

**BEFORE THE STATE CORPORATION COMMISSION  
OF THE STATE OF KANSAS**

|  |   |                        |
|--|---|------------------------|
| <b>In the Matter of the Application of</b> | ) |                        |
| <b>Columbus Communications Services,</b>   | ) |                        |
| <b>LLC for Additional Kansas Universal</b> | ) | <b>Docket No.</b>      |
| <b>Service Fund Support Pursuant to</b>    | ) | <b>22-COST-546-KSF</b> |
| <b>K.S.A. 66-2008</b>                      | ) |                        |

**DIRECT TESTIMONY**

**PREPARED BY**

**Adam H. Gatewood**

**UTILITIES DIVISION**

**KANSAS CORPORATION COMMISSION**

**October 6, 2022**

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7 **Q. Please state your name and business address.**

8 A. Adam H. Gatewood, 1500 Arrowhead Road, Topeka, Kansas 66604.

9 **Q. Who is your employer and what is your title?**

10 A. I am a Senior Managing Financial Analyst for the Kansas Corporation Commission  
11 (Commission).

12 **Q. What is your educational and professional background?**

13 A. I graduated from Washburn University with a B.A. in Economics in 1987 and a Masters of  
14 Business Administration in 1996. I have filed testimony on cost of capital, capital structure,  
15 and related issues before the Commission in more than 130 proceedings. I have also filed  
16 cost of capital testimony before the Federal Energy Regulatory Commission in natural gas  
17 pipeline and electric transmission revenue requirement complaint dockets.

1 **Q. What is the purpose of your testimony?**

2 A. My testimony contains Staff's rate of return (ROR) for Columbus Communications  
3 Services, LLC (Columbus or Applicant). The rate of return is an input to Staff's revenue  
4 requirement study that determines Columbus's Kansas Universal Service Fund (KUSF)  
5 annual support.

6 **Executive Summary**

7 **Q. Please summarize your recommendation?**

8 A. I recommend that the Commission adopt an allowed return (ROR) of 7.42% for the purpose  
9 of setting Columbus's KUSF revenue requirement that incorporates a 9.60% return on  
10 equity and a 60% equity ratio; as opposed to its actual equity ratio of 89%.

| <b>Staff Cost of Capital Recommendation<br/>Columbus Communications Services, LLC<br/>22-COST-546-KSF</b> |        |                |                      |
|---|--------|----------------|----------------------|
|   | Weight | Cost           | Weighted<br>Avg Cost |
| Equity  | 60%    | 9.60%          | 5.76%                |
| Debt  | 40%    | 4.16%          | 1.66%                |
|   |        | Rate of Return | 7.42%                |

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12 **Q. How did you conclude that a 9.60% ROE is a just and reasonable return for rural**  
13 **local exchange carriers (RLEC)?**

14 A. I performed an analysis to verify that a 9.60% return is just and reasonable compensation  
15 for the RLECs' equity investors in line with the legal principles espoused by in several

1 landmark cases specific to this issue. My analysis is the same type of analysis performed  
2 by investors who are evaluating returns available in the capital markets.

3 **Q. Staff has recommended 9.60% return on equity in the recent KUSF support**  
4 **calculations. Why has Staff presented the same recommendation in several KUSF**  
5 **dockets and again in this Docket for Columbus?**

6 A. Staff wants to strike a balance between accurately reflecting the prevailing cost of equity  
7 capital with applying a return uniformly across the entire group of Kansas RLECs. Thus  
8 Staff is willing to recommend a uniform number as long as it is appropriate and supported  
9 by rigorous analysis. Based on the market data of the past six months, despite the increased  
10 volatility in the markets, a 9.60% return on equity is still appropriate and provides  
11 Columbus's members/owners a return significantly above that available in fixed income  
12 investments and the broad equity market. Staff demonstrates in each KUSF docket that its  
13 ROE recommendation provides the RLEC a just and reasonable return while being being  
14 fair to Kansasns that contribute to the KUSF.

15 **Q. Please summarize Columbus's rate of return request.**

16 A. Columbus requests the Commission grant it an ROR equal to the 9.75% ROR authorized  
17 by the Federal Communications Commission (FCC) to calculate federal high-cost support;<sup>1</sup>  
18 Section 7 of Columbus's Application does not state a specific ROE, just a 9.75% ROR.

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<sup>1</sup> Connect America Fund, WC Docket No. 10-90, Rate of Return Order, March 23, 2016.

| Rate of Return Requested By<br>Columbus Communications Services, LLC<br>22-COST-546-KSF  |               |        |       |                      |
|--|---------------|--------|-------|----------------------|
|  | Balance       | Weight | Cost  | Weighted<br>Avg Cost |
| Equity   | \$ 28,096,030 | 89.17% |       |                      |
| Debt   | \$ 3,411,674  | 10.83% | 4.16% |                      |
|  | \$ 31,507,704 |        |       |                      |
| <b>Columbus Comm. Services, LLC Requested ROR</b>  |               |        |       | <b>9.75%</b>         |
| Source: Section 7; Schedule 1 of Application<br>Debt Balances at 12/31/2020; Columbus Communications Services, LLC<br>Requested ROR based on FCC authorized ROR effective July 1, 2021 |               |        |       |                      |

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Columbus’ requested ROR of 9.75% effectively provides it with an ROE of 10.43% based on its actual capital structure and embedded cost of debt.

| Effective Rate of Return Requested by<br>Columbus Communications Services, LLC<br>22-COST-546-KSF |               |        |                |                      |
|---|---------------|--------|----------------|----------------------|
|   |               | Weight | Cost           | Weighted<br>Avg Cost |
| Equity  | \$ 28,096,030 | 89.17% | <b>10.43%</b>  | <b>9.300%</b>        |
| Debt  | \$ 3,411,674  | 10.83% | 4.16%          | 0.450%               |
|   | \$ 31,507,704 |        | Rate of Return | <b>9.75%</b>         |

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Staff has consistently argued that the FCC’s generic ROR does not meet the cost-based standard that this Commission applies when setting revenue requirements for KUSF support. Because the FCC’s ROR does not differentiate between costs of debt and equity capital that is employed by a specific RLEC, it does not recognize the cost savings that can result from utilizing debt capital. Nor does the FCC’s ROR reflect the current capital markets as the FCC issued the Order in July of 2016. A review of the FCC’s Order indicates that the 10.75% ROR set by the FCC for 2017, dropping to 10.00% in 2020, and 9.75% in 2021 incorporates an ROE greater than the cost of equity set by this Commission since the early 2000s. By some measures, the FCC’s generic allowed ROR would result in an ROE

1 in excess of 14.00% largely because it does not recognize an RLEC's actual cost of debt.<sup>2</sup>  
 2 In the case of Columbus, it is an effective ROE of 10.43%. Based on all of the cost of  
 3 capital studies I have prepared from 2016 to the present, the FCC's annual reduction has  
 4 not kept pace with the market reductions in the cost of capital. Thus, I surmise that the  
 5 excessive return on equity discussed in footnote 2 continues even as the Authorized ROR  
 6 has ratcheted down to 9.75%.

| Phase in of Authorized RoR Reduction From 11.25% to 9.75% |                           |   |
|---|---------------------------|---|
| Effective Date of Rate of Return                          | Authorized Rate of Return |   |
| 2016  | 11.00%                    | *Authorized rate of return is set at      |
| 2017  | 10.75%                    | 9.75% and phased in over time             |
| 2018  | 10.50%                    |   |
| 2019  | 10.25%                    | *9.75% WACC embodies a 5.87% cost of debt |
| 2020  | 10.00%                    | 14.37% ROE with a 54.34% debt ratio       |
| 2021  | 9.75%                     |   |

FCC Report and Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking; March 30, 2016  
 FCC 16-33; para 319-326

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8 Columbus's requested rate of return has no link to returns available in the capital markets,  
 9 its actual cost of debt, or its capital structure. Therefore, it fails to conform to the  
 10 Commission's established practice and fails the basic principles set out in the key legal

<sup>2</sup> Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking In the Matter of Connect America Fund ETC Annual Reports and Certifications Developing a Unified Intercarrier Compensation Regime (WC Docket No. 10-90; WC Docket No. 14-58; and CC Docket No. 01-92) Released March 30, 2016. See paragraph 322.

322. We note that the WACC is supposed to compensate equity holders and debtholders who provide the funds used to finance the firm's assets. Given a rate of return set equal to 9.75 percent, an average capital structure based on our estimates of 54.34 percent debt, and a cost of debt based on our estimates of 5.87 percent, the implied cost of equity is 14.37 percent. We find that not only is the WACC of 9.75 percent high enough adequately to compensate the firm's debtholders, but the implied rate of return on equity also provides equity holders with the opportunity to earn a reasonable rate of return on their investment. As support for our finding that a 9.75 percent rate of return is reasonable, we examine some benchmarks.

