## STAFF REPORT

## COST OF SERVICE

## APPENDIX 2

Support for Staff
Cost of
Capital Recommendations

THE EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. ER-2019-0374

Jefferson City, Missouri

January 15, 2020
** Denotes Confidential Information **

AN ANALYSIS OF THE COST OF CAPITAL

FOR

THE EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. ER-2019-0374 SCHEDULES

BY

PETER CHARI

FINANCIAL ANALYSIS DEPARTMENT

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

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## Rate of Inflation (CPI)

| Mo/Year | Rate (\%) | Mo/Year | Rate (\%) |
| :---: | :---: | :---: | :---: |
| Jan 1980 | 13.90 | Jun | 4.20 |
| Feb | 14.20 | Jul | 4.20 |
| Mar | 14.80 | Aug | 4.30 |
| Apr | 14.70 | Sep | 4.30 |
| May | 14.40 | Oct | 4.30 |
| Jun | 14.40 | Nov | 4.10 |
| Jul | 13.10 | Dec | 3.90 |
| Aug | 12.90 | Jan 1985 | 3.50 |
| Sep | 12.60 | Feb | 3.50 |
| Oct | 12.80 | Mar | 3.70 |
| Nov | 12.60 | Apr | 3.70 |
| Dec | 12.50 | May | 3.80 |
| Jan 1981 | 11.80 | Jun | 3.80 |
| Feb | 11.40 | Jul | 3.60 |
| Mar | 10.50 | Aug | 3.30 |
| Apr | 10.00 | Sep | 3.10 |
| May | 9.80 | Oct | 3.20 |
| Jun | 9.60 | Nov | 3.50 |
| Jul | 10.80 | Dec | 3.80 |
| Aug | 10.80 | Jan 1986 | 3.90 |
| Sep | 11.00 | Feb | 3.10 |
| Oct | 10.10 | Mar | 2.30 |
| Nov | 9.60 | Apr | 1.60 |
| Dec | 8.90 | May | 1.50 |
| Jan 1982 | 8.40 | Jun | 1.80 |
| Feb | 7.60 | Jul | 1.60 |
| Mar | 6.80 | Aug | 1.60 |
| Apr | 6.50 | Sep | 1.80 |
| May | 6.70 | Oct | 1.50 |
| Jun | 7.10 | Nov | 1.30 |
| Jul | 6.40 | Dec | 1.10 |
| Aug | 5.90 | Jan 1987 | 1.50 |
| Sep | 5.00 | Feb | 2.10 |
| Oct | 5.10 | Mar | 3.00 |
| Nov | 4.60 | Apr | 3.80 |
| Dec | 3.80 | May | 3.90 |
| Jan 1983 | 3.70 | Jun | 3.70 |
| Feb | 3.50 | Jul | 3.90 |
| Mar | 3.60 | Aug | 4.30 |
| Apr | 3.90 | Sep | 4.40 |
| May | 3.50 | Oct | 4.50 |
| Jun | 2.60 | Nov | 4.50 |
| Jul | 2.50 | Dec | 4.40 |
| Aug | 2.60 | Jan 1988 | 4.00 |
| Sep | 2.90 | Feb | 3.90 |
| Oct | 2.90 | Mar | 3.90 |
| Nov | 3.30 | Apr | 3.90 |
| Dec | 3.80 | May | 3.90 |
| Jan 1984 | 4.20 | Jun | 4.00 |
| Feb | 4.60 | Jul | 4.10 |
| Mar | 4.80 | Aug | 4.00 |
| Apr | 4.60 | Sep | 4.20 |
| May | 4.20 | Oct | 4.20 |


| Mo/Year | Rate (\%) |
| :---: | :---: |
| Nov | 4.20 |
| Dec | 4.40 |
| Jan 1989 | 4.70 |
| Feb | 4.80 |
| Mar | 5.00 |
| Apr | 5.10 |
| May | 5.40 |
| Jun | 5.20 |
| Jul | 5.00 |
| Aug | 4.70 |
| Sep | 4.30 |
| Oct | 4.50 |
| Nov | 4.70 |
| Dec | 4.60 |
| Jan 1990 | 5.20 |
| Feb | 5.30 |
| Mar | 5.20 |
| Apr | 4.70 |
| May | 4.40 |
| Jun | 4.70 |
| Jul | 4.80 |
| Aug | 5.60 |
| Sep | 6.20 |
| Oct | 6.30 |
| Nov | 6.30 |
| Dec | 6.10 |
| Jan 1991 | 5.70 |
| Feb | 5.30 |
| Mar | 4.90 |
| Apr | 4.90 |
| May | 5.00 |
| Jun | 4.70 |
| Jul | 4.40 |
| Aug | 3.80 |
| Sep | 3.40 |
| Oct | 2.90 |
| Nov | 3.00 |
| Dec | 3.10 |
| Jan 1992 | 2.60 |
| Feb | 2.80 |
| Mar | 3.20 |
| Apr | 3.20 |
| May | 3.00 |
| Jun | 3.10 |
| Jul | 3.20 |
| Aug | 3.10 |
| Sep | 3.00 |
| Oct | 3.20 |
| Nov | 3.00 |
| Dec | 2.90 |
| Jan 1993 | 3.30 |
| Feb | 3.20 |
| Mar | 3.10 |
| Apr | 3.20 |


| Mo/Year | Rate (\%) |
| :---: | :---: |
| May | 3.20 |
| Jun | 3.00 |
| Jul | 2.80 |
| Aug | 2.80 |
| Sep | 2.70 |
| Oct | 2.80 |
| Nov | 2.70 |
| Dec | 2.70 |
| Jan 1994 | 2.5 |
| Feb | 2.5 |
| Mar | 2.5 |
| Apr | 2.4 |
| May | 2.3 |
| Jun | 2.5 |
| Jul | 2.8 |
| Aug | 2.9 |
| Sep | 3.0 |
| Oct | 2.6 |
| Nov | 2.7 |
| Dec | 2.7 |
| Jan 1995 | 2.90 |
| Feb | 2.90 |
| Mar | 3.10 |
| Apr | 2.40 |
| May | 3.20 |
| Jun | 3.00 |
| Jul | 2.80 |
| Aug | 2.60 |
| Sep | 2.50 |
| Oct | 2.80 |
| Nov | 2.60 |
| Dec | 2.50 |
| Jan 1996 | 2.70 |
| Feb | 2.70 |
| Mar | 2.80 |
| Apr | 2.90 |
| May | 2.90 |
| Jun | 2.80 |
| Jul | 3.00 |
| Aug | 2.90 |
| Sep | 3.00 |
| Oct | 3.00 |
| Nov | 3.30 |
| Dec | 3.30 |
| Jan 1997 | 3.00 |
| Feb | 3.00 |
| Mar | 2.80 |
| Apr | 2.50 |
| May | 2.20 |
| Jun | 2.30 |
| Jul | 2.20 |
| Aug | 2.20 |
| Sep | 2.20 |
| Oct | 2.10 |


| Mo/Year | Ra |
| :--- | :--- |
| Nov |  |
| Dec |  |
| Jan 1998 |  |
| Feb |  |


