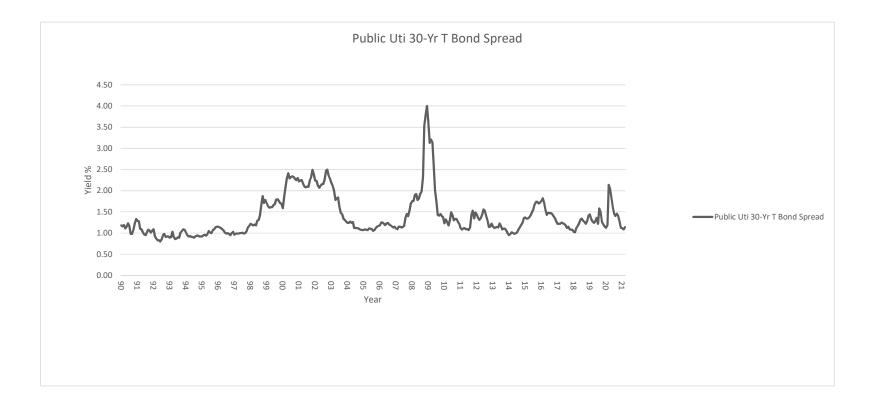
Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)						
Jan 1990	9.44	Jan 1996	7.2	Jan 2002	7.69	Jan 2008	6.08	Jan 2014	4.72	Jan 2020	3.34
Feb	9.66	Feb	7.37	Feb	7.62	Feb	6.28	Feb	4.64	Feb	3.16
Mar	9.75	Mar	7.72	Mar	7.83	Mar	6.29	Mar	4.63	Mar	3.59
Apr	9.87 9.89	Apr May	7.88 7.99	Apr May	7.74 7.76	Apr May	6.36	Apr May	4.52 4.37	Apr May	3.31 3.22
May Jun	9.69	Jun	8.07	Jun	7.67	Jun	6.38 6.5	Jun	4.42	Jun	3.10
Jul	9.66	Jul	8.02	Jul	7.54	Jul	6.5	Jul	4.35	Jul	2.77
Aug	9.84	Aug	7.84	Aug	7.34	Aug	6.48	Aug	4.29	Aug	2.76
Sep	10.01	Sep	8.01	Sep	7.23	Sep	6.59	Sep	4.4	Sep	2.88
Oct	9.94	Oct	7.76	Oct	7.43	Oct	7.7	Oct	4.24	Oct	2.98
Nov	9.76	Nov	7.48	Nov	7.31	Nov	7.8	Nov	4.29	Nov	2.89
Dec	9.57	Dec	7.58	Dec	7.2	Dec	6.87	Dec	4.18	Dec	2.8
Jan 1991	9.56	Jan 1997	7.79	Jan 2003	7.13	Jan 2009	6.77	Jan 2015	3.83	Jan 2021	2.94
Feb	9.31	Feb	7.68	Feb	6.92	Feb	6.72	Feb	3.91	Feb	3.13
Mar	9.39	Mar	7.92	Mar	6.8	Mar	6.85	Mar	3.97	Mar	3.48
Apr May	9.3 9.29	Apr May	8.08 7.94	Apr May	6.68 6.35	Apr May	6.9 6.83	Apr May	3.96 4.38	Apr May	3.33 3.36
Jun	9.44	Jun	7.94	Jun	6.21	Jun	6.54	Jun	4.5	Jun	3.19
Jul	9.4	Jul	7.52	Jul	6.54	Jul	6.15	Jul	4.63	Jul	2.99
Aug	9.16	Aug	7.57	Aug	6.78	Aug	5.8	Aug	4.54	August	2.99
Sep	9.03	Sep	7.5	Sep	6.58	Sep	5.6	Sep	4.68		
Oct	8.99	Oct	7.37	Oct	6.5	Oct	5.64	Oct	4.63		
Nov	8.93	Nov	7.24	Nov	6.44	Nov	5.71	Nov	4.73		
Dec	8.76	Dec	7.16	Dec	6.36	Dec	5.86	Dec	4.69		
Jan 1992	8.67	Jan 1998	7.03	Jan 2004	6.23	Jan 2010	5.83	Jan 2016	4.62		
Feb	8.77	Feb	7.09	Feb	6.17	Feb	5.94	Feb	4.44		
Mar	8.84	Mar	7.13	Mar	6.01	Mar	5.9	Mar	4.4		
Apr	8.79	Apr	7.12	Apr	6.38	Apr	5.87	Apr	4.16		
May	8.72 8.64	May Jun	7.11 6.99	May Jun	6.68 6.53	May Jun	5.59 5.62	May Jun	4.06 3.93		
Jun Jul	8.46	Jul	6.99	Jul	6.34	Jul	5.41	Jul	3.55		
Aug	8.34	Aug	6.96	Aug	6.18	Aug	5.1	Aug	3.73		
Sep	8.32	Sep	6.88	Sep	6.01	Sep	5.1	Sep	3.8		