1 decisions rendered by the U.S. Supreme Court, commonly referred to as the “Hope and  
2 Bluefield” decisions that are the cornerstone to establishing a fair return.<sup>3</sup> For these reasons,  
3 the Commission should reject the FCC ROR for Columbus, as it has in all past KUSF  
4 Dockets.

5 **Q. Does Staff have any additional concerns surrounding this issue?**

6 A. The Kansas Legislature established a cap on aggregate annual KUSF support to RLECs.  
7 Applying the FCC ROR to KUSF support calculations could cause a substantial shift in  
8 support dollars among the Kansas RLECs, transferring support dollars to those RLECs with  
9 the greatest leverage in their capital structures and away from RLECs with balanced,  
10 conservative capital structures. It is Staff’s opinion that such an outcome is far from  
11 desirable for stakeholders to the KUSF support system. Staff urges the Commission not to  
12 waiver from its past, established practice of rejecting the FCC ROR and instead, looking  
13 closely at the RLECs’ actual capital costs.

14 **Q. How do KUSF Dockets in which the Commission is setting the level of KUSF support**

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<sup>3</sup> Bluefield Water Works & Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679, 692-3 (1923). (Bluefield)

Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591, 603 (1944). 603 [8] [9] The rate-making process under the Act, i.e., the fixing of ‘just and reasonable’ rates, involves a balancing of the investor and the consumer interests. Thus, we stated in the Natural Gas Pipeline Co. case that ‘regulation does not insure that the business shall produce net revenues.’ But such considerations aside, the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view, it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. The conditions under which more or less might be allowed are not important here. Nor is it important to this case to determine the various permissible ways in which any rate base on which the return is computed might be arrived at. For we are of the view that the end result in this case cannot be condemned under the Act as unjust and unreasonable from the investor or company viewpoint. (Hope)

1           **for a RLEC differ from a typical rate case?**

2    A.    In a typical rate case, the revenue requirement is collected from a utility's customers. In  
3           determining an RLEC's KUSF support, the Commission is not setting a revenue  
4           requirement to determine rates *solely* paid by the RLEC customers; rather, the KUSF  
5           support is coming from all Kansans who pay into the KUSF, which transfers money from  
6           users of telecommunications services in Kansas to the ratepayers of an RLEC so that they  
7           do not have to pay the full cost of those RLEC telephony services. In essence, all Kansans,  
8           either directly or indirectly, are paying a portion of the RLECs' revenue requirements. In  
9           setting revenue requirements for any rate regulated industry, a regulatory agency has to  
10          balance the interests of a regulated entity and the consumer. In this instance, "consumers'  
11          interests" encompass all who contribute to the KUSF support mechanism.

12   **Q.    When establishing a reasonable rate of return for RLECs in KUSF Dockets, are there**  
13           **unique issues that the Commission should be aware of that are not present in gas and**  
14           **electric rate cases?**

15    A.    Yes, in KUSF Dockets, we are estimating the capital costs associated with providing a very  
16           narrow set of telecommunications services.<sup>4</sup> The foremost challenging issue is a lack of  
17           publicly traded companies whose primary business is the provision of land-line telephony  
18           services in rural areas. Of the few companies that do provide land-line services to rural

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<sup>4</sup>In Kansas, Universal Service is defined by K.S.A. 66-1,187(p): "Universal service" means telecommunications services and facilities which include: single party, two-way voice grade calling; stored program controlled switching with vertical service capability; E911 capability; tone dialing; access to operator services; access to directory assistance; and equal access to long distance services."



1 areas, that segment of their operations is a small percent of their total revenues and earnings.  
2 As a result of this limited exposure to RLEC services, investors do not evaluate those  
3 companies based on the risks associated with providing RLEC services, but instead, the  
4 risks and growth potential of providing other telecommunications services such as cellular,  
5 internet, and cable television. Despite these difficulties, it is possible to estimate the cost  
6 of equity for companies providing RLEC services, with the caveat the stakeholders in this  
7 process have to accept a less precise estimate than we would otherwise have if we had access  
8 to a robust proxy group for the analysis. This data limitation creates a challenge and it is a  
9 matter of fact that parties must accept. In spite of these challenges, Staff can demonstrate  
10 that there is ample evidence that its recommended rate of return meets the legal  
11 requirements of a just and reasonable return to Columbus's members/shareholders.

12 **Q. How did you overcome those challenges?**

13 A. Staff overcomes these challenges by relying on data that reflects long-run, forward-looking  
14 returns available in the capital markets measured by the capital asset pricing model (CAPM)  
15 and similar risk premium models. Seasoned financial industry experts and institutional  
16 investors universally rely on models to evaluate investment opportunities.

17 In this KUSF ROE review, Staff is not using a discounted cash flow (DCF) model. There  
18 are specific data requirements for a DCF analysis and several of those requirements cannot  
19 be met by the small number of publicly traded telecommunications companies that provide  
20 landline services. The companies in that group currently exhibit volatile earning growth  
21 projections, and several with negative earnings growth projections. Dropping the DCF

1 model is not a substantial change in Staff's cost of capital study as Staff has emphasized in  
2 the past KUSF dockets that it was putting very little weight on the DCF model for the same  
3 reason.

#### 4 **Risk-Premium Provided by a 9.60% ROE**

5 **Q. How does your recommendation in this Docket compare to those in past KUSF**  
6 **Dockets?**

7 A. The best picture of this comparison is the risk premium which the allowed ROE provides  
8 the RLEC investors, over bond yields that we observe in the capital markets and returns set  
9 for other regulated utilities. This table contains the KUSF Dockets of the last nine years  
10 beginning in 2012. In these Dockets, Staff's recommendations have been in the range of  
11 9.60% to 10.50%. As a clearer picture of the economy in the post-Global Financial Crisis  
12 (GFC) materialized, with slower economic growth rates and lower capital costs, Staff  
13 recommended an ROE of 9.60% to 9.75%.

| Staff Positions in Recent KUSF Dockets   |                |  |              |           |                 |                |
|--|----------------|--|--------------|-----------|-----------------|----------------|
| Docket   | Testimony Date | Company                                  | Equity Ratio | Staff ROE | Baa/BBB Yields* | Resulting Rp** |
| 12-GRHT-633-KSF  | 10/18/2012     | Gorham Telephone Company                 | 29.69%       | 10.50%    | 4.27%           | 6.23%          |
| 12-LHPT-875-AUD  | 12/19/2012     | LaHarpe Telephone Company                | 90.00%       | 10.00%    | 4.33%           | 5.67%          |
| 13-CRKT-268-KSF  | 3/13/2013      | Craw-Kan Telephone Cooperative, Inc.     | 60.00%       | 10.00%    | 4.48%           | 5.52%          |
| 13-ZENT-065-AUD  | 5/17/2013      | Zenda Telephone Company, Inc.            | Confidential | 10.00%    | 4.42%           | 5.58%          |
| 13-JBNT-437-KSF  | 5/23/2013      | J.B.N. Telephone Company, Inc.           | 46.50%       | 9.75%     | 4.52%           | 5.23%          |
| 13-PLTT-678-KSF  | 9/24/2013      | Peoples Telecommunications, LLC          | 55.83%       | 9.75%     | 5.19%           | 4.56%          |
| 14-WTCT-142-KSF  | 2/5/2014       | Wamego Telecommunications Co.            | 61.43%       | 9.60%     | 4.78%           | 4.82%          |
| 14-S&TT-525-KSF  | 9/25/2014      | S&T Telephone Cooperative, Inc.          | 54.86%       | 9.75%     | 4.45%           | 5.30%          |
| 15-MRGT-097-KSF  | 1/20/2015      | Moundridge Telephone Co.                 | Confidential | 9.75%     | 3.91%           | 5.84%          |
| 15-TWVT-213-AUD  | 9/4/2015       | Twin Valley Telephone Co.                | 47.81%       | 9.75%     | 4.56%           | 5.19%          |
| 17-RNBT-555-KSF  | 10/26/2017     | Rainbow Telecomm Assoc. Coop             | 60.00%       | 9.75%     | 4.21%           | 5.54%          |
| 19-GNBT-505-KSF  | 10/11/2019     | Golden Belt Telephone Assoc. Cooperative | 60.00%       | 9.60%     | 3.67%           | 5.93%          |
| 20-UTAT-032-KSF  | 12/13/2019     | United Telephone Association             | 60.00%       | 9.60%     | 3.84%           | 5.76%          |
| 20-BLVT-218-KSF  | 3/20/2020      | Blue Valley Telecommunications, Inc.     | 60.00%       | 9.60%     | 3.78%           | 5.82%          |
| 22-CRKT-087-KSF  | 12/15/2021     | Craw-Kan Telephone Cooperative, Inc.     | 60.00%       | 9.60%     | 3.20%           | 6.40%          |
| <b>Average Risk Premium of Recent KUSF Dockets</b>   |                |  |              |           |                 | <b>5.56%</b>   |
| * Yield on Baa/BBB Utility Bonds reported by Value-Line Investment Survey at date of Staff's testimony |                |  |              |           |                 |                |
| **Risk premium of Staff's ROE Recommendation over the Baa/BBB Utility Bond Yield                       |                |  |              |           |                 |                |