| Mo/Year | Rate (\%) | Mo/Year | Rate (\%) | Mo/Year | Rate (\%) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| May | 1.20 | Nov | 2.00 | May | 3.60 |
| Jun | 1.10 | Dec | 2.50 | Jun | 3.60 |
| Jul | 1.50 | Jan 2007 | 2.10 | Jul | 3.60 |
| Aug | 1.80 | Feb | 2.40 | Aug | 3.80 |
| Sep | 1.50 | Mar | 2.80 | Sep | 3.90 |
| Oct | 2.00 | Apr | 2.60 | Oct | 3.50 |
| Nov | 2.20 | May | 2.70 | Nov | 3.40 |
| Dec | 2.40 | Jun | 2.70 | Dec | 3.00 |
| Jan 2003 | 2.60 | Jul | 2.40 | Jan 2012 | 2.90 |
| Feb | 3.00 | Aug | 2.00 | Feb | 2.90 |
| Mar | 3.00 | Sep | 2.80 | Mar | 2.70 |
| Apr | 2.20 | Oct | 3.50 | Apr | 2.30 |
| May | 2.10 | Nov | 4.30 | May | 1.70 |
| Jun | 2.10 | Dec | 4.10 | Jun | 1.70 |
| Jul | 2.10 | Jan 2008 | 4.30 | Jul | 1.40 |
| Aug | 2.20 | Feb | 4.00 | Aug | 1.70 |
| Sep | 2.30 | Mar | 4.00 | Sep | 2.00 |
| Oct | 2.00 | Apr | 3.90 | Oct | 2.20 |
| Nov | 1.80 | May | 4.20 | Nov | 1.80 |
| Dec | 1.90 | Jun | 5.00 | Dec | 1.70 |
| Jan 2004 | 1.90 | Jul | 5.60 | Jan 2013 | 1.60 |
| Feb | 1.70 | Aug | 5.40 | Feb | 2.00 |
| Mar | 1.70 | Sep | 4.90 | Mar | 1.50 |
| Apr | 2.30 | Oct | 3.70 | Apr | 1.10 |
| May | 3.10 | Nov | 1.10 | May | 1.40 |
| Jun | 3.30 | Dec | 0.10 | Jun | 1.80 |
| Jul | 3.00 | Jan 2009 | 0.00 | Jul | 2.00 |
| Aug | 2.70 | Feb | 0.20 | Aug | 1.50 |
| Sep | 2.50 | Mar | -0.40 | Sep | 1.20 |
| Oct | 3.30 | Apr | -0.70 | Oct | 1.00 |
| Nov | 3.50 | May | -1.28 | Nov | 1.20 |
| Dec | 3.30 | Jun | -1.40 | Dec | 1.50 |
| Jan 2005 | 3.00 | Jul | -2.10 | Jan 2014 | 1.60 |
| Feb | 3.00 | Aug | -1.50 | Feb | 1.10 |
| Mar | 3.10 | Sep | -1.30 | Mar | 1.50 |
| Apr | 3.50 | Oct | -0.20 | Apr | 2.00 |
| May | 2.80 | Nov | 1.80 | May | 2.10 |
| Jun | 2.50 | Dec | 2.70 | Jun | 2.10 |
| Jul | 3.20 | Jan 2010 | 2.60 | Jul | 2.00 |
| Aug | 3.60 | Feb | 2.10 | Aug | 1.70 |
| Sep | 4.70 | Mar | 2.30 | Sep | 1.70 |
| Oct | 4.30 | April | 2.20 | Oct | 1.70 |
| Nov | 3.50 | May | 2.00 | Nov | 1.30 |
| Dec | 3.40 | Jun | 1.10 | Dec | 0.80 |
| Jan 2006 | 4.00 | Jul | 1.20 | Jan 2015 | -0.10 |
| Feb | 3.60 | Aug | 1.10 | Feb | 0.00 |
| Mar | 3.40 | Sep | 1.10 | Mar | -0.10 |
| Apr | 3.50 | Oct | 1.20 | Apr | -0.20 |
| May | 4.20 | Nov | 1.10 | May | 0.00 |
| June | 4.30 | Dec | 1.50 | Jun | 0.10 |
| July | 4.10 | Jan 2011 | 1.60 | Jul | 0.20 |
| Aug | 3.80 | Feb | 2.10 | Aug | 0.20 |
| Sep | 2.10 | Mar | 2.70 | Sep | 0.00 |
| Oct | 1.30 | Apr | 3.20 | Oct | 0.20 |


| Mo/Year | Rate (\%) |
| :---: | :---: |
| Nov | 0.50 |
| Dec | 0.70 |
| Jan 2016 | 1.40 |
| Feb | 1.10 |
| Mar | 0.90 |
| Apr | 1.10 |
| May | 1.00 |
| Jun | 1.00 |
| Jul | 0.80 |
| Aug | 1.10 |
| Sep | 1.50 |
| Oct | 1.60 |
| Nov | 1.70 |
| Dec | 2.10 |
| Jan-17 | 2.50 |
| Feb | 2.70 |
| Mar | 2.40 |
| Apr | 2.20 |
| May | 1.90 |
| Jun | 1.60 |
| Jul | 1.70 |
| Aug | 1.90 |
| Sep | 2.20 |
| Oct | 2.00 |
| Nov | 2.20 |
| Dec | 2.10 |
| Jan-18 | 2.10 |
| Feb | 2.20 |
| Mar | 2.40 |
| Apr | 2.50 |
| May | 2.80 |
| Jun | 2.90 |
| Jul | 2.90 |
| Aug | 2.70 |
| Sep | 2.30 |
| Oct | 2.50 |
| Nov | 2.20 |
| Dec | 1.90 |
| Jan.-19 | 1.60 |
| Feb | 1.50 |
| Mar | 1.90 |
| Apr | 2.00 |
| May | 1.80 |
| Jun | 1.60 |
| Jul | 1.80 |
| Aug | 1.70 |
| Sep | 1.70 |
| Oct | 1.80 |
| Nov | 2.10 |
| Dec |  |

Source: U.S. Dept of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers
SCHEDULE PC-2-1

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


Public Utility Bond Yields

| Mo/Year | Rate (\%) |  | Mo/Year | Rate (\%) |
| :---: | :---: | :---: | :---: | :---: |
| Jan 1980 | 12.12 |  | Jan 1984 | 13.20 |


| Mo/Year | Rate (\%) | Mo/Year | Rate (\%) |
| :--- | :--- | :--- | :--- |
| Jan 1980 | 12.12 | Jan 1984 | 13.40 |
| Feb | 13.48 | Feb | 13.50 |
| Mar | 14.33 | Mar | 14.03 |
| Apr | 13.50 | Apr | 14.30 |
| May | 12.17 | May | 14.95 |
| Jun | 11.87 | Jun | 15.16 |
| Jul | 12.12 | Jul | 14.92 |
| Aug | 12.82 | Aug | 14.29 |
| Sep | 13.29 | Sep | 14.04 |
| Oct | 13.53 | Oct | 13.68 |
| Nov | 14.07 | Nov | 13.15 |
| Dec | 14.48 | Dec | 12.96 |
| Jan 1981 | 14.22 | Jan 1985 | 12.88 |
| Feb | 14.84 | Feb | 13.00 |
| Mar | 14.86 | Mar | 13.66 |
| Apr | 15.32 | Apr | 13.42 |
| May | 15.84 | May | 12.89 |
| Jun | 15.27 | Jun | 11.91 |
| Jul | 15.87 | Jul | 11.88 |
| Aug | 16.33 | Aug | 11.93 |
| Sep | 16.89 | Sep | 11.95 |
| Oct | 16.76 | Oct | 11.84 |
| Nov | 15.50 | Nov | 11.33 |
| Dec | 15.77 | Dec | 10.82 |
| Jan 1982 | 16.73 | Jan 1986 | 10.66 |
| Feb | 16.72 | Feb | 10.16 |
| Mar | 16.07 | Mar | 9.33 |
| Apr | 15.82 | Apr | 9.02 |
| May | 15.60 | May | 9.52 |
| Jun | 16.18 | Jun | 9.51 |
| Jul | 16.04 | Jul | 9.19 |
| Aug | 15.22 | Aug | 9.15 |
| Sep | 14.56 | Sep | 9.42 |
| Oct | 13.88 | Oct | 9.39 |
| Nov | 13.58 | Nov | 9.15 |
| Doc | 13.55 | Dec | 8.96 |
| Jan 1983 | 13.46 | Jan 1987 | 8.77 |
| Feb | 13.60 | Feb | 8.81 |
| Mar | 13.28 | Mar | 8.75 |
| Apr | 13.03 | Apr | 9.30 |
| May | 13.00 | May | 9.82 |
| Jun | 13.17 | Jun | 9.87 |
| Jul | 13.28 | Jul | 10.01 |
| Aug | 13.50 | Aug | 10.33 |
| Sep | 13.35 | Sep | 11.00 |
| Oct | 13.19 | Oct | 11.32 |
| Nov | 13.33 | Nov | 10.82 |
|  |  |  |  |
| Nov |  |  |  |