Oct	8.44	Oct	6.88	Oct	5.95	Oct	5.2	Oct	3.9		
Nov	8.53	Nov	6.96	Nov	5.97	Nov	5.45	Nov	4.21		
Dec	8.36	Dec	6.84	Dec	5.93	Dec	5.61	Dec	4.39		
Jan 1993	8.23	Jan 1999	6.87	Jan 2005	5.8	Jan 2011	5.69	Jan 2017	4.24		
Feb	8	Feb	7	Feb	5.64	Feb	5.82	Feb	4.25		
Mar	7.85	Mar	7.18	Mar	5.86	Mar	5.74	Mar	4.3		
Apr	7.76	Apr	7.16	Apr	5.72	Apr	5.76	Apr	4.19		
May Jun	7.78 7.68	May Jun	7.42 7.7	May Jun	5.6 5.39	May Jun	5.57 5.52	May Jun	4.19 4.01		
Jul	7.53	Jul	7.66	Jul	5.5	Jul	5.61	Jul	4.06		
Aug	7.21	Aug	7.86	Aug	5.51	Aug	5.26	Aug	3.92		
Sep	7.01	Sep	7.87	Sep	5.54	Sep	5.01	Sep	3.93		
Oct	6.99	Oct	8.02	Oct	5.79	Oct	5.11	Oct	3.97		
Nov	7.3	Nov	7.86	Nov	5.88	Nov	5	Nov	3.92		
Dec	7.33	Dec	8.04	Dec	5.83	Dec	4.96	Dec	3.93		
Jan 1994	7.31	Jan 2000	8.22	Jan 2006	5.77	Jan 2012	4.97	Jan 2018	3.97		
Feb	7.44	Feb	8.1	Feb	5.83	Feb	4.99	Feb	3.88		
Mar	7.83	Mar	8.14	Mar	5.98	Mar	5.13	Mar	3.85		
Apr May	8.2 8.32	Apr May	8.14 8.55	Apr May	6.28 6.39	Apr May	5.05 4.84	April May	4.24 4.36		
Jun	8.31	Jun	8.22	Jun	6.39	Jun	4.67	Jun	4.30		
Jul	8.47	Jul	8.17	Jul	6.37	Jul	4.56	Jul	4.35		
Aug	8.41	Aug	8.05	Aug	6.2	Aug	4.71	August	4.33		
Sep	8.65	Sep	8.16	Sep	6.03	Sep	4.75	Sep	4.41		
Oct	8.88	Oct	8.08	Oct	6.01	Oct	4.69	Oct	4.56		
Nov	9	Nov	8.03	Nov	5.82	Nov	4.53	Nov	4.65		
Dec	8.79	Dec	7.79	Dec	5.83	Dec	4.28	Dec	4.51		
Jan 1995	8.77	Jan 2001	7.76	Jan 2007	5.96	Jan 2013	4.45	Jan 2019	4.48		
Feb	8.56	Feb	7.69	Feb	5.91	Feb	4.49	Feb	4.35		
Mar	8.41	Mar	7.59	Mar	5.87	Mar	4.45	Mar	4.26		
Apr May	8.3 7.93	Apr May	7.81 7.88	Apr May	6.01 6.03	Apr May	4.19 4.36	April May	4.18 4.1		
May Jun	7.62	Jun	7.88	Jun	6.34	Jun	4.36	Jun	3.93		
Jul	7.73	Jul	7.71	Jul	6.28	Jul	4.7	Jul	3.79		
Aug	7.86	Aug	7.57	Aug	6.28	Aug		Aug	3.7		
Sep	7.62	Sep	7.73	Sep	6.24	Sep	5.05	Sep	3.65		
Oct	7.46	Oct	7.64	Oct	6.17	Oct	4.94	Oct	3.45		
Nov	7.4	Nov	7.61	Nov	6.04	Nov	5.04	Nov	3.48		
Dec	7.21	Dec	7.86	Dec	6.23	Dec	4.89	Dec	3.45		