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In the far right column is the resulting risk premium provided by the return on equity advocated by Staff in each docket; Staff recommended ROE minus the average yield on Baa/BBB utility bonds. For that 10 year period, the risk premium averaged 556 basis points. The downward trend of bond yields during 2019, 2020, and 2021 and ROE of 9.60% provided RLECs with a progressively higher risk premium almost to the point of demanding a lower ROE than the 9.60% that Staff recommended in the past four KUSF dockets. The higher interest rates in 2022 produce a risk premium lower than the recent KUSF dockets; providing Columbus a risk premium of 475 basis points. The resulting risk premium is within the range observed from the past decade.

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As a point of comparison, in February of 2020, the Commission granted Atmos Energy Corporation a 9.10% ROE which was 532 basis point premium over BBB/Baa public utility bonds at the time of Staff's analysis in late-2019; a point in time when interest rates were at historic lows. Staff's recommendations in gas and electric rate cases result in risk premiums

1 of 483 basis points during the past seven years revealing the same trend seen in KUSF  
2 dockets.

| <b>Risk Premium of Recent Electric and Gas Dockets</b>             |                   |                             |                 |                 |                     |  |                 |
|--|-------------------|-----------------------------|-----------------|-----------------|---------------------|--|-----------------|
| Docket   | Testimony<br>Date | Company                     | Equity<br>Ratio | Staff<br>Recmmd | *BBB/Baa<br>Utility |  | Resulting<br>Rp |
|  |                   |                             |                 |                 | Bond<br>yld.        |  |                 |
| 15-KCPE-116-RTS  | 5/11/2015         | Kansas City Power & Light   | 50.48%          | 9.25%           | 4.62%               |  | 4.63%           |
| 15-WSEE-115-RTS  | 7/9/2015          | Westar Energy               | 53.12%          | 9.25%           | 4.69%               |  | 4.56%           |
| 16-KGSG-491-RTS  | 9/7/2016          | Kansas Gas Service          | 55.00%          | 8.75%           | 4.05%               |  | 4.70%           |
| 16-ATMG-079-RTS  | 12/21/2016        | Atmos Energy                | 56.12%          | 9.10%           | 4.74%               |  | 4.36%           |
| 18-KCPE-095-MER  | 1/29/2018         | Kansas City Power & Light   | *               | 9.30%           | 4.18%               |  | 5.12%           |
| 18-WSEE-328-RTS  | 6/11/2018         | Westar Energy               | 51.24%          | 9.30%           | 4.61%               |  | 4.69%           |
| 18-KCPE-480-RTS  | 9/12/2018         | Kansas City Power & Light   | 49.09%          | 9.30%           | 4.66%               |  | 4.64%           |
| 18-KGSG-560-RTS  | 10/29/2018        | Kansas Gas Service          | 55.00%          | 9.15%           | 4.96%               |  | 4.19%           |
| 19-EPDE-223-RTS  | 5/13/2019         | Empire District Electric Co | 51.65%          | 9.30%           | 4.37%               |  | 4.93%           |
| 19-ATMG-525-RTS  | 10/31/2019        | Atmos Energy                | 56.32%          | 9.10%           | 3.78%               |  | 5.32%           |
| 21-BHCG-418-RTS  | 9/10/2021         | Black Hills Energy          | 42.96%          | 9.20%           | 3.17%               |  | 6.03%           |
| <b>Average Risk Premium from Recent Gas &amp; Electric Dockets</b> |                   |                             |                 |                 |                     |  | <b>4.83%</b>    |

\* Yield on Baa/BBB Utility Bonds reported by Value-Line Investment Survey at date of Staff's testimony

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4 Providing investors a risk premium over less risky debt investments, as Staff has done,  
5 follows the principles espoused by the Supreme Court in its *Hope* and *Bluefield* decisions.  
6 These types of income producing securities are viewed as alternatives to investments in  
7 utility stocks because, like utility stocks, bonds offer stable valuations and higher current  
8 income, relative to the equity market. Risk premiums vary over time and across economic  
9 and capital market conditions; thus, there is not a benchmark risk premium or formula that  
10 sets a reasonable return on equity at a given interest rate. Risk premium calculations do  
11 place the allowed return in context to prevailing interest rates that are market determined  
12 and observable. The Court's decisions makes it clear that a fair and reasonable return for a  
13 utility's equity investors must offer the opportunity for investors to earn a premium over  
14 less risky investment vehicles such as public utility bonds. The following table  
15 demonstrates that Staff's proposed 9.60% ROE meets that standard in each instance; Staff's

1 recommendation provides a premium ranging from 467 to 684 basis points over the returns  
 2 offered by less risky fixed income investments.

**KCC Staff's Risk Premium Over Fixed Income Yields  
 Based on a 9.60% Return on Equity  
 22-COST-546-KSF**

| <b>Monthly Averages</b> | <b>10-Year<br/>T-Bond<br/>Yield<sup>1</sup></b> | <b>30-Year<br/>T-Bond<br/>Yield<sup>2</sup></b> | <b>Baa Corporate<br/>Bond<br/>Yield<sup>3</sup></b> | <b>BBB/Baa<br/>Utility Bond<br/>Yield<sup>4</sup></b> |
|-------------------------|---|---|---|---|
| March, 2022             | 2.06%   | 2.38%   | 4.29%   | 4.33%   |
| April, 2022             | 2.69%   | 2.77%   | 4.60%   | 4.57%   |
| May, 2022               | 2.90%   | 3.07%   | 5.12%   | 5.04%   |
| June, 2022              | 3.13%   | 3.23%   | 5.23%   | 5.22%   |
| July, 2022              | 2.93%   | 3.13%   | 5.24%   | 5.03%   |
| August, 2022            | 2.86%   | 3.11%   | 5.13%   | 4.89%   |
| <b>Average</b>          | <b>2.76%</b>                                    | <b>2.95%</b>                                    | <b>4.93%</b>  | <b>4.85%</b>  |

**Staff's Risk Premium Over the Average 10-Year Treasury Bond Yield**

|   |              |
|---|--------------|
| Staff Recommended Allowed ROE                           | 9.60%        |
| Six Month Average 10-Year Treasury Bond Yield           | 2.76%        |
| <b>Premium Over Average 10-Year Treasury Bond Yield</b> | <b>6.84%</b> |

**Staff's Risk Premium Over the Average 30-Year Treasury Bond Yield**

|   |              |
|---|--------------|
| Staff Recommended Allowed ROE                           | 9.60%        |
| Six Month Average 30-Year Treasury Bond Yield           | 2.95%        |
| <b>Premium Over Average 30-Year Treasury Bond Yield</b> | <b>6.65%</b> |

**Staff's Risk Premium Over the Average BBB/Baa Corporate Bond Yield**

|  |              |
|--|--------------|
| Staff Recommended Allowed ROE                          | 9.60%        |
| Six-Month Average BBB/Baa Corporate Bond Yield         | 4.93%        |
| <b>Premium Over Average BBB/Baa Utility Bond Yield</b> | <b>4.67%</b> |

**Staff's Risk Premium Over the Average BBB/Baa Utility Bond Yield**

|  |              |
|--|--------------|
| Staff Recommended Allowed ROE                          | 9.60%        |
| Six-Month Average BBB/Baa Utility Bond Yield           | 4.85%        |
| <b>Premium Over Average BBB/Baa Utility Bond Yield</b> | <b>4.75%</b> |

Sources:

- 1) Yield on U.S. 10-Year Treasury Bond reported at <https://fred.stlouisfed.org/>
- 2) Yield on U.S. 30-Year Treasury Bond reported at <https://fred.stlouisfed.org/>
- 3) Yield on Baa Corporate Bonds reported at <https://fred.stlouisfed.org/>
- 4) Yield on BBB/Baa Publicly Utility Bonds; Value-Line Investment Survey, Selections and Opinions

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4 **Q. For a point of comparison, could you please summarize ROE decisions across the**  
 5 **country?**

6 **A.** There is ample information on the allowed returns granted to gas distribution and electric