Source: Mergent Bond Record

Mo/r
Jan 19
Feb
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May
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Jul
Aug
Sep
Oct
Nov 10.75
10.11
10.11
10.53
10.75
10.71
10.96
11.09
10.96
9.92
9.89
10.02
10.02
10.02
10.16
10.14
9.92
9.49
9.34
9.37
9.43
9.37
9.33
9.31
9.44
9.66
9.75
9.87
9.89
9.69
9.66
9.84
10.01
9.94
9.76
9.57
9.56
9.31
9.39
9.90
9.29
9.44
9.40
9.16
9.03
8.99
8.93
 Rate $(\%)$
8.67
8.77
8.84
8.79
8.72
8.64
8.46
8.34
8.32
8.44
8.53
8.36
8.23
8.00
7.85
7.76
7.78
7.68
7.53
7.21
7.01
6.99
7.30
7.33
7.31
7.44
7.83
8.20
8.32
8.31
8.47
8.41
8.65
8.88
9.00
8.79
8.77
8.56
8.41
8.30
7.93
7.62
7.73
7.86
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7.46
7.40 M
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Sep
Oct
Nov
Dec
Jan
$\frac{\text { Mo/Year }}{}$ Rate (\%)

| MolYear | Rate $(\%)$ |
| :--- | ---: |
| Jan 2000 | 8.22 |
| Feb | 8.10 |
| Mar | 8.14 |
| Apr | 8.14 |
| May | 8.55 |
| Jun | 8.22 |
| Jul | 8.17 |
| Aug | 8.05 |
| Sep | 8.16 |
| Oct | 8.08 |
| Nov | 8.03 |
| Dec | 7.79 |
| Jan 2001 | 7.76 |
| Feb | 7.69 |
| Mar | 7.59 |
| Apr | 7.81 |
| May | 7.88 |
| Jun | 7.75 |
| Jul | 7.71 |
| Aug | 7.57 |
| Sep | 7.73 |
| Oct | 7.64 |
| Nov | 7.61 |
| Dec | 7.86 |
| Jan 2002 | 7.69 |
| Feb | 7.62 |
| Mar | 7.83 |
| Apr | 7.74 |
| May | 7.76 |
| Jun | 7.67 |
| Jul | 7.54 |
| Aug | 7.34 |
| Sep | 7.23 |
| Oct | 7.43 |
| Nov | 7.31 |
| Dec | 7.20 |
| Jan 2003 | 7.13 |
| Feb | 6.92 |
| Mar | 6.80 |
| Apr | 6.68 |
| May | 6.35 |
| Jun | 6.21 |
| Jul | 6.54 |
| Aug | 6.78 |
| Sep | 6.58 |
| Oct | 6.50 |
| Nov | 6.44 |





Mo/Year $\frac{\text { Rate (\%) }}{608}$

|  | Man 2008 |
| :--- | :--- |
| Feb | 6.08 |
| Mar | 6.28 |
| Mar | 6.29 |
| Apr | 6.36 |
| May | 6.38 |
| Jun | 6.50 |
| Jul | 6.50 |
| Aug | 6.48 |
| Sep | 6.59 |
| Oct | 7.70 |
| Nov | 7.80 |
| Dec | 6.87 |
| Jan 2009 | 6.77 |
| Feb | 6.72 |
| Mar | 6.85 |
| Apr | 6.90 |
| May | 6.83 |
| June | 6.54 |
| July | 6.15 |
| Aug | 5.80 |
| Sep | 5.60 |
| Oct | 5.64 |
| Nov | 5.71 |
| Dec | 5.86 |
| Jan 2010 | 5.83 |
| Feb | 5.94 |
| Mar | 5.90 |
| Apr | 5.87 |
| May | 5.59 |
| June | 5.62 |
| July | 5.41 |
| Aug | 5.10 |
| Sep | 5.10 |
| Oct | 5.20 |
| Nov | 5.45 |
| Dec | 5.64 |
| Jan 2011 | 5.64 |
| Feb | 5.73 |
| Mar | 5.62 |
| Apr | 5.62 |
| May | 5.38 |
| June | 5.32 |
| July | 5.34 |
| Aug | 4.78 |
| Sep | 4.61 |
| Oct | 4.66 |
| Nov | 4.37 |

$\frac{\text { Mo/Year }}{\text { Jan } 2012} \frac{\text { Rate (\%) }}{4.48}$

| Jan 2012 | 4.48 |
| :---: | :---: |
| Feb | 4.47 |
| Mar | 4.59 |
| Apr | 4.54 |
| May | 4.36 |
| Jun | 4.26 |
| Jul | 4.12 |
| Aug | 4.18 |
| Sep | 4.17 |
| Oct | 4.04 |
| Nov | 3.95 |
| Dec | 4.10 |
| Jan 2013 | 4.24 |
| Feb | 4.29 |
| Mar | 4.29 |
| Apr | 4.08 |
| May | 4.24 |
| Jun | 4.63 |
| Jul | 4.78 |
| Aug | 4.85 |
| Sep | 4.90 |
| Oct | 4.78 |
| Nov | 4.86 |
| Dec | 4.88 |
| Jan 2014 | 4.72 |
| Feb | 4.64 |
| Mar | 4.64 |
| Apr | 4.52 |
| May | 4.37 |
| Jun | 4.42 |
| Jul | 4.35 |
| Aug | 4.28 |
| Sep | 4.40 |
| Oct | 4.24 |
| Nov | 4.29 |
| Dec | 4.18 |
| Jan 2015 | 3.83 |
| Feb | 3.91 |
| Mar | 3.97 |
| Apr | 3.96 |
| May | 4.38 |
| June | 4.60 |
| July | 4.63 |
| Aug | 4.54 |
| Sep | 4.69 |
| Oct | 4.63 |


$\frac{\text { Mo/Year }}{\text { Jan } 2016}$ | Jan 2016 | 4.62 |
| :--- | :--- |
| Feb | 4.44 |
| Mar | 4.40 |
| Apr | 4.16 |
| May | 4.06 |
| Jun | 3.94 |
| Jul | 3.70 |
| Aug | 3.73 |
| Sep | 3.80 |
| Oct | 3.90 |
| Nov | 4.21 |
| Dec | 4.39 |
| Jan. 20017 | 4.24 |
| Feb | 4.25 |
| Mar | 4.30 |
| Apr | 4.19 |
| May | 4.19 |
| Jun | 4.01 3-Month Average |
| Jul | 4.06 |
| Aug | 3.92 |
| Sep | 3.94 |
| Oct | 3.97 |
| Nov | 3.88 |
| Dec | 3.85 |
| Jan. 2018 | 3.91 |
| Feb | 4.15 |
| Mar | 4.21 |
| Apr | 4.25 |
| May | 4.36 |
| Jun | 4.36 |
| Jul | 4.35 |
| Aug | 4.33 |
| Sep | 4.41 |
| Oct | 4.56 |
| Nov | 4.65 |
| Dec | 4.51 |
| Jan. 2019 | 4.48 |
| Feb | 4.35 |
| Mar | 4.26 |
| Apr | 4.18 |
| May | 4.10 |
| Jun | 3.93 |
| Jul | 3.78 |
| Aug | 3.36 |
| Sep | 3.44 3-Month Average Average Drop |
| Oct | 3.45 |
| Nov | 3.48 |
|  |  |