Source: Mergent Bond Record (through November 2010); BondsOnline (December 2010 - November 2013); Mergent Bond Record (December 2013 - Present).

## The Empire District Electric Company ER-2021-0312



## The Empire Dostrict Electric Company Case No. ER-2021-0312



#### The Empire District Electric Company Criteria For Selecting Comparable Electric Utility Companies ER-2021-0312

					ER-2021-0312						
(1)	(2)	(3)	(4)	(5) At Least	(6)	(7)	(8)		(9) At least	(10)	(12)
			80% of	Investment	L- T Growth Coverage from	No		At Least 80% of	50% of	At least	Comparable
		Stock	Assets U.S.	Grade Credit	at least 2 equity	Pending	No Reduced	Income	Plant from	25% of Plant	Company
Edison Electric Institute		Publicly	Regulated	Rating	analysts and	Merger or	Dividend	from U.S. Regulated	Electric	Electric Plant	Met All
Power Companies	Ticker	Traded	(EEI)	(2 of 3 agencies)	L-T Growth Available	Acquisition	Since 2018	Utility Operations	Utility	Generation	Criteria
ALLETE. Inc.	ALE	YES	NO			•					
Alliant Energy Corporation	LNT	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Ameren Corporation <sup>1</sup>	AEE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
American Electric Power Company, Inc.	AEP	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
AVANGRID, Inc.	AGR	YES	NO								
Avista Corporation	AVA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Black Hills Corporation	BKH	YES	YES	YES	YES	YES	YES	YES	NO		
CenterPoint Energy, Inc.	CNP	YES	NO								
CMS Energy Corporation	CMS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Consolidated Edison, Inc.	ED	YES	YES	YES	YES	YES	YES	YES	YES	NO	
Dominion Resources, Inc.	D	YES	NO								
DTE Energy Company	DTE	YES	NO								
Duke Energy Corporation	DUK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Edison International	EIX	YES	YES	YES	YES	YES	YES	YES	YES	NO	
El Paso Electric Company	EE	NO									
Entergy Corporation <sup>2</sup>	ETR	YES	YES	YES	YES	YES	YES	YES	YES	YES	
Evergy, Inc.	EVRG	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Eversource Energy	ES	YES	YES	YES	YES	YES	YES	YES	YES	NO	
Exelon Corporation	EXC	YES	NO								
FirstEnergy Corp.	FE	YES	YES	NO							
Hawaiian Electric Industries, Inc.	HE	YES	NO								
IDACORP, Inc.	IDA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
MDU Resources Group, Inc.	MDU	YES	NO								
MGE Energy, Inc.	MGEE	YES	NO								
NextEra Energy, Inc.	NEE	YES	NO								
NiSource Inc.	NI	YES	YES	YES	YES	YES	YES	YES	NO		
NorthWestern Corporation	NWE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OGE Energy Corp.	OGE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Otter Tail Corporation	OTTR	YES	YES	YES	NO						
PG&E Corporation	PCG	YES	YES	NO							
Pinnacle West Capital Corporation	PNW	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PNM Resources, Inc.	PNM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Portland General Electric Company	POR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PPL Corporation	PPL	YES	YES	YES	YES	YES	YES	NO			
Public Service Enterprise Group Inc.	PEG	YES	NO								
SCANA Corporation	SCG	NO									
Sempra Energy	SRE	YES	NO								
Southern Company	SO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Unitil Corporation	UTL	YES	YES	YES	NO						
Vectren Corporation	VVC	NO									
WEC Energy Group, Inc.	WEC	YES	YES	YES	YES	YES	YES				
Xcel Energy, Inc.	XEL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Sources: Columns 1, 2, 3, 4 = Edison Electric Institute

Column 5,6,7,8,9,10,11 = SNL Finance

Notes: 1 Ameren appears in Staff's Schedules for reference. Staff's analysis of the proxy group excludes Ameren Data.

2 Entergy Corporation was not included because losses from its wholesale commodities business have led to considerable volitility in revenues, compared to the proxy group.

## The Empire District Electric Company Comparable Electric Utility Companies For Empire District Electric Company Case No. ER-2021-0312

			S&P	
			Corporate	
		Ticker	Credit	
Number	Company Name	Symbol	Rating	
1	Alliant Energy Corporation	LNT	A-	1
2	Ameren Corporation	AEE	BBB+	2
3	American Electric Power Company, Inc.	AEP	A-	1
4	Avista Corporation	AVA	BBB	3
5	CMS Energy Corporation	CMS	BBB+	2
6	Duke Energy Corporation	DUK	BBB+	2
7	Evergy, Inc.	EVRG	A-	1
8	IDACORP, Inc.	IDA	BBB	3
9	NorthWestern Corporation	NWE	BBB	3
10	OGE Energy Corp.	OGE	BBB+	2
11	Pinnacle West Capital Corporation	PNW	A-	1
12	PNM Resources, Inc.	PNM	BBB	3
13	Portland General Electric Company	POR	BBB+	2
14	Southern Company	SO	A-	1
15	Xcel Energy, Inc.	XEL	A-	1
				28
	Average Credit Ratings		BBB+	1.9

## The Empire District Electric Company Case No. ER-2021-0312 Empire District Electric Company Pro Forma Capital Structure as of September 30, 2021