1 utilities; unfortunately, there is no reporting of the returns granted to local exchange carriers  
 2 across the nation as most telephony services are either deemed competitive or operate under  
 3 some sort of price cap regulation. This comparison to other rate-of-return regulated  
 4 industries is helpful as allowed returns on other rate of return regulated industries have  
 5 moved in parallel with broad measures of capital costs. Thus, there have been many  
 6 opportunities for regulatory commissions to evaluate evidence on investors' required  
 7 returns. From this data, it is apparent that regulatory commissions concluded that capital  
 8 costs of regulated utilities have trended downward over the past 19 years. In 2022 allowed  
 9 returns have been at historic lows.

| <b>Median Allowed<br/>Return on Equity</b> |                    |                 |
|--|--------------------|-----------------|
| <b>Date</b>                                | <b>Natural Gas</b> | <b>Electric</b> |
| 2000                                       | 11.16              | 11.50           |
| 2001                                       | 11.00              | 11.00           |
| 2002                                       | 11.00              | 11.28           |
| 2003                                       | 11.00              | 10.75           |
| 2004                                       | 10.50              | 10.70           |
| 2005                                       | 10.40              | 10.35           |
| 2006                                       | 10.50              | 10.23           |
| 2007                                       | 10.20              | 10.20           |
| 2008                                       | 10.45              | 10.30           |
| 2009                                       | 10.26              | 10.50           |
| 2010                                       | 10.10              | 10.30           |
| 2011                                       | 10.03              | 10.17           |
| 2012                                       | 10.00              | 10.08           |
| 2013                                       | 9.72               | 9.95            |
| 2014                                       | 9.78               | 9.78            |
| 2015                                       | 9.68               | 9.65            |
| 2016                                       | 9.50               | 9.75            |
| 2017                                       | 9.60               | 9.60            |
| 2018                                       | 9.60               | 9.58            |
| 2019                                       | 9.70               | 9.65            |
| 2020                                       | 9.44               | 9.45            |
| 2021                                       | 9.60               | 9.38            |
| 2022 Q1                                    | 9.40               | 9.25            |
| 2022 Q2                                    | 9.23               | 9.20            |

Source: S&P Market Intelligence; RRA

10

11 This table highlights that for rate of return regulated companies, public service commissions

1 across the country recognize the decline in capital costs over the past two decades.  
2 Decisions by this Commission have followed the same downward trend.

### 3 **Macro-Economic Environment & Investor Expectations**

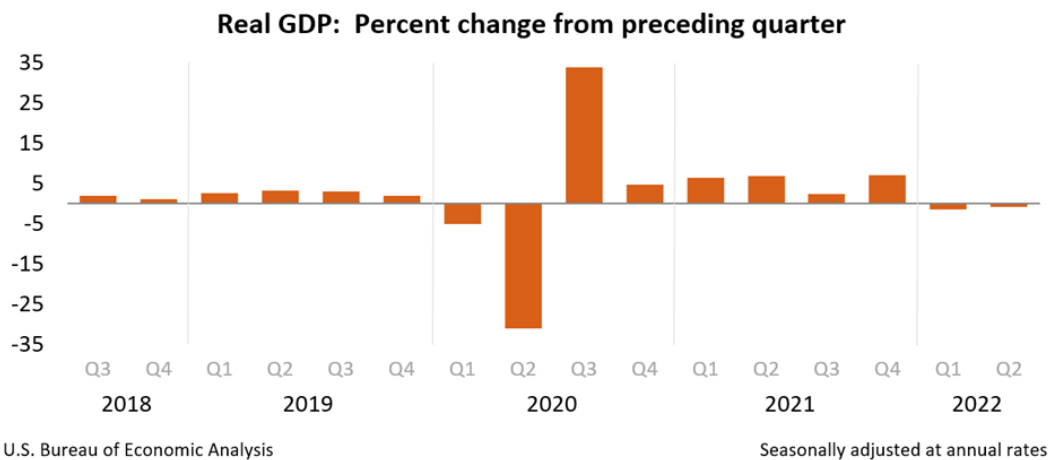
4 **Q. Is it necessary for the Commission to create a forecast of the broad economy in order**  
5 **to determine a reasonable return for RLECs like Columbus?**

6 A. I advise the Commission that determining a fair and reasonable allowed return does *not*  
7 require it to make a forecast of the economy's future or even adopt a specific perspective  
8 on the economy's direction. The focus of setting a fair and reasonable allowed return is on  
9 the *investors'* required return, which is a product of the investors' expectations for the  
10 economy (not the Commissioners' expectations). Investors' expectations for the economy  
11 are captured within the Commission's cost of capital decision, provided the Commission's  
12 decision is based on market-derived data such as current stock prices, interest rates, and  
13 other market data that conveys investors' outlook for the economy. It is not necessary, and  
14 likely counterproductive, for regulators to second-guess the capital markets.

15 It is a well-accepted premise that our capital markets are efficient, where investors factor  
16 all available information into their decisions to buy and sell debt and equity securities.  
17 Those decisions establish the prices that are used in cost of capital analyses. Furthermore,  
18 rational, profit-maximizing investors are forward looking. Accordingly, investors  
19 incorporate their own forecasts of the economy into their decisions in their best attempt to  
20 maximize returns.

1 **Q. Do you believe the Commission benefits from some discussion of economic forecast**  
 2 **when setting allowed returns?**

3 A. Yes, particularly in the wake of the global events of the past 30 months which began with  
 4 Covid-19 pandemic in March of 2020 followed by the Russian/Ukrainian war in February  
 5 of 2022. In the first quarter of 2020 public health officials recognized the necessity to  
 6 contain the spread of the virus by issuing stay-at-home mandates, closures of businesses in  
 7 the restaurant, hospitality, entertainment, and travel industries. The effects of these actions  
 8 began to appear in the first quarter of 2020; U.S. real GDP experienced a -5.1% growth  
 9 from the previous quarter followed by a record -31.2% growth in the second quarter.<sup>5</sup> That  
 10 decline in real GDP was historic, as was the 33.8% rebound in real GDP growth that  
 11 occurred in third quarter of 2020 as the economy began to reopen. On an annual basis real  
 12 GDP grew at -3.40% for 2020 and 5.70% in 2021.



13

14 Aggregate real GDP output recovered to pre-pandemic output levels by the second quarter

<sup>5</sup> Bureau of Economic Analysis, [https://www.bea.gov/sites/default/files/2021-07/gdp2q21\\_adv.pdf](https://www.bea.gov/sites/default/files/2021-07/gdp2q21_adv.pdf)



1 of 2021. After the sharp recovery, U.S. real GDP growth declined in each of the first and  
2 second quarters of 2022, -0.9% and -1.60% respectively. Two consecutive quarters of  
3 negative growth in real GDP is often regarded as the start of a recession. Determining the  
4 start of a recession is the responsibility of National Bureau of Economic Research (NBER)  
5 and it also determines when the contraction officially ends.<sup>6</sup> Despite this contraction in  
6 output in 2022, unemployment has returned to historically low levels, very near that level  
7 seen prior to the Covid-19 virus and 2020 recession. The strong employment data is one  
8 indicator that the U.S. economy is likely not in a recession despite the negative growth for  
9 two consecutive quarters.



10

11 Between March of 2020 and January of 2022, minutes of the Federal Open Market  
12 Committee arm of the U.S. Federal Reserve specifically noted that, “the path of the  
13 economy will depend significantly on the course of the virus.” FOMC statements issued  
14 since January of 2022, changed the focus citing to inflationary global pressures caused by

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<sup>6</sup> Past economic cycles may be viewed at <https://www.nber.org/research/business-cycle-dating>.

1 supply-chain issues lingering from Covid-19 related disruptions and the Russian/Ukraine  
2 war that dislocated long-established international trade patterns of food and energy.<sup>7</sup>

3 The FOMC's action on interest rates attracts more headlines than any other part of its policy  
4 statements. In March of 2022, FOMC began raising the federal fund rate, a short-term  
5 interest rate, while taking steps to roll back quantitative easing policies in an effort to raise  
6 longer term interest. In 2022 the FOMC raised the Federal Funds rate 275 basis points  
7 including two increases of 75 basis points.<sup>8</sup> Both of these steps work to reduce economic  
8 activity with the intent of bringing demand and supply of goods and services back into  
9 balance thereby stemming inflationary pressures. The FOMC announced in each meeting  
10 that it continues to target 2.00% inflation and 2.00% real GDP growth over the long run.  
11 These are targets that were in place for several years prior to the pandemic and FOMC  
12 members' economic projections indicate they expect to meet those projections by 2024.<sup>9</sup>

13 **Q. Does the uptick in interest rates signal a sea change in capital costs for utilities?**

14 A. Only time can answer that question. At this point in time the uptick in interest rates looks  
15 only to be a return to pre-pandemic levels and consistent with interest rates observed while  
16 Staff applied a 9.60% return on equity in previous KUSF dockets. Thus, at this juncture in  
17 the economy I believe an increase from a 9.60% ROE is unwarranted.