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

| Average | Yields on T | Year U.S | Treasury |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mo/Year | Rate (\%) | Molyear | Rate (\%) | Mo/Year | Rate (\%) | Mo/Year | Rate (\%) | Molyear | Rate (\%) | Mo/Year | Rate (\%) | Mo/Year | Rate (\%) | Mo/Year | Rate (\%) | Mo/Year | Rate (\%) | Mo/Year | Rate (\%) |  |
| Jan 1980 | 10.60 | Jan 1984 | 11.75 | Jan 1988 | ${ }^{8.83}$ | Jan 1992 | 7.58 | Jan 1996 | 6.05 | Jan 2000 | 6.63 | Jan 2004 | 4.99 | Jan 2008 | ${ }^{4.33}$ | Jan 2012 | ${ }^{3.03}$ | Jan 2016 | ${ }^{2.86}$ |  |
| Feb | ${ }^{12.13}$ | Feb | 11.95 | Feb | 8.43 | Feb | 7.85 | Feb | 6.24 | Feb | 6.23 | Feb | 4.93 | Feb | 4.52 | Feb | 3.11 | Feb | 2.62 |  |
| Mar | 12.34 | Mar | 12.38 | Mar | 8.63 | Mar | 7.97 | Mar | 6.60 | Mar | 6.05 | Mar | 4.74 | Mar | 4.39 | Mar | 3.28 | Mar | 2.68 |  |
| Apr | 11.40 | Apr | 12.65 | Apr | 8.95 | Apr | 7.96 | Apr | ${ }^{6.79}$ | Apr | 5.85 | ${ }^{\text {Apr }}$ | 5.14 | Apr | 4.44 | Apr | ${ }^{3.18}$ | Apr | 2.62 |  |
| May | 10.36 | may | 13.43 | May | 9.23 | May | 7.89 | May | 6.93 | May | ${ }^{6.15}$ | May | 5.42 | May | 4.60 | May | 2.93 | May | 2.63 |  |
| Jun | 9.81 | Jun | 13.44 | Jun | 9.00 | Jun | 7.84 | Jun | 7.06 | Jun | 5.93 | Jun | 5.41 | Jun | 4.69 | Jun | 2.70 | Jun | 2.45 |  |
| Jul | 10.24 | Jul | 13.21 | Jul | 9.14 | Jul | 7.60 | Jul | 7.03 | Jul | 5.85 | Jul | 5.22 | Jul | 4.57 | Jul | 2.59 | Jul | 2.23 |  |
| Aug | 11.00 | Aug | 12.54 | Aug | 9.32 | Aug | 7.39 | Aug | 6.84 | Aug | 5.72 | Aug | 5.06 | Aug | 4.50 | Aug | 2.77 | Aug | 2.26 |  |
| Sep | 11.34 | Sep | 12.29 | Sep | 9.06 | Sep | 7.34 | Sep | 7.03 | Sep | 5.83 | Sep | 4.90 | Sep | 4.27 | Sep | 2.88 | Sep | 2.35 |  |
| Oct | 11.59 | Oct | 11.98 | Oct | 8.89 | Oct | 7.53 | Oct | 6.81 | Oct | 5.80 | Oct | 4.86 | Oct | 4.17 | Oct | 2.90 | Oct | 2.50 |  |
| Nov | 12.37 | Nov | 11.56 | Nov | 9.02 | Nov | 7.61 | Nov | 6.48 | Nov | 5.78 | Nov | 4.89 | Nov | 4.00 | Nov | 2.80 | Nov | 2.86 |  |
| Dec | 12.40 | Dec | 11.52 | Dec | 9.01 | Dec | 7.44 | Dec | 6.55 | Dec | 5.49 | Dec | 4.86 | Dec | 2.87 | Dec | 2.88 | Dec | 3.11 |  |
| Jan 1981 | 12.14 | Jan 1985 | 11.45 | Jan 1989 | 8.93 | Jan 1993 | 7.34 | Jan 1997 | 6.83 | Jan 2001 | 5.54 | Jan 2005 | 4.73 | Jan 2009 | 3.13 | Jan 2013 | 3.08 | Jan. 2017 | 3.02 |  |
| Feb | 12.80 | Feb | 11.47 | Feb | 9.01 | Feb | 7.09 | Feb | 6.69 | Feb | 5.45 | Feb | 4.55 | Feb | 3.59 | Feb | 3.17 | Feb | 3.03 |  |
| Mar | 12.69 | Mar | 11.81 | Mar | 9.17 | Mar | 6.82 | Mar | 6.93 | Mar | 5.34 | Mar | 4.78 | Mar | 3.64 | Mar | ${ }^{3.16}$ | Mar | 3.08 |  |
| Apr | 13.20 | Apr | 11.47 | Apr | 9.03 | Apr | 6.85 | Apr | 7.09 | Apr | 5.65 | Apr | 4.65 | Apr | 3.76 | Apr | 2.93 | Apr | 2.94 |  |
| May | 13.60 | may | 11.05 | May | 8.83 | May | 6.92 | May | 6.94 | May | 5.78 | May | 4.49 | may | 4.23 | may | 3.11 | May | 2.963 | 3-Month Average |
| Jun | 12.96 | Jun | 10.44 | Jun | 8.27 | Jun | 6.81 | Jun | 6.77 | Jun | 5.67 | Jun | 4.29 | Jun | 4.52 | Jun | 3.40 | Jun | 2.80 | 2.90 |
| Jul | 13.59 | Jul | 10.50 | Jul | 8.08 | Jul | 6.63 | Jul | 6.51 | Jul | 5.61 | Jul | 4.41 | July | 4.41 | Jul | 3.61 | Jul | 2.88 |  |
| Aug | 14.17 | Aug | 10.56 | Aug | 8.12 | Aug | 6.32 | Aug | ${ }^{6.58}$ | Aug | 5.48 | Aug | 4.46 | Aug | 4.37 | Aug | 3.76 | Aug | 2.80 |  |
| Sep | 14.67 | Sep | 10.61 | Sep | 8.15 | Sep | 6.00 | Sep | ${ }^{6.50}$ | Sep | 5.48 | Sep | 4.47 | Sep | 4.19 | Sep | ${ }^{3.79}$ | Sep | 2.78 |  |
| Oct | 14.68 | Oct | 10.50 | Oct | 8.00 | Oct | 5.94 | Oct | ${ }^{6.33}$ | Oct | 5.32 | Oct | 4.67 | Oct | 4.19 | Oct | 3.68 | Oct | 2.88 |  |
| Nov | 13.35 | Nov | 10.06 | Nov | 7.90 | Nov | 6.21 | Nov | 6.11 | Nov | 5.12 | Nov | 4.73 | Nov | 4.31 | Nov | 3.80 | Nov | 2.80 |  |
| Dec | 13.45 | Dec | 9.54 | Dec | 7.90 | Dec | 6.25 | Dec | 5.99 | Dec | 5.48 | Dec | 4.66 | Dec | 4.49 | Dec | 3.89 | Dec | 2.77 |  |
| Jan 1982 | 14.22 | Jan 1986 | 9.40 | Jan 1990 | 8.26 | Jan 1994 | 6.29 | Jan 1998 | 5.81 | Jan 2002 | 5.44 | Jan 2006 | 4.59 | Jan 2010 | 4.60 | Jan 2014 | 3.77 | Jan. 2018 | 2.88 |  |
| Feb | 14.22 | Feb | 8.93 | Feb | 8.50 | Feb | 6.49 | Feb | 5.89 | Feb | 5.39 | Feb | 4.58 | Feb | 4.62 | Feb | 3.66 | Feb | 3.13 |  |
| Mar | 13.53 | Mar | 7.96 | Mar | 8.56 | Mar | 6.91 | Mar | 5.95 | Mar | 5.71 | Mar | 4.73 | Mar | 4.64 | Mar | 3.62 | Mar | 3.09 |  |
| Apr | 13.37 | Apr | 7.39 | Apr | 8.76 | Apr | 7.27 | Apr | 5.92 | Apr | 5.67 | Apr | 5.06 | Apr | 4.69 | Apr | ${ }^{3.52}$ | Apr | 3.07 |  |
| May | 13.24 | may | 7.52 | may | 8.73 | May | 7.41 | May | 5.93 | May | 5.64 | May | 5.20 | May | 4.29 | May | ${ }^{3.39}$ | may | 3.13 |  |
| Jun | 13.92 | Jun | 7.57 | Jun | 8.46 | Jun | 7.40 | Jun | 5.70 | Jun | 5.52 | Jun | 5.16 | Jun | 4.13 | Jun | 3.42 | Jun | 3.05 |  |
| Jul | 13.55 | Jul | 7.27 | Jul | 8.50 | Jul | 7.58 | Jul | 5.68 | Jul | 5.38 | July | 5.13 | July | 3.99 | Jul | 3.33 | Jul | 3.01 |  |
| Aug | 12.77 | Aug | 7.33 | Aug | 8.86 | Aug | 7.49 | Aug | 5.54 | Aug | 5.08 | Aug | 5.00 | Aug | 3.80 | Aug | 3.20 | Aug | 3.04 |  |
| Sep | 12.07 | Sep | 7.62 | Sep | 9.03 | Sep | 7.71 | Sep | 5.20 | Sep | 4.76 | Sep | 4.85 | Sep | 3.77 | Sep | 3.26 | Sep | 3.15 |  |
| Oct | 11.17 | Oct | 7.70 | Oct | 8.86 | Oct | 7.94 | Oct | 5.01 | Oct | 4.93 | Oct | 4.85 | Oct | 3.87 | Oct | 3.04 | Oct | 3.34 |  |
| Nov | 10.54 | Nov | 7.52 | Nov | 8.54 | Nov | 8.08 | Nov | 5.25 | Nov | 4.95 | Nov | 4.69 | Nov | 4.19 | Nov | 3.04 | Nov | 3.36 |  |
| Dec | 10.54 | Dec | 7.37 | Dec | 8.24 | Dec | 7.87 | Dec | 5.06 | Dec | 4.92 | Dec | 4.68 | Dec | 4.42 | Dec | 2.83 | Dec | 3.10 |  |
| Jan 1983 | 10.63 | Jan 1987 | 7.39 | Jan 1991 | 8.27 | Jan 1995 | 7.85 | Jan 1999 | 5.16 | Jan 2003 | 4.94 | Jan 2007 | 4.85 | Jan 2011 | 4.52 | Jan 2015 | 2.46 | Jan. 2019 | 3.04 |  |
| Feb | 10.88 | Feb | 7.54 | Feb | 8.03 | Feb | 7.61 | Feb | 5.37 | Feb | 4.81 | Feb | 4.82 | Feb | 4.65 | Feb | 2.57 | Feb | 3.02 |  |
| Mar | 10.63 | Mar | 7.55 | Mar | 8.29 | Mar | 7.45 | Mar | 5.58 | Mar | 4.80 | Mar | 4.72 | Mar | 4.51 | Mar | 2.63 | Mar | 2.98 |  |
| Apr | 10.48 | Apr | 8.25 | Apr | 8.21 | Apr | 7.36 | Apr | 5.55 | Apr | 4.90 | Apr | 4.86 | Apr | 4.50 | Apr | 2.59 | Apr | 2.94 |  |
| May | 10.53 | May | 8.78 | May | 8.27 | May | 6.95 | May | 5.81 | May | 4.53 | May | 4.90 | May | 4.29 | May | 2.96 | May | 2.82 |  |
| Jun | 10.93 | Jun | 8.57 | Jun | 8.47 | Jun | 6.57 | Jun | 6.04 | Jun | 4.37 | Jun | 5.20 | Jun | 4.23 | Jun | 3.11 | Jun | 2.57 |  |
| Jul | 11.40 | Jul | 8.64 | Jul | 8.45 | Jul | 6.72 | Jul | 5.98 | Jul | 4.93 | July | 5.11 | Jul | 4.27 | Jul | 3.07 | Jul | 2.57 |  |
| Aug | 11.82 | Aug | 8.97 | Aug | 8.14 | Aug | 6.86 | Aug | 6.07 | Aug | 5.30 | Aug | 4.93 | Aug | 3.65 | Aug | 2.86 | Aug | 2.12 |  |
| Sep | 11.63 | Sep | 9.59 | Sep | 7.95 | Sep | 6.55 | Sep | 6.07 | Sep | 5.14 | Sep | 4.79 | Sep | 3.18 | Sep | 2.95 | Sep | 2.16 |  |
| Oct | 11.58 | Oct | 9.61 | Oct | 7.93 | Oct | 6.37 | Oct | 6.26 | Oct | 5.16 | Oct | 4.77 | Oct | ${ }^{3.13}$ | Oct | 2.89 | Oct | 2.193 | 3-Month Average |
| Nov | 11.75 | Nov | 8.95 | Nov | 7.92 | Nov | ${ }_{6}^{6.26}$ | Nov | ${ }^{6.15}$ | Nov | 5.13 | Nov | 4.52 | Nov | ${ }^{3.02}$ | Nov | ${ }^{3.03}$ | Nov | 2.28 | 2.21 |
| Dec | 11.88 | Dec | 9.12 | Dec | 7.70 | Dec | 6.06 | Dec | 6.35 | Dec | 5.08 | Dec | 4.53 | Dec | 2.98 | Dec | 2.97 | Dec |  |  |