Line No.	Description	pital per Books 9/30/20 (1)	Capital Ratio 9/30/20	Pro Fo	orma Adjustments (2)	А	djusted Capital 9/30/20	Pro Forma Capital Ratio
	(a)	(b)	(c)		(d)		(e) = (b) + (d)	(f)
1	Long Term Debt	\$ 735,000,000	40.65%	\$	425,000,000	\$	1,160,000,000	47.56%
2	Preferred Stock	-	0.00%			\$	-	0.00%
3	Common Equity	1,072,982,332	59.35%		205,978,724	\$	1,278,961,056	52.44%
4	Total Capital	\$ 1,807,982,332	100.00%	\$	630,978,724	\$	2,438,961,056	100.00%

(1) Empire District Electric Company Consolidated per MPSC Order ER-2019-0374

(2) Reflects common equity changes from September 30, 2020 through March 2021 and Empire financing of wind farm rate base investments. Excludes February/March extraordinary fuel purchases which will be permanently financed based on the Pro Forma Capital Ratios in column (f) pending further discussions with the staff of the Missouri Public Service Commission.

Source: Todd Mooney's Direct Testimony, Case No. ER-2021-0312, Schedule TM-3

### The Empire District Electric Company Case No. ER-2021-0312 Liberty Utilities Company Pro Forma Capital Structure as of September 30, 2021

Line No.	Description (a)	Capital per Books 9/30/20 (b)	Capital Ratio 9/30/20 (c)	Pro Forma Adjustments (2) (d)	Adjusted Capital 9/30/20 (e) = (b) + (d)	Pro Forma Capital Ratio (f)	ER-2019-0374 Adjustments (3) (g)	Adjusted Capital 9/30/20 Post ER- 2019-0374 (h) = (e) + (g)	Adjusted Capital Ratio (i)
1	Long Term Debt	\$ 1,881,030,000	38.07%	\$ 584,089,000	\$ 2,465,119,000	37.62%	\$ 628,500,000	\$ 3,093,619,000	47.21%
2	Preferred Shares	-	0.00%		-	0.00%		\$-	0.00%
3	Redeemable Non Controlling Interest (1)	22,895,000	0.46%	(2,036,000)	20,859,000	0.32%		20,859,000	0.32%
4	Common Equity	3,036,870,000	61.47%	1,029,823,000	4,066,693,000	62.06%	(628,500,000)	3,438,193,000	52.47%
5	Total Equity	3,059,765,000	61.93%	1,027,787,000	4,087,552,000	62.38%	(628,500,000)	3,459,052,000	52.79%
6	Total Capital	\$ 4,940,795,000	100.00%	\$ 1,611,876,000	\$ 6,552,671,000	100.00%	\$-	\$ 6,552,671,000	100.00%

(1) Redeemable Non Controlling Interests relate to third party tax equity investments in solar projects that are not expected to be redeemed.

(2) Reflects estimated changes in common equity from September 30, 2020 through March 31, 2021 and financing of wind farm investments.

(3) In ER-2019-0374, OPC increased Long-Term Debt to reflect guarantees by LUCO of Affiliate Debt not reflected on LUCO's balance sheet. In addition, OPC also subtracted the same amounts from Common Equity. Empire does not agree with these adjustments but has reflected them per the 2019-0374 Order. The issue is on appeal before the Missouri Court of Appeals, Western District. Besides disagreement with the underlying methodology Empire also does not agree with the common equity adjustment in column (g).

#### The Empire District Electric Company Case No. ER-2021-0312 Algonquin Power and Utilities Corp. Pro Forma Capital Structure as of September 30, 2021

Line No.	Description (a)	Capital per Books 9/30/20 (b)	Capital Ratio 9/30/20 (c)	 Pro Forma Adjustments (2) (d)	Adjusted Capital 9/30/20 (e) = (b) + (d)	Pro Forma Capital Ratio (f)	Adjustn	19-0374 ments (3) (g)	9/3	usted Capital 0/20 Post ER- 2019-0374 n) = (e) + (g)	Adjusted Capital Ratio (i)
1	Long Term Debt	\$ 3,977,705,000	41.80%	\$ 1,022,854,000	\$ 5,000,559,000	43.04%	\$ (31	18,750,000)	\$	4,681,809,000	40.30%
2	Preferred Shares	184,299,000	1.94%		184,299,000	1.59%	(9	92,150,000)		92,149,000	0.79%
3	Redeemable Non Controlling Interest, held by Related Party	306,234,000	3.22%	\$ 82,000	306,316,000	2.64%				306,316,000	2.64%
4	Redeemable Non Controlling Interest (1)	22,896,000	0.24%	(2,037,000)	20,859,000	0.18%				20,859,000	0.18%
5	Common Equity	5,024,186,000	52.80%	1,082,496,000	6,106,682,000	52.56%	41	10,900,000		6,517,582,000	56.10%
6	Total Equity	5,047,082,000	53.04%	 1,080,459,000	6,127,541,000	52.74%	41	10,900,000		6,538,441,000	56.28%
7	Total Capital	\$ 9,515,320,000	100.00%	\$ 2,103,395,000	\$ 11,618,715,000	100.00%	\$	-	\$ 1	1,618,715,000	100.00%

(1) Redeemable Non Controlling Interests relate to third party tax equity investments in solar projects that are not expected to be redeemed.