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<sup>7</sup> Federal Reserve Issues FOMC Statement, July 27, 2022,  
<https://www.federalreserve.gov/newsevents/pressreleases/monetary20220727a.htm>

<sup>8</sup> <https://www.federalreserve.gov/monetarypolicy/openmarket.htm>

<sup>9</sup> Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assumptions of projected appropriate monetary policy, June 2022  
<https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20220615.pdf>



2 Having recently experienced a brief, severe recession caused by the pandemic, supply chain  
3 disruptions, and historically high inflation, investors are well aware of the risks these  
4 variables pose to corporate profits and the broad economy and have factored those risks into  
5 their decisions. We know that financial markets are efficient, investors constantly assess  
6 and re-assess these risks and price securities accordingly, including the inputs to the CAPM  
7 and DCF analyses.

## 8 **Corporate Structure**

9 **Q. Please describe Columbus.**

10 A. Columbus Telephone Company, Inc. (CTC) is organized as a cooperative corporation. CTC  
11 is the parent of Columbus Communications, LLC (as noted earlier, the Applicant or  
12 Columbus) and Fiber Communications of Columbus LLC (d/b/a, Optic Communications).  
13 Columbus is an RLEC serving about 850 access lines all within one exchange located in

1 Cherokee County, Kansas.<sup>10 11</sup> Fiber Communications of Columbus LLC (d/b/a, Optic  
2 Communications) provides CLEC and broadband services in Columbus, Pittsburg,  
3 Riverton, Galena in Kansas, and Loma Linda, Missouri.

4 The current corporate structure resulted from a 2012 restructuring that created a new  
5 subsidiary and transferred assets, responsibilities and certificates from Columbus  
6 Telephone Company, Inc. to Columbus Communications, LLC (Columbus). The  
7 Commission approved the restructuring in docket 12-COST-923-COC. After the  
8 restructuring, just as before, the customers of Columbus continue to own the equity interest  
9 of the cooperative.

### **Standards for a Just & Reasonable Rate of Return**

10 **Q. What standards should public utility commissions consider when authorizing a rate**  
11 **of return?**

12 A. The standards for setting a just and reasonable rate of return require that, to be reasonable,  
13 the allowed return must reflect the risks associated with an equity investment in the utility.  
14 For the allowed return to be in that reasonable range, it must compensate for risks while  
15 capturing a fair proportion of benefits for consumers. The allowed ROE is best described  
16 as the forward-looking discount rate that is necessary to induce equity investors to commit  
17 their capital to the enterprise. Standards used to gauge the fairness and reasonableness of

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<sup>10</sup> <https://columbus-telephone.com/wp-content/uploads/2020/03/2020-Bylaws.pdf>

<sup>11</sup> Columbus Communications Services, KCC Telephone Utility Annual Report, 2021.

1 an allowed ROE have been stated by courts, as the result of appeals of decisions issued by  
2 regulatory agencies. Financial analysts and policy-makers rely on the courts' decisions as  
3 a guide in estimating the appropriate cost of capital. The opinions do not articulate precisely  
4 how to estimate or model a reasonable cost of capital. Instead, the decisions provide critical  
5 questions for policy makers and analysts to consider in determining a reasonable return for  
6 a regulated utility. There are several court cases that, as a group, are viewed as the keystone  
7 to measuring the adequacy of a utility's allowed return. The earliest of these decisions go  
8 back to an era when it was not only the "rate of return" at issue but also the fundamental  
9 measurement of the investment in the utility enterprise, commonly referred to as rate base.  
10 This is less of an issue today as regulators, utility management, and investors readily accept  
11 actual historic-depreciated value as the measure of investment to estimate the value of a  
12 utility's rate base (as opposed to reproduction cost or market value). The Court's decision  
13 in *Bluefield* addressed both rate base and ROR.<sup>12</sup>

14 United States Supreme Court decisions state that returns granted to regulated public utilities  
15 should: 1) be commensurate with returns on investments of similar risk; 2) be sufficient to  
16 assure the financial integrity of the utility under efficient economic management; and 3)  
17 change over time with changes in the money market and business conditions.<sup>13</sup> An  
18 important take-away from these decisions is that the Supreme Court of the United States  
19 has afforded regulatory agencies a significant amount of latitude in establishing an

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<sup>12</sup> *Bluefield Water Works & Improvement Co. v. Pub. Svc. Comm'n of West Virginia*, 262 U.S. 679, 692-3 (1923).

<sup>13</sup> *Smyth v. Ames*, 169 U.S. 466 (1898); *Wilcox v. Consolidated Gas Co.*, 212 U.S. 19, 48-49 (1909); *Bluefield Water Works & Improvement Company v. Public Service Commission of West Virginia*, 262 U.S. 679, 692-3 (1923); *Federal Power Commission v. Hope Natural Gas Company*, 320 U.S. 591, 603 (1944).

1 appropriate ROR and ROE for a utility. The Kansas Supreme Court has recognized and  
2 follows this body of law.<sup>14</sup> This Commission has noted this fact in Orders issued in previous  
3 dockets.<sup>15</sup>

4 **Q. How do financial analysts apply the standards established by the Court?**

5 A. For an allowed ROE to meet the legal standards, the return should be as specific as possible  
6 to the utility in question. Financial analysts achieve this goal by analyzing not only the  
7 utility in question, when it is possible to do so, but also a proxy group of similarly situated  
8 utilities. Treatises on rate of return for public utilities, such as The Cost of Capital – A  
9 Practitioner’s Guide, agree that *Bluefield* lays out the four standards for a fair return.

- 10 1) *Comparable Earnings* – a utility is entitled to a return similar to that  
11 being earned by other enterprises with similar risks, but not as high  
12 as those earned by highly profitable or speculative ventures;
- 13 2) *Financial Integrity* – a utility is entitled to a return level reasonably  
14 sufficient to assure financial soundness;
- 15 3) *Capital Attraction* – a utility is entitled to a return sufficient to  
16 support its credit and raise capital; and
- 17 4) *Changing Level of Returns* – a fair return can change along with  
18 economic conditions and capital markets.<sup>16</sup>

19 As a financial analyst formulating rate of return analyses for our state commission, I take  
20 from *Bluefield* that the Court requires a rate Order that allows a utility an opportunity to

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<sup>14</sup> *Kansas Gas & Elec. Co. v. State Corp. Comm'n*, 239 Kan. 483, 491, 720 P. 2d 1063, 1072 (1986).

<sup>15</sup> Order: 1) Addressing Prudence; 2) Approving Application, in Part; & 3) Ruling on Pending Requests, Docket No. 10-KCPE-415-RTS, November 22, 2010, 37-38.

<sup>16</sup> *The Cost of Capital – A Practitioner’s Guide* by David C. Parcell, Prepared for the Society of Utility and Regulatory Financial Analysts, 1997, pp. 3-13 to 3-14.

1           earn a return consistent with the utility’s risk profile and consistent with observations in the  
2           capital markets. The Court’s decision in *Hope*,<sup>17</sup> like that in *Bluefield*, dealt with both  
3           valuation of rate base, as well as rate of return on that rate base. With respect to the rate of  
4           return, the Court in *Hope* affirmed the four standards set out in *Bluefield*.

## 5           Capital Structure

6           **Q.     Please describe Columbus’s capital structure presented in Section 7 of its Application.**

7           A.     Columbus reports a capital structure with 89.17% equity 10.83% long-term debt.<sup>18</sup> I  
8           verified that its equity ratio in Section 7 accurately depicts Columbus’s actual capitalization.  
9           It is similar to the consolidated capital structure of Columbus Telephone Co., the parent  
10          company.

11          **Q.     Did you use Columbus’s actual capital structure to calculate the ROR?**

12          A.     No, I did not. Throughout the KUSF investigations, Staff has used an upper limit of 60%  
13          in capital structure calculations; Columbus’s actual equity ratio exceeds Staff’s threshold.

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<sup>17</sup> *Federal Power Comm’n. v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944). “The rate-making process under the Act, i.e., the fixing of ‘just and reasonable’ rates, involves a balancing of the investor and the consumer interests. Thus, we stated in the Natural Gas Pipeline Co. case that ‘regulation does not insure that the business shall produce net revenues.’ But such considerations aside, the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view, it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. The conditions under which more or less might be allowed are not important here. Nor is it important to this case to determine the various permissible ways in which any rate base on which the return is computed might be arrived at. For we are of the view that the end result in this case cannot be condemned under the Act as unjust and unreasonable from the investor or company viewpoint.”