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


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


The Empire District Electric Company
Case NO. ER-2019-0374

| Average Yields on A-rated and |
| :---: |
| BBB-rated Pulic Utility Bonds (2014-present) |



SCHEDULE PC-4-3

# The Empire District Electric Company 

Case No. ER-2019-0374

## Capital Structure As of September 30, 2019

## Algonquin Power \& Utilities Company

Figures in (000)

|  | December 31, 2018 |  | March 31, 2019 |  | June 30, 2019 |  | September 30, 2019 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Long-Term Debt | \$ | 3,323,747 | \$ | 3,644,253 | \$ | 3,773,477 | \$ | 4,065,649 |
| Short-Term Debt | \$ | 184,299 | \$ | 184,299 | \$ | 184,299 | \$ | 210,565 |
| Common Equity | \$ | 3,513,223 | \$ | 3,548,472 | \$ | 3,163,726 | \$ | 3,964,313 |
| Total | \$ | 7,021,269 | \$ | 7,377,024 | \$ | 7,121,502 | \$ | 8,240,527 |
|  | December 31, 2018 |  | March 31, 2019 |  | June 30, 2019 |  | September 30, 2019 |  |
| Long-Term Debt |  | 47.34\% |  | 49.40\% |  | 52.99\% |  | 49.34\% |
| Short-Term Debt |  | 2.62\% |  | 2.50\% |  | 2.59\% |  | 2.56\% |
| Common Equity |  | 50.04\% |  | 48.10\% |  | 44.42\% |  | 48.11\% |

## Liberty Utilities Co.

|  | December 31, 2018 |  | March 31, 2019 |  | June 30, 2019 |  | September 30, 2019 |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | ---: |
| Long-Term Debt | $\$$ | $1,985,625$ | $\$$ | $2,005,176$ | $\$$ | $2,022,861$ | $\$$ | $1,879,252$ |
| Short-Term Debt | $\$$ | - | $\$$ | - | $\$$ | - | $\$$ | 208,500 |
| Common Equity | $\$$ | $2,273,821$ | $\$$ | $2,326,276$ | $\$$ | $2,339,211$ | $\$$ | $2,354,587$ |
| Total | $\$$ | $4,259,446$ | $\$$ | $4,331,452$ | $\$$ | $4,362,072$ | $\$$ | $4,442,339$ |


|  | December 31, 2018 | March 31, 2019 | June 30, 2019 | September 30, 2019 |
| :--- | ---: | ---: | ---: | ---: |
| Long-Term Debt | $46.62 \%$ | $46.29 \%$ | $46.37 \%$ | $42.30 \%$ |
| Short-Term Debt | $0.00 \%$ | $0.00 \%$ | $0.00 \%$ | $4.69 \%$ |
| Common Equity | $53.38 \%$ | $53.71 \%$ | $53.63 \%$ | $53.00 \%$ |