(2) Reflects estimated changes in accounts from September 30, 2020 through March 31, 2021 and consolidated financing of wind farm projects.

(3) In ER-2019-0374, OPC adjusted Long-Term Debt down by half of the outstanding balance of the hybrid loans, and the preferred stock also by one half, and added those amounts to common equity.

## The Empire District Electric Company Case No. ER-2021-0312 Pro Forma Capital Structure as of September 30, 2021

	 Dollar Values	Ratios
Long-Term Debt	\$ 1,160,000,000.00	47.56%
Preferred Stock		0.00%
Common Stock	\$ 1,278,961,056.00	52.44%
Total	\$ 2,438,961,056.00	100.00%

Source: Todd Mooney's Direct Testimony, Case No. ER-2021-0312, Schedule TM-3

#### The Empire District Electric Company Case No. ER-2021-0312 Electric Proxy Group Per Share Growth Rate

		Ten-	[1] Year Histor	ic Growth	Rates	Five	[2] -Year Histor	ic Growth I	Rates		[3]	[4] Projected O	[5] Trowth Rate	[(	6]	
		Ten	rear mistor	le Growin	raios	1100	i cui instoi	le Growari	laios			i iojecieu c	nowin read			
										10-Year and	EPS					
	Ticker									5-Year	(Market					
Company Name	Symbol	EPS	DPS	BVPS	Average	EPS	DPS	BVPS	Average	Average	Intelligence)	EPS (VL)	Average	DPS	BVPS	Average
Alliant Energy Corporation	LNT	6.00%	7.00%	4.50%	5.83%	6.00%	7.00%	5.50%	6.17%	6.00%	5.90%	5.50%	5.70%	6.00%	6.00%	5.90%
Ameren Corporation	AEE	2.00%	0.50%	NM	1.25%	8.00%	3.50%	3.50%	5.00%	3.13%	7.32%	6.00%	6.66%	7.00%	6.00%	6.55%
American Electric Power Company, Inc.	AEP	4.00%	5.00%	4.00%	4.33%	4.00%	5.50%	3.00%	4.17%	4.25%	5.89%	6.50%	6.19%	5.50%	5.50%	5.73%
Avista Corporation	AVA	6.50%	8.00%	4.00%	6.17%	7.00%	4.00%	4.50%	5.17%	5.67%	5.08%	1.00%	3.04%	4.00%	2.50%	3.18%
CMS Energy Corporation	CMS	7.50%	11.50%	5.00%	8.00%	7.00%	7.00%	5.00%	6.33%	7.17%	7.20%	7.50%	7.35%	7.00%	8.00%	7.45%
Duke Energy Corporation	DUK	3.00%	3.00%	2.00%	2.67%	2.50%	3.00%	1.00%	2.17%	2.42%	5.14%	7.00%	6.07%	2.50%	2.00%	3.52%
Evergy, Inc.	EVRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	6.33%	8.00%	7.17%	5.50%	2.50%	5.06%
IDACORP, Inc.	IDA	7.00%	7.00%	5.00%	6.33%	4.00%	9.00%	5.00%	6.00%	6.17%	3.53%	4.50%	4.02%	6.50%	4.00%	4.84%
NorthWestern Corporation	NWE	7.00%	5.50%	6.00%	6.17%	6.00%	7.50%	7.00%	6.83%	6.50%	4.99%	2.50%	3.75%	4.00%	3.00%	3.58%
OGE Energy Corp.	OGE	4.50%	7.50%	6.00%	6.00%	3.00%	9.50%	4.00%	5.50%	5.75%	2.44%	4.00%	3.22%	4.50%	1.50%	3.07%
Pinnacle West Capital Corporation	PNW	6.50%	3.00%	3.00%	4.17%	5.00%	3.50%	4.00%	4.17%	4.17%	2.78%	4.50%	3.64%	6.00%	3.50%	4.38%
PNM Resources, Inc.	PNM	15.00%	5.00%	0.50%	6.83%	7.00%	10.00%	NM	8.50%	7.67%	5.34%	7.50%	6.42%	6.50%	6.00%	6.31%
Portland General Electric Company	POR	3.50%	4.00%	3.00%	3.50%	4.50%	5.50%	3.50%	4.50%	4.00%	5.80%	4.00%	4.90%	6.00%	2.50%	4.47%
Southern Company	SO	3.00%	3.50%	3.50%	3.33%	3.00%	3.50%	3.00%	3.17%	3.25%	5.53%	5.00%	5.26%	3.00%	3.50%	3.92%
Xcel Energy, Inc.	XEL	5.50%	5.00%	4.00%	4.83%	5.00%	6.50%	4.50%	5.33%	5.08%	6.18%	6.00%	6.09%	6.00%	5.50%	5.86%
	Average	5.79%	5.39%	3.88%	4.96%	5.14%	6.07%	4.12%	5.21%	5.09%	5.30%	5.30%	5.30%	5.33%	4.13%	4.92%