<sup>18</sup> Application, Section 7; Docket 22-COST-546-KSF

1 Most important is that Columbus does not provide any evidence that its capital structure is  
2 reasonable and cost efficient. Without convincing evidence, costs associated with the  
3 excessive equity layer should not be passed on to consumers that fund the KUSF.

4 Staff's capital structure provides the Commission with a means to balance the interests of  
5 the RLEC with the competing interests the public generally. Establishing a subsidy  
6 payment out of the KUSF should balance the interests of the RLECs that receive the subsidy  
7 and Kansas telephony consumers who fund the subsidy, an act that requires that the revenue  
8 requirement be estimated using reasonable and cost-effective inputs. There is no evidence  
9 that a high-equity ratio capital structure is cost-effective for an RLEC. Columbus, like  
10 most Kansas RLECs, has access to relatively low cost debt capital; the KUSF subsidy  
11 should recognize that RLECs have access to low cost debt capital.

12 **Q. Is Staff recommending that Columbus's management change its equity ratio?**

13 A. No, Staff's recommendation pertains only to the capital structure used to calculate the  
14 KUSF revenue requirement. Staff is not requesting that Columbus change its capitalization;  
15 Staff leaves capitalization decisions to company management.

16 **Q. How did you conclude that a hypothetical capital structure with 60% equity is**  
17 **reasonable?**

18 A. Over the course of performing KUSF audits during the past two decades, I have found that  
19 an equity ratio of 60% has been the high-end of the range observed for financial sound  
20 publicly traded telecommunications companies, RLECs, and utilities operating in Kansas.



1 Staff believes the 60% equity ratio provides RLECs with a reasonable return and a  
2 reasonable cost structure for the KUSF subsidy while balancing the competing interests of  
3 consumers.

4 **Q. Did Staff encounter any difficulty in evaluating Columbus' capitalization?**

5 A. No, there is ample information in the Application to evaluate Columbus' capitalization.  
6 Staff relies on the Application, the KCC Annual Report, and reports by the Applicant's  
7 outside auditor. Those sources provided a clear and comprehensive look at Columbus' and  
8 its parent cooperative's sources of capital.

9 Across all types of utility revenue requirement filings, Staff looks to the consolidated capital  
10 structure of the ultimate parent company to determine capitalization as that is the entity the  
11 controls the regulated subsidiaries' capital structure. In this instance, the actual capital  
12 structure of the parent was not appropriate to use in setting KUSF support, it also contained  
13 a heavy proportion of equity capital. Staff's analysis found that a contributing factor to the  
14 thick equity ratio is the parent's investment in marketable securities,<sup>19</sup> securities that were  
15 held by the regulated entity prior to the corporate restructuring and are now held by the  
16 parent.<sup>20</sup> The parent holding those securities is not problematic, but it will likely mean that  
17 its capitalization will always have a relatively thick layer of equity as it appears these assets  
18 are not offsetting a liability.

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<sup>19</sup> Application (Confidential Version) 22-COST-546-KSF; Auditor Review of Columbus Telephone Company, Inc.,  
Note 11; pdf pp. 106-108.

<sup>20</sup> See Dockets 12-COST-923-COC and 12-CBST-924-CCS

1 **Cost of Debt**

2 **Q. What cost of debt do you use in Columbus's ROR?**

3 A. I recommend using 4.16%, Columbus' embedded cost of debt.<sup>21</sup> It is also a cost of debt  
4 consistent with debt costs experienced by other RLECs in Kansas.

5 **Summary of Cost of Equity Models**

6 **Q. Please provide an overview of the methods you relied on to arrive at 9.60% ROE.**

7 A. To estimate the RLEC's cost of equity, I applied the same financial models as I do for  
8 regulated natural gas distribution and electric utilities. I applied capital asset pricing models  
9 (CAPM) and reviewed the options of applying discounted cash flow (DCF) models to a  
10 group of telecommunications companies.

11 **Q. Which models do you believe are the most informative to estimate an RLEC's cost of  
12 equity capital?**

13 A. I consider the CAPM is the most informative for estimating an ROE for Columbus and  
14 similar RLECs. At this point in time it is simply not possible to apply a DCF analysis to  
15 the publicly traded companies that could serve as the proxy group for Kansas RLECs and  
16 expect it to produce meaningful information. Staff has relied on a proxy group consisting  
17 of five telecommunications companies. For the members of this group, at this point in time,

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<sup>21</sup> Application, Section 7; Docket 22-COST-546-KSF  
Columbus Telephone Company, Inc. Independent Accountant's Review Report and Consolidated Financial  
Statements with Supplementary Information, Notes to Consolidated Financial Statements December 31, 2021 &  
2020; Note 5. (Attached to Confidential Application)

1 the forecasted earnings growth rates vary widely from -32.80% to 86.80% and of those  
2 growth rate observations, one-third of those projected growth rate observations are negative.  
3 The DCF model requires stable growth in earnings and divide, either in a singular, constant  
4 rate or occurring in several distinct, predictable phases. Most of the members of the proxy  
5 group fail this requirement, exhibiting growth forecasts that are far too high or low to expect  
6 them to continue beyond the analysts' three to five year horizon. The DCF model is merely  
7 an equation, with negative or volatile growth forecasts the DCF equation falls apart and  
8 cannot produce reasonable, realistic, and informative results. The CAPM is informative  
9 because it can provide a look at investors' required return in the current capital markets  
10 without the need for analysts' forecasted earnings growth rates.

## 11 **Discussion of Staff's Cost of Equity Analysis**

### 12 **Proxy Group Selection**

13 **Q. How did you select a proxy group for your analysis?**

14 A. I began with the FCC proxy group<sup>22</sup> and eliminated companies: 1) that do not pay a  
15 dividend; 2) that are not followed by Value Line Investment; and 3) that do not have growth  
16 rate estimates reported by Value-Line, YahooFinance, or Zacks Research. These screens  
17 ensured that the analysis is performed on a group of companies in the relevant industry with  
18 publicly available financial data.

---

<sup>22</sup> Prescribing the Authorized Rate of Return; Analysis of Methods for Establishing Just and Reasonable Rates for Local Exchange Carriers; Wireline Competition Bureau, Staff Report; WC Docket No. 10-90; May 16, 2013. Appendix I3.

**FCC Proxy Group**

|                                      |      |
|--------------------------------------|------|
| Alaska Communications Systems Group  | ACS  |
| Alteva                               | ALTV |
| AT&T                                 | T    |
| Century Link                         | CTL  |
| Cincinnati Bell                      | CBB  |
| Consolidated Communications Holdings | CNSL |
| FairPoint                            | FRP  |
| Frontier Communications Corp         | FTR  |
| Hawaiian Telecom                     | HCOM |
| Hickory Tech Corp                    | HTCO |
| Lumos                                | LMOS |
| New Ulm                              | NULM |
| Shenandoah Telecommunications Co     | SHEN |
| Telephone & Data Systems             | TDS  |
| Verizon                              | VZ   |
| Windstream                           | WIN  |

Source:  
Connect America Fund, WC Docket No. 10-90,  
Report and Order, May 16, 2016; Appendix I

1

2 With each passing year since the FCC Staff Report in 2013<sup>23</sup> and related follow up reports,  
3 the number of telecommunications companies that can meet the selection criteria falls.  
4 Several of those in the FCC Proxy Group have merged or eliminated dividends, and that  
5 group is smaller. There are five companies that meet Staff's selection criteria.

**KCC Staff Proxy Group**

|  |      |
|--|------|
| AT&T   | T    |
| Lumen Technologies, (formerly, Century Link) | LUMN |
| Shenandoah Telecommunications Co             | SHEN |
| Telephone & Data Systems                     | TDS  |
| Verizon                                      | VZ   |

6

7 Each of the proxy companies provides local exchange services in addition to other services,

<sup>23</sup> Prescribing the Authorized Rate of Return; Analysis of Methods for Establishing Just and Reasonable Rates for Local Exchange Carriers; Wireline Competition Bureau, Staff Report; WC Docket No. 10-90; May 16, 2013.

1 such as digital subscriber line, broadband internet access, cable television, and wireless. It  
2 would be ideal to have a group of companies strictly in the business of providing local  
3 exchange services in rural areas; such companies simply do not exist.