The Empire District Electric Company

| December 31, $\mathbf{2 0 1 8}$ |  | March 31, 2019 |  | June 30, 2019 |  | September 30, 2019 |  |
| :---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\$$ | 780,000 | $\$$ | 780,000 | $\$$ | 780,000 | $\$$ | 780,000 |
| $\$$ | 820,496 | $\$$ | 842,108 | $\$$ | 842,509 | $\$$ | 877,206 |
| $\$$ | $1,600,496$ | $\$$ | $1,622,108$ | $\$$ | $1,622,509$ | $\$$ | $1,657,206$ |


|  | December 31, 2018 | March 31, 2019 | June 30, 2019 | September 30, 2019 |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Long-Term Debt | $48.73 \%$ | $48.09 \%$ | $48.07 \%$ | $47.07 \%$ |  |
| Common Equity | $51.27 \%$ | $51.91 \%$ | $51.93 \%$ | $52.93 \%$ |  |

Source: DR. Nos. 0185 and 0173

# Schedule PC-6 

HAS BEEN DEEMED

## CONFIDENTIAL

## IN ITS ENTIRETY

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

## Selection Criteria

| Edison Electric Institute Power Company |  | Stock <br> Publicly <br> Traded | At Least 80\% <br> Assets U.S <br> Regulated | At Least Investment Grade Credit Rating (2 of 3 Agencies) | L-T Growth Coverage at least 2 equity Analysts and LT Growth Available | No Pending Merger or Acquisition | At Least 25\% of Electric Plant Generation | No <br> Reduced <br> Dividends Since 2016 | At Least 50\% of Plant From Electric Utility | At Least 80\% of Income From U.S Regulated Utility Operations | Comparabl <br> e <br> Company Met <br> All Criteria |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ALLETE, Inc. | ALE |  | NO |  |  |  |  |  |  |  |  |
| Alliant Energy Corporation | LNT |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Ameren Corporation | AEE |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| American Electric Power Company, Inc. | AEP |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Avangrid, Inc. | AGR |  | NO |  |  |  |  |  |  |  |  |
| Avista Corporation | AVA |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Black Hills Corporation | BKH |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Broadwind Energy, Inc. | BWEN |  | NO |  |  |  |  |  |  |  |  |
| Capstone Turbine Corp. | CPST |  | NO |  |  |  |  |  |  |  |  |
| CenterPoint Energy, Inc. | CNP |  | NO |  |  |  |  |  |  |  |  |
| CMS Energy Corporation | CMS |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Consolidated Edison, Inc. | ED |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Dominion Energy, Inc. | D |  | NO |  |  |  |  |  |  |  |  |
| DTE Energy Company | DTE |  | NO |  |  |  |  |  |  |  |  |
| Duke Energy Corporation | DUK |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Edison International | EIX |  | YES | YES | YES | YES | NO |  |  |  |  |
| El Paso Electric Company | EE |  | YES | YES | YES | NO |  |  |  |  |  |
| Entergy Corporation | ETR |  | YES | YES | YES | YES | YES | YES | YES | YES | Very Volatile |
| Evergy, Inc. | EVRG |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Eversource Energy | ES |  | YES | YES | YES | NO |  |  |  |  |  |
| Exelon Corporation | EXC |  | NO |  |  |  |  |  |  |  |  |
| FirstEnergy Corp. | FE |  | YES | NO |  |  |  |  |  |  |  |
| Hawaiian Electric Industries, Inc. | HE |  | NO |  |  |  |  |  |  |  |  |
| IDACORP, Inc. | IDA |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| MDU Resources Group Inc. | MDU |  | NO |  |  |  |  |  |  |  |  |
| MGE Energy, Inc. | MGEE |  | NO |  |  |  |  |  |  |  |  |
| NextEra Energy, Inc. | NEE |  | NO |  |  |  |  |  |  |  |  |
| NiSource Inc. | NI |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| NorthWestern Corporation | NWE |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| OGE Energy Corp. | OGE |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Otter Tail Corporation | OTTR |  | YES | YES | NO |  |  |  |  |  |  |
| PG\&E Corporation | PCG |  | YES | NO |  |  |  |  |  |  |  |
| Pinnacle West Capital Corporation | PNW |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| PNM Resources, Inc. | PNM |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Portland General Electric Company | POR |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| PPL Corporation | PPL |  | YES | YES | YES | YES | YES | YES | YES | NO |  |
| Public Service Enterprise Group Incorporated | PEG |  | NO |  |  |  |  |  |  |  |  |
| SCANA Corporation | SCG |  | YES | NO |  |  |  |  |  |  |  |
| Sempra Energy | SRE |  | NO |  |  |  |  |  |  |  |  |
| Southern Company | SO |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Unitil Corporation | UTL |  | YES | YES | YES | YES | NO(.84\%) |  |  |  |  |
| Vectren Corporation | WC |  | YES | NO |  |  |  |  |  |  |  |
| WEC Energy Group, Inc. | WEC |  | YES | YES | YES | YES | YES | NO |  |  |  |
| Xcel Energy Inc. | XEL |  | YES | YES | YES | YES | YES | YES | YES | YES | YES |

## The Empire District Electric Company

## Case No. ER-2019-0374

## Credit Ratings

## Electric Proxy Group



The Empire District Electric Company
Case No. ER-2019-0374
Ten-Year Dividends Per Share, Earnings Per Share \& Book Value Per Share Growth Rates for the Fifteen Comparable Companies


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

Five-Year Dividends Per Share, Earnings Per Share \& Book Value Per Share Growth Rates for the Fifteen Comparable Companies
-------------------- 5-Year Annual Compound Growth Rates
$\left.\begin{array}{lccc} & & & \begin{array}{c}\text { Average of } \\ 5\end{array} \\ & & & \\ \text { Year } \\ \text { Annual } \\ \text { Compound }\end{array}\right)$

Source: SNL Financial.

## The Empire District Electric Company

Case No. ER-2019-0374
Historical and Projected Growth Rates for the
Fifteen Comparable Electric Companies

|  | (1) | (2) | (3) |
| :---: | :---: | :---: | :---: |
| Company Name | 10-Year <br> Historical Growth Rate EPS | 5-Year <br> Hisotrical Growth Rate EPS | Projected 5-Year EPS Growth SNL <br> (Mean) (\%) |
| Alliant Energy Corporation | 2.38\% | 4.99\% | 5.66\% |
| Ameren Corporation | -0.39\% | 6.31\% | 6.28\% |
| American Electric Power Company, Inc. | 0.28\% | 0.34\% | 5.82\% |
| Avista Corporation | 5.37\% | 4.75\% | 3.98\% |
| CMS Energy Corporation | NM | 4.47\% | 6.89\% |
| Duke Energy Corporation | 2.29\% | 2.42\% | 4.57\% |
| Evergy, Inc. | NM | NM | 6.17\% |
| IDACORP, Inc. | 7.11\% | 3.85\% | 3.50\% |
| NorthWestern Corporation | 9.56\% | 6.84\% | 3.41\% |
| OGE Energy Corp. | 6.12\% | 4.66\% | 5.18\% |
| Pinnacle West Capital Corporation | 4.78\% | 4.73\% | 5.29\% |
| PNM Resources, Inc. | NM | -4.94\% | 6.05\% |
| Portland General Electric Company | 3.19\% | 5.12\% | 4.63\% |
| Southern Company | -1.75\% | -4.80\% | 4.52\% |
| Xcel Energy Inc. | 5.05\% | 4.80\% | 5.43\% |
| Average | 3.66\% | 3.11\% | 5.16\% |