[1] Source: Value Line

[2] Source: Value Line

[3] Source: Market Intelligence, as of July 30, 2021

[4] Analysts Earnings per Share Estimate from Value Line: LNT, AEE, AEP, CMS, EVRG, OGE were pulled from the

February 12, 2021 Value Publication; AVA, IDA, NWE, PNM, PNW, POR, XEL were pulled from the January 22, 2021

Value Line Publication; DUK and SO were pulled from the May 14, 2021 Value Line Publication

[5] Average of [3] and [4]

[6] Source: Value Line. LNT, AEE, AEP, CMS, EVRG, OGE were pulled from the February 12, 2021 Value Publication IDA, NWE, PNM, PNW, POR, XEL were pulled from the January 22, 2021 Value Line Publication

DUK and SO were pulled from the May 14, 2021 Value Line Publication

## The Empire District Electric Company Case No. ER-2021-0312 Constant-Growth Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Electric Utility Companies

		[1]	[2]	[3]	[4]	[5]
		Analysts EPS			Projected	
		Estimate	Analysts EPS		Long-Term	
	Ticker	(Market	Estimate		GDP Growth	Average
Company Name	Symbol	Intelligence)	(Value Line)	Average	Rate	Growth Rate
Alliant Energy Corporation	, LNT	5.90%	5.50%	5.70%	3.83%	5.08%
Ameren Corporation	AEE	7.32%	6.00%	6.66%	3.83%	5.72%
American Electric Power Company, Inc.	AEP	5.89%	6.50%	6.19%	3.83%	5.41%
Avista Corporation	AVA	5.08%	1.00%	3.04%	3.83%	3.30%
CMS Energy Corporation	CMS	7.20%	7.50%	7.35%	3.83%	6.18%
Duke Energy Corporation	DUK	5.14%	7.00%	6.07%	3.83%	5.32%
Evergy, Inc.	EVRG	6.33%	8.00%	7.17%	3.83%	6.05%
IDACORP, Inc.	IDA	3.53%	4.50%	4.02%	3.83%	3.95%
NorthWestern Corporation	NWE	4.99%	2.50%	3.75%	3.83%	3.77%
OGE Energy Corp.	OGE	2.44%	4.00%	3.22%	3.83%	3.42%
Pinnacle West Capital Corporation	PNW	2.78%	4.50%	3.64%	3.83%	3.70%
PNM Resources, Inc.	PNM	5.34%	7.50%	6.42%	3.83%	5.56%
Portland General Electric Company	POR	5.80%	4.00%	4.90%	3.83%	4.54%
Southern Company	SO	5.53%	5.00%	5.26%	3.83%	4.79%
Xcel Energy, Inc.	XEL	6.18%	6.00%	6.09%	3.83%	5.34%
Average		5.30%	5.30%	5.30%	3.83%	4.81%

[1] Analysts Earnings per Share Estimate from S&P Market Intelligence, as of August 31, 2021.

[2] Analysts Earnings per Share Estimate from Value Line: LNT, AEE, AEP, CMS, EVRG, OGE were pulled from the February 12, 2021 Value Publication; AVA, IDA, NWE, PNM, PNW, POR, XEL were pulled from the January 22, 2021 Value Line Publication; DUK and SO were pulled from the May 14, 2021 Value Line Publication

[3] Average of [1] and [2]

[4] Source: CBO, Fed and

[5] (2/3)\*[3]+(1/3)\*[4]