4 **Q Because of these other lines of business and services, do the cost of equity estimates for**  
5 **the proxy companies include growth potential and earnings that do not apply to RLEC**  
6 **services?**

7 A Yes, each of the proxy companies is engaged in other segments of the telecommunications  
8 industry and these services have higher growth rates and potential earnings than services  
9 that are under the KUSF umbrella. These other services are provided in a competitive  
10 environment. The local wire-line services that most RLECs in Kansas provide do compete  
11 against other wire-line services, but at the same time, the Kansas RLECs have access to  
12 state and federal subsidies to stabilize cash-flows, recover invested capital, and earn their  
13 allowed return. Support from the KUSF and USF enable RLECs to recoup costs of  
14 providing service and capital investments without raising local rates, thus reducing their  
15 risks of recovering capital investments. In addition to these subsidies, a local telephone  
16 company that has opted for traditional rate of return regulation in Kansas can file for a  
17 revenue adjustment (either through the KUSF or local rates) when it fails to earn its allowed  
18 return on capital. Rate of return established revenue streams and regulation are not an  
19 option for the business units of the proxy companies operating in a competitive  
20 environment, thus making those competitive services riskier than the KUSF supported  
21 services.

1 **CAPM Analysis**

2 **Q. Please describe the CAPM?**

3 A. The CAPM is an important tool of finance because it offers an explanation of the positive  
4 relationship between risk and equity returns required by investors.<sup>24</sup> It is one of the  
5 cornerstone financial models. For example, every merger and acquisition analysis  
6 performed by an investment banker involving a Kansas utility has incorporated a CAPM  
7 analysis as a critical component of the valuation process. It is appealing to regulators  
8 because it meets the legal standards I discussed above, as it incorporates current data from  
9 the financial markets and the unique risks of the utility in question.

10 
$$K_e = R_f + \text{Beta} (R_m - R_f) \text{ or}$$

11 
$$K_e = R_f + \text{Beta} (R_p)$$

12 Where:

13  $K_e$  = required return on equity

14  $R_f$  = return on a risk-free security

15  $R_m$  = an expected return from the market as a whole

16  $R_p$  = risk premium available to investors through purchasing common stocks instead of risk-free  
17 securities often calculated as  $R_m - R_f$

18  $\text{Beta}$  = volatility of the security's or portfolio's return relative to the volatility of the market's return  
19 with the market beta equal to 1.0

20 **Rf**

21 The  $R_f$  estimate is the interest rate investors believe represents a riskless return. Although  
22 it is a simple concept, the answer is not universally agreed upon. It is widely accepted that  
23 a debt instrument issued by the U.S. Government is a risk-free instrument as there is no

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<sup>24</sup> The theoretical support for the CAPM is the work done by Harry Markowitz ("Portfolio Selection," Journal of Finance, March, 1952). W.F. Sharpe added the concept of a risk-free rate of return to the Markowitz model ("A Simplified Model of Portfolio Analysis," Management Science, January, 1963).

1 default risk even though the market price does vary over time. An investment in U.S.  
2 Treasury Bonds is a risk-free investment, if the investor plans to hold it until maturity. It is  
3 from this base risk-free return that is universally available to investors that investors add a  
4 premium to justify taking on additional risks of an investment in equity securities, namely  
5 accepting the volatility of stock prices as opposed to stable periodic interest payments from  
6 U.S. Treasury Bonds.

7 **Beta**

8 The beta coefficient measures the volatility of the return earned by the utility's stock relative  
9 to the volatility of the returns earned by the broader equity market. The broad equity market  
10 is frequently measured using the S&P 500 Index. This measure provides a look at the risk  
11 and volatility of a stock relative to other investments. A stock with a beta of 1 is equally as  
12 volatile as the market as a whole. A stock with a beta of 0.5 is half as volatile as the market.  
13 Value-Line reports that the proxy group has a beta coefficient of 0.86 with a range of 0.65  
14 to 1.00.

15 **Rm**

16 Rm is the expected return on the stock market as measured by a broad market index such  
17 as the S&P 500. This represents the total return consisting of the price change of the index  
18 plus dividends earned for the year.

19 **Rp**

1           The risk premium is the difference between investors' expected return from the stock  
2           market and their expected return from the risk-free investment over the same time period.  
3           The risk premium is written as  $R_m - R_f$ . The market return and the risk-free return should  
4           be taken from the same time period so as to accurately measure the additional return  
5           required by investors to take on the risk of common stocks over the risk-free investment  
6           over that forecasted or historic time period. The risk-premium itself is an important topic  
7           in financial research as it signals the additional return investors demand when taking of the  
8           added risks of investing in equity capital instead of a U.S. Treasury Bond.

9   **Q.   Does the CAPM meet the *Hope-Bluefield* legal standards discussed earlier in your**  
10 **testimony?**

11 A.   Yes, a cost of equity estimate derived from the CAPM meets those legal standards if the  
12       model incorporates current information from the capital markets that investors rely on to  
13       evaluate investment options. This market-based information ensures the cost of equity  
14       estimates evaluate investors' required rate of return or discount rate that reflects the current  
15       economic environment. In the CAPM analysis, such information is the expected returns in  
16       the broad equity market and the return available on risk free investment vehicles.

17 **Q.   Please discuss your CAPM analysis.**

18 A.   I took two distinct approaches to the CAPM analysis that are commonly found in cost of  
19       capital studies in regulatory and asset-valuation arenas. I performed one analysis using  
20       purely historic measures of returns from the stock and bond markets. The other analyses



1 incorporate forecasted returns on debt and equity capital from three different sources. The  
 2 results are different with the two approaches because historic returns on equity stocks are  
 3 significantly higher than forecasted returns. This range reflects the overwhelming evidence  
 4 that expectations for future returns on capital investments are much lower than those  
 5 experienced by investors over the past century. Keep in mind that there are several unique  
 6 and distinct sources for the expected returns on the equity and debt markets and none of  
 7 them are at the level of historic returns.

| <b>Summary of CAPM Findings</b> |  |                |                 |
|---------------------------------|--|----------------|-----------------|
|                                 |  | Lowest<br>Beta | Highest<br>Beta |
| <b>Forecasted Data:</b>         |  |                |                 |
| J.P. Morgan Asset Management    |  | 5.11%          | 6.52%           |
| Black Rock                      |  | 6.69%          | 9.01%           |
| Kroll (f/k/a Duff & Phelps)     |  | 7.04%          | 9.24%           |
| <b>Historic Data:</b>           |  |                |                 |
| Arithmetic Returns              |  | 8.81%          | 11.49%          |
| Geometric Returns               |  | 7.86%          | 9.92%           |
| Lowest Beta, 0.60               |  |                |                 |
| Highest Beta, 1.00              |  |                |                 |

8

9 Both forms of my CAPM analyses incorporate the high and low beta coefficients observed  
 10 in the proxy group. The average beta of the proxy group is about 84% of that exhibited by  
 11 the broad equity market, indicating that these telecommunications companies are viewed as  
 12 slightly less volatile (and less risky) than the broad stock market.

| Beta Coefficients                                     |      |       |
|---|------|-------|
| AT&T  | T    | 0.800 |
| Lumen Tech (Century Link)                             | CTL  | 1.000 |
| Shenandoah Telecommunications Co                      | SHEN | 0.800 |
| Telephone & Data Systems                              | TDS  | 1.000 |
| Verizon   | VZ   | 0.600 |
|   |      | 0.840 |
| Source:<br>Value Line Online gathered August 30, 2022 |      |       |

1

2 **Q. Please describe your forecasted CAPM analyses.**

3 A. For the forecasted CAPM analyses, I obtained forecasts of long-run returns for common  
4 equity and U.S. Treasury Bonds from three distinct sources; J.P. Morgan Asset Management  
5 (JPMAM), BlackRock Investments (BlackRock), and Kroll, Inc. (data formerly published  
6 by Duff & Phelps Corp). Combined, JPMAM and BlackRock oversee more than \$8.5  
7 trillion dollars with individual and institutional clients worldwide. Thus, it is reasonable to  
8 assume their published forecasts influence the expectations of investors beyond just their  
9 own client base. JPMAM and BlackRock each publish annually their views of long-run  
10 (more than 15 years) returns available of numerous asset classes. Their respective forecasts  
11 are not identical, taken together, they provide a range for long-run returns on asset classes  
12 by the largest asset management companies. I routinely review projections published by  
13 other institutional investors and found that JPMAM and BlackRock forecasts are  
14 representative of the institutional investors. Kroll is a global provider of advisory services  
15 to the financial industry and corporations. Those services include forecasts of expected  
16 market returns and risk premium used in valuation studies and portfolio construction.