Sources: $\quad$ Column $1=$ Schedule 10-4

Column 2 = Schedule 10-5.
Column 3 = SNL Financial

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

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

|  | (1) | (2) | (3) |
| :--- | :---: | :---: | :---: |
|  |  | Average |  |
|  | Expected <br> Annual <br> Dividend | High/Low <br> Stock <br> Price | Projected <br> Dividend <br> Yield |
| Company Name | $\$ 1.50$ | $\$ 52.87$ | $2.83 \%$ |
| Alliant Energy Corporation | $\$ 2.00$ | $\$ 76.78$ | $2.60 \%$ |
| Ameren Corporation | $\$ 2.79$ | $\$ 92.32$ | $3.02 \%$ |
| American Electric Power Company, Inc. | $\$ 1.59$ | $\$ 47.66$ | $3.34 \%$ |
| Avista Corporation | $\$ 1.60$ | $\$ 62.68$ | $2.55 \%$ |
| CMS Energy Corporation | $\$ 3.89$ | $\$ 93.24$ | $4.18 \%$ |
| Duke Energy Corporation | $\$ 3.74$ | $\$ 116.65$ | $3.21 \%$ |
| Evergy, Inc. | $\$ 2.62$ | $\$ 108.32$ | $2.42 \%$ |
| IDACORP, Inc. | $\$ 2.37$ | $\$ 72.90$ | $3.25 \%$ |
| NorthWestern Corporation | $\$ 1.57$ | $\$ 43.46$ | $3.62 \%$ |
| OGE Energy Corp. | $\$ 3.15$ | $\$ 92.74$ | $3.40 \%$ |
| Pinnacle West Capital Corporation | $\$ 1.58$ | $\$ 50.54$ | $3.12 \%$ |
| PNM Resources, Inc. | $\$ 1.60$ | $\$ 56.13$ | $2.85 \%$ |
| Portland General Electric Company | $\$ 2.53$ | $\$ 61.35$ | $4.12 \%$ |
| Southern Company | $\$ 1.64$ | $\$ 63.11$ | $2.59 \%$ |
| Xcel Energy Inc. | $\$ 2.28$ | $\$ 72.72$ | $3.14 \%$ |


| Proposed Dividend Yield: | $3.14 \%$ |
| :--- | :--- |
| Proposed Range of Growth: | $\underline{4.20 \%-5.00 \%}$ |

Estimated Proxy Cost of Common 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

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

## Reproduced Constant-Growth Discount Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Gas Utility Companies

|  | Expected <br> Dividend | 2019 <br> Stock Price | Expected <br> Dividend Yield |
| :--- | :---: | :---: | :---: |
| Atmos Energy Corporation | 2.39 | 83.59 | $2.85 \%$ |
| Northwest Gas Holding | 1.90 | 69.19 | $2.75 \%$ |
| ONE Gas, Inc. | 2.14 | 110.60 | $1.93 \%$ |
| Southwest Gas Holdings, Inc. | 2.00 | 91.94 | $2.18 \%$ |
| Spire Missouri Inc. | 2.17 | 86.30 | $2.51 \%$ |
| Average Dividend Yield |  | $\mathbf{2 . 4 5 \%}$ |  |
| Proposed Dividend Yield |  | $\mathbf{2 . 4 5 \%}$ |  |
| Proposed Range of Growth |  | $\underline{\mathbf{4 . 2 0 \% - 5 . 0 0 \%}}$ |  |
| Estimated Proxy Cost of Equity |  | $\underline{\mathbf{6 . 6 5 \% - \mathbf { 7 . 4 5 \% }}}$ |  |

Source:

Column: 1
Column: 2
Column: 3
(2)
(3)

Last 3-Months
Ending Nov. 30,
2.45\%

SNL Analyst Projected Dividends
3 Month Ending November 30 Stock Price Average
Column 1 divide by Column 2

## The Empire District Electric Company

Case No. ER-2019-0374

## Reproduced Constant-Growth Discounted Cash Flow (DCF) for Comparable Gas Utility Companies

|  | (1) | (2) | (3) |
| :---: | :---: | :---: | :---: |
|  |  | Average |  |
|  | Expected | 3-Month | Projected |
|  | Annual | Stock | Dividend |
| Company | Dividend | Price | Yield |
| Atmos Energy Corporation | \$ 1.89 | \$ 82.04 | 2.30\% |
| Northwest Gas Holding | \$ 1.89 | \$ 60.46 | 3.13\% |
| ONE Gas, Inc. | \$ 1.76 | \$ 69.73 | 2.52\% |
| Southwest Gas Holdings, Inc. | \$ 2.03 | \$ 79.89 | 2.54\% |
| Spire Missouri Inc. | \$ 2.15 | \$ 69.85 | 3.08\% |
| Average |  |  | 2.71\% |
|  | Proposed Dividend Yield: |  | 2.70\% |
|  | Proposed Range of Growth: |  | 4.20\% - 5.00\% |
|  | Estimated Proxy Cost of Common Equity:6.90\% -7.70\% |  |  |
| Notes: Column 1 = Expected Annual Dividend based on the sum of equity analysts' expected next four quarters of DPS. <br> Column 3 = (Column 1/Column 2) |  |  |  |
|  |  |  |  |
| Sources: Columns 1 and $2=$ SNL Financial |  |  |  |

# The Empire District Electric Company 

## Case No. ER-2019-0374

Capital Asset Pricing Model (CAPM) Estimated Costs of Common Equity for Comparable Electric Utility Companies

|  | (1) | (2) | (3) | (4) | (5) | (6) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company Name | Risk <br> Free <br> Rate | Beta | Arithmetic Average Market Risk Premium $(1926-2018)$ | Geometric Average Market Risk Premium $(1926-2013)$ | Arithmetic CAPM Cost of Common Equity $(1926-2014)$ | Geometric <br> CAPM <br> Cost of <br> Common <br> Equity <br> $(1926-2014)$ |
| Alliant Energy Corporation | 2.21\% | 0.56 | 6.00\% | 4.50\% | 5.56\% | 4.72\% |
| Ameren Corporation | 2.21\% | 0.54 | 6.00\% | 4.50\% | 5.44\% | 4.63\% |
| American Electric Power Company, Inc. | 2.21\% | 0.54 | 6.00\% | 4.50\% | 5.44\% | 4.63\% |
| Avista Corporation | 2.21\% | 0.57 | 6.00\% | 4.50\% | 5.64\% | 4.78\% |
| CMS Energy Corporation | 2.21\% | 0.50 | 6.00\% | 4.50\% | 5.23\% | 4.48\% |
| Duke Energy Corporation | 2.21\% | 0.47 | 6.00\% | 4.50\% | 5.03\% | 4.33\% |
| Evergy, Inc. | 2.21\% | 0.44 | 6.00\% | 4.50\% | 4.83\% | 4.18\% |
| IDACORP, Corp | 2.21\% | 0.58 | 6.00\% | 4.50\% | 5.68\% | 4.81\% |
| NorthWestern Corporation | 2.21\% | 0.56 | 6.00\% | 4.50\% | 5.60\% | 4.75\% |
| OGE Energy Corp. | 2.21\% | 0.64 | 6.00\% | 4.50\% | 6.04\% | 5.08\% |
| Pinnacle West Capital Corporation | 2.21\% | 0.52 | 6.00\% | 4.50\% | 5.32\% | 4.54\% |
| PNM Resources, Inc. | 2.21\% | 0.59 | 6.00\% | 4.50\% | 5.76\% | 4.87\% |
| Portland General Electric Company | 2.21\% | 0.54 | 6.00\% | 4.50\% | 5.48\% | 4.66\% |
| Southern Company | 2.21\% | 0.50 | 6.00\% | 4.50\% | 5.23\% | 4.48\% |
| Xcel Energy Inc. | 2.21\% | 0.50 | 6.00\% | 4.50\% | 5.19\% | 4.45\% |
| Average |  | 0.54 |  |  | 5.43\% | 4.63\% |

Column 1 = The appropriate yield is equal to the average 30 -year U.S. Treasury Bond yield for September 2019, October 2019, and November 2019,
which was obtained from the St. Louis Federal Reserve website at http://research.stlouisfed.org/fred2/data/GS30.txt
Column $2=$ Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. Staff calculated the unadjusted Beta for each company using an Excel spreadsheet designed specifically to be used with the SNL database market and financial information, then adjusted each Beta using the Blume adjustment formula as used by Value Line: Adjusted Beta $=0.35+0.67$ * Unadjusted Beta

Column 3 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926-2018 was determined to be $6.00 \%$ based on an arithmetic average as calculated in Duff \& Phelps 2019 Valuation Handbook: A Guide to the Cost of Capital.