## The Empire District Electric Company Case No. ER-2019-0374

## Recalculated Constant-Growth Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Electric Utility Companies

	(1)	(2)	(3)	(4)	
	Eveneted	Average	Drainatad	Recalculated Estimated Cost	
	Expected Annual	High/Low Stock	Projected Dividend	of	
Company Name	Dividend	Price	Yield	Equity	
Alliant Energy Corporation	\$1.50	\$52.87	2.83%	<u> </u>	
Ameren Corporation	\$2.00	\$76.78	2.60%	8.09%	
American Electric Power Company, Inc.	\$2.79	\$92.32	3.02%	8.20%	
Avista Corporation	\$1.59	\$47.66	3.34%	7.29%	
CMS Energy Corporation	\$1.60	\$62.68	2.55%	8.44%	
Duke Energy Corporation	\$3.89	\$93.24	4.18%	8.52%	
Evergy, Inc.	\$3.74	\$116.65	3.21%	8.62%	
IDACORP, Inc.	\$2.62	\$108.32	2.42%	6.05%	
NorthWestern Corporation	\$2.37	\$72.90	3.25%	6.82%	
OGE Energy Corp.	\$1.57	\$43.46	3.62%	8.37%	
Pinnacle West Capital Corporation	\$3.15	\$92.74	3.40%	8.22%	
PNM Resources, Inc.	\$1.58	\$50.54	3.12%	8.45%	
Portland General Electric Company	\$1.60	\$56.13	2.85%	7.23%	
Southern Company	\$2.53	\$61.35	4.12%	8.43%	
Xcel Energy Inc.	\$1.64	\$63.11	2.59%	7.51%	
Average	\$2.28	\$72.72	3.14%	7.88%	
-			High	8.62%	
			Low	6.05%	
	Proposed Divid		3.14%		
	Proposed Range of Growth:				
	Estimated Prop	n Equity:	7.34% - 8.14%		

Notes: Column 1 = Expected Annual Dividend based on the sum of rquity analysts' expected next four quarters of DPS. FactSet projected dividends per share according to SNL Financial.

Sources: Column 1 = SNL Financial

Column 2 = Schedule 11.

Column 3 = Column 1/Column 2

Column 4 =

## The Empire District Electric Company Case No. ER-2021-0312 Constant-Growth Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Electric Utility Companies

	-		•	-		
		[1]	[2]	[3]	[4]	[5]
		Projected		Expected	Estimated	
	Ticker	Annual	Stock	Dividend	Growth	DCF COE
Company Name	Symbol	Dividend	Price	Yield	Rate	Estimate
Alliant Energy Corporation	LNT	1.66	\$ 58.61	2.83%	5.08%	7.91%
Ameren Corporation	AEE	2.21	\$ 84.84	2.60%	5.72%	8.32%
American Electric Power Company, Inc.	AEP	3.15	\$ 86.75	3.63%	5.41%	9.04%
Avista Corporation	AVA	1.72	\$ 43.15	3.99%	3.30%	7.29%
CMS Energy Corporation	CMS	1.81	\$ 61.64	2.94%	6.18%	9.11%
Duke Energy Corporation	DUK	4.18	\$ 103.29	4.05%	5.32%	9.37%
Evergy, Inc.	EVRG	2.03	\$ 64.57	3.14%	6.05%	9.20%
IDACORP, Inc.	IDA	2.95	\$ 102.56	2.87%	3.95%	6.83%
NorthWestern Corporation	NWE	2.53	\$ 62.58	4.04%	3.77%	7.81%
OGE Energy Corp.	OGE	1.65	\$ 34.49	4.79%	3.42%	8.21%
Pinnacle West Capital Corporation	PNW	3.48	\$ 82.76	4.21%	3.70%	7.91%
PNM Resources, Inc.	PNM	1.33	\$ 48.70	2.74%	5.56%	8.30%
Portland General Electric Company	POR	1.70	\$ 48.77	3.49%	4.54%	8.03%
Southern Company	SO	2.69	\$ 63.70	4.22%	4.79%	9.00%
Xcel Energy, Inc.	XEL	1.89	\$ 68.44	2.76%	5.34%	8.09%
		2.33	\$ 67.66	3.49%	4.81%	8.30%
					Mean	8.30%
					High	9.37%
					Low	6.83%

 [1] = Projected Annual Dividend is analysts' estimated average high/low dividends for the next 12 months (as of July 30, 2021) from Market Intelligence

[2] = Average of the openning and closing recent three-months stock prices, ending July 30, 2021.

[3] = [1]/[2]

[4] = Average of analysts' estimated earnings per share growth rate for the next five years, as of July 30, 2021. Source: Market Intelligence and Value Line (see PC-8-2).

[5] = [3]+[4]

## The Empire District Electric Company Case No. ER-2021-0312 Capital Asset Pricing Model (CAPM) Estimated Costs of Equity for the Comparable Electric Utility Companies

		[1]	[2]	[3]	[4]	[5]	[6]
				A	Constain		
				Arithmetic	Geometric		~ ~ ~ ~ ~
				Average	Average	Average	CAPM
	Ticker	Risk Free		Market Risk		Risk	COE
Company Name	Symbol	Rate	Beta	Premium	Premium	Premium	Estimate
Alliant Energy Corporation	LNT	2.01%	0.85	6.07%	4.62%	5.35%	6.55%
Ameren Corporation	AEE	2.01%	0.85	6.07%	4.62%	5.35%	6.55%
American Electric Power Company, Inc.	AEP	2.01%	0.75	6.07%	4.62%	5.35%	6.02%
Avista Corporation	AVA	2.01%	0.95	6.07%	4.62%	5.35%	7.09%
CMS Energy Corporation	CMS	2.01%	0.80	6.07%	4.62%	5.35%	6.29%
Duke Energy Corporation	DUK	2.01%	0.90	6.07%	4.62%	5.35%	6.82%
Evergy, Inc.	EVRG	2.01%	0.95	6.07%	4.62%	5.35%	7.09%
IDACORP, Inc.	IDA	2.01%	0.85	6.07%	4.62%	5.35%	6.55%
NorthWestern Corporation	NWE	2.01%	0.95	6.07%	4.62%	5.35%	7.09%
OGE Energy Corp.	OGE	2.01%	1.05	6.07%	4.62%	5.35%	7.62%
Pinnacle West Capital Corporation	PNW	2.01%	0.90	6.07%	4.62%	5.35%	6.82%
PNM Resources, Inc.	PNM	2.01%	0.95	6.07%	4.62%	5.35%	7.09%
Portland General Electric Company	POR	2.01%	0.90	6.07%	4.62%	5.35%	6.82%
Southern Company	SO	2.01%	0.95	6.07%	4.62%	5.35%	7.09%
Xcel Energy, Inc.	XEL	2.01%	0.80	6.07%	4.62%	5.35%	6.29%
Average			0.89				6.78%
						Mean	6.78%
						High	7.62%
						Low	6.02%

[1] = The appropriate Risk-free rate is the average yield on 30-Year Treasury Bond for the months of February, March and April of 2021 obtained from St. Louis Fed: https://fred.stlouisfed.org/series/DGS30.

[2] = Beta is a measure of volatility or risk of a stock relative to the market as a whole. Betas for AEE, AEP, CMS, EVRG and OGE were pulled from Value Line Published on September 10, 2021. Betas for DUK and SO were pulled from the Value Line published on August 13, 2021. Betas for AVA, IDA, NWE, PNM, PNW, POR and XEL were pulled from the Value Line published on July 23, 2021

[3] = The Market Risk Premium represents the expected return from holding the entire market portfolio less the return from holding a risk-free investment. The appropriate Market Risk Premium for the period 1926-2020 was determined to be 4.62%, geometric average, based on Stocks, Bonds, Bills and Inflation Data provided by Ibbotson.

[4] = The Market Risk Premium represents the expected return from holding the entire market portfolio less the return from holding a risk-free investment. The appropriate Market Risk Premium for the period 1926-2020 was determined to be 6.04%, arithmetic average, based on Stocks, Bonds, Bills and Inflation provided by Ibbbotson.

[5] = Average of [3] and [4]

[6] = [1] + ([2]\*[5])

#### The Empire District Electric Company Case No. ER-2021-0312

### Summary of Staff's Cost of Equity Estimates

### Current Cost of Equity Estimates for the Proxy Group

	Mean	
DCF Range	8.30%	1

# Reproduced Cost of Equity Estimates for the Proxy Group in the Empire Case No. ER-2019-0374

	Mean
DCF Range	7.88%
DCF COE Difference Between The Current Case and Empire Rate Case	0.42%
Commission Allowed ROE in Empire Rate Case	9.25%
Adjustment of Empire's Authorized ROE with DCF COE estimate to reflect Increase in COE,	
and setting of Upper Limit of Range of Reasonableness	9.67%
Lower Limit of Range of Reasonableness	9.25%
Range of Reasonableness with Upper Limit rounded down to 9.75%	9.25% - 9.75%

#### Recommended Authorized ROE; Midpoint of the Reasonable Range

- <sup>1</sup> Schedule PC-9-1
- <sup>2</sup> Schedule PC-9-2
- <sup>3</sup> H6(<sup>1</sup>)-H12(<sup>3</sup>)
- <sup>4</sup> Empire Commission Authorized ROE, Case No. ER-2019-0374
- <sup>5</sup> H15(<sup>4</sup>)+H14(<sup>3</sup>)
- <sup>6</sup> Empire Commission Authorized ROE, Case No. ER-2019-0374
- <sup>7</sup> Range of reasonableness
- <sup>8</sup> Point Estimate of Recommended Authorized ROE

9.50%

8

## Recommended Allowed Rate of Return as of October 29, 2021 for The Empire District Electric Company

	[1]	[2]	[3]	[4]	[5]		
			Allowed Rate of Return Using Common Equity Return of:				
	Percentage	Embedded					
Capital Components	of Capital	Cost					
			9.25%	9.50%	9.75%		
Long-Term Debt	47.56%	3.76%	1.79%	1.79%	1.79%		
Common Equity	52.44%		4.85%	4.98%	5.11%		
Total	100%		6.64%	6.77%	6.90%		

[1] Capital Structure Ratios, Response to DR. 0651

[2] Source: Long-Term Debt Cost - Response to Data Request No. 0114, Case No. GR-2021-0241 Preferred Stock - Response to Data Request No. 0114, Case No. GR-2021-0241