Column 4 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding
a risk free investment. The appropriate Market Risk Premium for the period 1926-2018 was determined to be 4.50\% based on a geometric average calculated by using the arithmetic average as calculated in Duff \& Phelps 2019 Valuation Handbook: A Guide to the Cost of Capital.

Column $5=($ Column $1+($ Column $2 *$ Column 3$))$.
Column $6=($ Column $1+($ Column $2 *$ Column 4$))$.

## The Empire District Electric Company

Case No. ER-2019-0374

## Capital Asset Pricing Model (CAPM) Estimated Costs of Common Equity for Comparable Gas Utility Companies

|  | (1) | (2) | (3) | (4) | (5) | (6) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company Name | Risk <br> Free <br> Rate | Beta | Arithmetic Average Market Risk Premium (1926-2018) | $\begin{aligned} & \text { Geometric } \\ & \text { Average } \\ & \text { Market } \\ & \text { Risk } \\ & \text { Premium } \\ & (1926-2018) \\ & \hline \end{aligned}$ | Arithmetic CAPM Cost of Common Equity (1926-2018) | Geometric <br> CAPM <br> Cost of <br> Common <br> Equity <br> $(1926-2018)$ |
| Atmos Energy Corporation | 2.21\% | 0.57 | 6.00\% | 4.50\% | 5.64\% | 4.78\% |
| Northwest Gas Holding | 2.21\% | 0.59 | 6.00\% | 4.50\% | 5.76\% | 4.87\% |
| ONE Gas, Inc. | 2.21\% | 0.62 | 6.00\% | 4.50\% | 5.96\% | 5.02\% |
| Southwest Gas Holdings, Inc | 2.21\% | 0.61 | 6.00\% | 4.50\% | 5.88\% | 4.96\% |
| Spire Inc. | 2.21\% | 0.60 | 6.00\% | 4.50\% | 5.80\% | 4.90\% |
| Average |  | 0.60 |  |  | 5.81\% | 4.91\% |

Column 1 = The appropriate yield is equal to the average 30-year U.S. Treasury Bond yield for September 2019, October 2019, and November 2019 which was obtained from the St. Louis Federal Reserve website at http://research.stlouisfed.org/fred2/data/GS30.txt

Column $2=$ Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. Staff calculated the unadjusted Beta for each company using an Excel spreadsheet designed specifically to be used with the SNL database market and financial information, then adjusted each Beta using the Blume adjustment formula as used by Value Line: Adjusted Beta $=0.35+0.67$ * Unadjusted Beta
Column 3 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926-2018 was determined to be 6.00\% based on an arithmetic average as calculated in Duff \& Phelps 2019 Valuation Handbook: A Guide to the Cost of Capital.
Column 4 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926-2018 was determined to be 4.50\% based on a geometric average calculated by using the arithmetic average as calculated in Duff \& Phelps 2019 Valuation Handbook: A Guide to the Cost of Capital
Column 5 = (Column $1+($ Column 2 * Column 3) $)$
Column $6=($ Cloumn $1+($ Column $2 *$ Column 4$))$

## Reproduced Capital Asset Pricing Model (CAPM) Estimated Costs of Common Equity for Comparable Gas Utility Companies

|  | (1) | (2) | (3) | (4) | (5) | (6) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company Name | Risk <br> Free <br> Rate | Beta | Arithmetic Average Market Risk Premium (1926-2016) | Geometric Average Market Risk Premium (1926-2016) | Arithmetic <br> CAPM <br> Cost of <br> Common Equity (1926-2016) | Geometric <br> CAPM <br> Cost of <br> Common Equity (1926-2016) |
| Atmos Energy Corporation | 2.90\% | 0.71 | 6.00\% | 4.50\% | 7.17\% | 6.10\% |
| Northwest Gas Holding | 2.90\% | 0.66 | 6.00\% | 4.50\% | 6.89\% | 5.89\% |
| ONE Gas, Inc. | 2.90\% | 0.77 | 6.00\% | 4.50\% | 7.53\% | 6.37\% |
| Southwest Gas Holdings, Inc. | 2.90\% | 0.71 | 6.00\% | 4.50\% | 7.16\% | 6.10\% |
| Spire Inc. | 2.90\% | 0.67 | 6.00\% | 4.50\% | 6.93\% | 5.92\% |
| Average |  | 0.71 |  |  | 7.14\% | 6.08\% |

Column 1 = The appropriate yield is equal to the average 30-year U.S. Treasury Bond yield for April 2017, May 2017, and June 2017 which was obtained from the St. Louis Federal Reserve website at http://research.stlouisfed.org/fred2/data/GS30.txt

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. Staff calculated the unadjusted Beta for each company using an Excel spreadsheet designed specifically to be used with the SNL database market and financial information, then adjusted each Beta using the Blume adjustment formula as used by Value Line: Adjusted Beta $=0.35+0.67$ * Unadjusted Beta
Column 3 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926-2016 was determined to be 6.00\% based on an arithmetic average as calculated in Duff \& Phelps 2019 Valuation Handbook: A Guide to the Cost of Capital.
Column 4 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926-2016 was determined to be 4.50\% based on a geometric average calculated by using the arithmetic average as calculated in Duff \& Phelps 2017 Valuation Handbook: A Guide to the Cost of Capital.
Column $5=($ Column $1+($ Column $2 *$ Column 3$))$
Column $6=($ Column $1+($ Column $2 *$ Column 4$))$

# The Empire District Electric Company 

 Case No. ER-2019-0374
## Summary of Staff's Cost of Equity Estimates

Current Cost of Equity Estimates for the Electric Proxy Group

| DCF Range of Growth \% | 4.20\% | 5.00\% | Average |
| :---: | :---: | :---: | :---: |
| DCF | 7.34\% | 8.14\% | 7.74\% |
|  | Geometric | metic |  |
| CAPM | 4.63\% | 5.43\% | 5.03\% |
|  | Average |  | 6.39\% |

Current Cost of Equity Estimates for the Gas Proxy Group

| DCF Range of Growth \% | 4.20\% | 5.00\% | Average |
| :---: | :---: | :---: | :---: |
| DCF | 6.65\% | 7.45\% | 7.05\% |
|  | Geometric | metic |  |
| CAPM | 4.91\% | 5.81\% | 5.36\% |
|  |  | age | 6.21\% |

Reproduced Cost of Equity Estimates for the Gas Proxy Group in the Spire Missouri Cases No. GR-2017-0215 and GR-2017-0216
$\left.\begin{array}{cccc}\text { DCF Range of Growth \% } & \begin{array}{c}\frac{4.20 \%}{6.91 \%}\end{array} & \begin{array}{c}5.00 \% \\ \text { DCF }\end{array} & \begin{array}{c}\text { Average } \\ \text { Geometric }\end{array} \\ & \text { Arithmetic }\end{array}\right)$

| Average COE Difference Between Updated Spire Case and Last Spire Case ${ }^{1}$ | $-0.75 \%$ |
| :--- | ---: |
| COE Differential Between Electric Proxy Group and Gas Proxy ${ }^{2}$ | $0.18 \%$ |
|  | $-0.57 \%$ |
| Commission Allowed ROE in Spire rate cases ${ }^{3}$ | $9.80 \%$ |
|  | $-0.57 \%$ |
| Staff Recommended Allowed ROE | $9.23 \%$ |
|  | $9.25 \%$ |

${ }^{1}$ (6.96\%-6.21\%)
2 (6.39\%-6.21\%)
${ }^{3}$ GR-2017-0215 \& GR-2017-0216

# Recommended Allowed Rate of Return as of October 31, 2019 for The Empire District Electric Company 

| Capital Component | Percentage <br> of Capital | Embedded Cost | Allowed Rate of Return Using Common Equity Return of: |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 9.05\% | 9.25\% | 9.80\% |
| Common Stock Equity | 52.90\% | ----- | 4.79\% | 4.89\% | 5.18\% |
| Long-Term Debt | 47.10\% | 4.76\% | 2.24\% | 2.24\% | 2.24\% |
| Total | 100.00\% |  | 7.03\% | 7.14\% | 7.43\% |

Notes:

See Schedule 7 for the Capital Structure Ratios.