| <b>Summary of Market Returns<br/>Applied in CAPM Studies</b> |        |
|--|--------|
| <b>Forecasted Market Return Published in 2022</b>            |        |
| J.P. Morgan  | 5.41%  |
| Black Rock   | 7.50%  |
| Kroll (f/k/a Duff & Phelps)                                  | 9.24%  |
| <b>Historic Market Returns 1928-2021</b>                     |        |
| Arithmetic Returns   | 11.82% |
| Geometric Returns  | 9.98%  |

1

2 **Q. How is JPMAM data applied to the CAPM analysis?**

3 A. The forecasts for returns expected on common stocks encompass the next 10 to 15 years.  
4 JPMAM directly manages more than one-trillion dollars of assets making their forecasts an  
5 important indicator of the expectations of sophisticated, institutional investment advisors.  
6 In the last three years, JPMAM and similar institutional investors maintained relatively low  
7 expected returns on common stocks and corporate bonds. The JPMAM's forecasted returns  
8 on common stocks have trended downward over the past decade, generally a product of the  
9 increase in stock prices during this bull market coupled with low inflation and declining  
10 growth.

| <b>J.P. Morgan Asset Management<br/>Long-Term Capital Market<br/>Assumptions<br/>Forecasted 10 to 15 Year<br/>Annual Arithmetic Total Returns</b> |                    |                       |
|---|--------------------|-----------------------|
|   | Large<br>Companies | Mid-Size<br>Companies |
| 2012  | 9.69%              | 11.35%                |
| 2013  | 8.71%              | 10.23%                |
| 2014  | 8.49%              | 9.10%                 |
| 2015  | 7.60%              | 8.34%                 |
| 2016  | 8.09%              | 8.54%                 |
| 2017  | 7.25%              | 8.03%                 |
| 2018  | 6.41%              | 6.39%                 |
| 2019  | 6.03%              | 6.79%                 |
| 2020  | 6.55%              | 7.12%                 |
| 2021  | 5.13%              | 5.73%                 |
| 2022  | 5.16%              | 5.65%                 |

Source:  
<https://am.jpmorgan.com/us/>

1

2 For this CAPM analysis, we are interested in their forecasted returns on common stock in  
3 the U.S. and U.S. Treasury Bonds published by JPMAM to establish the expected return for  
4 the market. JPMAM publishes 10 to 15-year forecasts of expected returns on dozens of  
5 investment asset classes in its annual publication, the Long Term Capital Market Return  
6 Assumptions (LTCMRA).<sup>25</sup> JPMAM forecasts an annual return on common stocks of  
7 5.66% (the average of its forecasted returns on small companies of 6.17%, mid-sized  
8 companies of 5.65%, and large companies of 5.10%). Following the calculations and inputs  
9 through the CAPM equation in line 2 of the following table, the forecasted return on a risk-  
10 free investment, 10-Year U.S. Treasury Bonds, is subtracted from the expected return on  
11 common stocks, resulting in a risk premium of 3.52%. This risk premium is the additional  
12 return necessary to induce investors to take on the added risk associated with common

<sup>25</sup> J.P. Morgan Asset Management, Long-term Capital Market Return Assumptions, 2021 Edition, J.P. Morgan Asset Management (published October of 2020).  
[www.jpmorganinstitutional.com/pages/jpmorgan/am/ia/research\\_and\\_publications/long-term\\_capital\\_market](http://www.jpmorganinstitutional.com/pages/jpmorgan/am/ia/research_and_publications/long-term_capital_market)

1 stocks over that of the risk-free investment in a U.S. Treasury Bond. The beta coefficient  
 2 is applied to the risk premium to ascertain how much of a risk premium is necessary for  
 3 investors to take on risks of investing in utility stocks as opposed to the risk free U.S.  
 4 Treasury Bond.

| <b>Capital Asset Pricing Model -- Forecasted Risk Premium<br/>Using Forecasted Market Returns &amp; Treasury Bond Yields<br/>22-COST-546-KSF</b> |   |                 |                  |                 |
|--|---|-----------------|------------------|-----------------|
|  |   | <u>Low Beta</u> | <u>High Beta</u> | <u>Avg Beta</u> |
| 1) Forecasted Returns on Common Stocks   |   | 5.66%           | 5.66%            | 5.66%           |
| 2) Forecasted Total Return on 10-Year T-Bonds  | - | 2.14%           | 2.14%            | 2.14%           |
| 3) Equity Risk Premium   |   | 3.52%           | 3.52%            | 3.52%           |
| 4) Beta Coefficient  | X | 0.60            | 1.00             | 0.84            |
| 5) Beta Adjusted Risk Premium  |   | 2.11%           | 3.52%            | 2.96%           |
| 6) Forecasted Yield on 10-Year T-Bonds   | + | 3.00%           | 3.00%            | 3.00%           |
| 7) For Cost of Equity  |   | 5.11%           | 6.52%            | 5.96%           |

- 1) Forecasted 10 to 15-year annual arithmetic return on stocks  
J.P. Morgan Asset Management, 2022 Edition.
- 2) Forecasted 10 to 15-year annual arithmetic return on intermediate term  
U.S. Government bonds by J.P. Morgan Asset Management, 2022 Edition.
- 3) Resulting risk premium (1-2).
- 4) Beta coefficient range of proxy group reported by Value-Line.
- 5) Row 3 x Row 4 = asset specific risk premium.
- 6) Forecasted yield on 10-Year U.S. Treasury bonds forecasted by  
J.P. Morgan Asset Management, 2022 Edition (page 10).
- 7) Forecasted cost of equity capital row 5 + row 6.

Sources:  
 J.P. Morgan Asset Management, Long-term Capital Market Return Assumptions,  
 2022 Edition, J.P. Morgan Asset Management

5

6 The expected risk-free yield of 3.00% forecasted by JPMAM is added to the beta specific  
 7 risk premium to arrive at the cost of equity for the given beta coefficients.

8 The next table applies the same methodology using inputs from BlackRock Investments.  
 9 These two capital asset pricing models vary with respect to the precise return each projects

1 that is demanded by investors going forward. What is very apparent is that the models from  
 2 both of these sources project that returns on equity capital in the future will be lower than  
 3 the historic returns. Their view of lower returns is virtually universally accepted across the  
 4 investment banking and asset management industry.

| <b>Capital Asset Pricing Model -- Forecasted Risk Premium</b> |   |          |           |          |
|---|---|----------|-----------|----------|
| <b>Forecasted Market Returns &amp; Treasury Bond Yields</b>   |   |          |           |          |
| <b>by BlackRock Investments</b>                               |   |          |           |          |
| <b>22-COST-546-KSF</b>  |   |          |           |          |
|   |   | Low Beta | High Beta | Avg Beta |
| 1) Forecasted Returns on Common Stocks                        |   | 7.50%    | 7.50%     | 7.50%    |
| 2) Forecasted Total Return on 10+ Year U.S. T-Bonds           | - | 1.70%    | 1.70%     | 1.70%    |
| 3) Equity Risk Premium  |   | 5.80%    | 5.80%     | 5.80%    |
| 4) Beta Coefficients of Proxy Group                           | x | 0.60     | 1.00      | 0.84     |
| 5) Beta Adjusted Risk Premium                                 |   | 3.48%    | 5.80%     | 4.87%    |
| 6) Forecasted Yield on 10-Year T-Bonds                        | + | 3.21%    | 3.21%     | 3.21%    |
| 7) Cost of Equity   |   | 6.69%    | 9.01%     | 8.08%    |

1) Forecasted 25-year annual geometric returns on U.S. common stocks  
 2) Forecasted 25-year annual geometric return on intermediate term Treasury bonds  
 3) Resulting risk premium (1-2)  
 4) Beta coefficient range of proxy group reported by Value-Line.  
 5) Proxy Group risks premium  
 6) Forecasted yield on 10-Year U.S. Treasury bonds published in Survey of Professional Forecasters (Federal Reserve Bank of Philadelphia)  
 7) Forecasted cost of equity capital row 5 + row 6.

Sources:  
<https://www.blackrockblog.com/blackrock-capital-markets-assumptions/>  
<https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/>

5

6 **Q. What is the third source of data used in the forward looking CAPM analyses?**

7 A. Kroll provides forward-looking estimates of an equity risk premium (ERP) and a risk-free  
 8 return. Just as in the previous CAPM equations, the ERP is multiplied by the beta  
 9 coefficient of the proxy group and that product is added to the risk-free rate of return to  
 10 arrive at the cost of capital for those specific assets. As capital markets change, Kroll adjusts

1 its ERP and risk-free return estimates. On April 7, 2022, Kroll raised its ERP from 5.00%  
 2 to 5.50% followed on June 16 by raising the risk-free rate from 3.00% to 3.50%. Kroll  
 3 added the caveat that the risk-free rate should be the highest of 3.50% or the market yield  
 4 on the 20-Year U.S. Treasury Bond as a means to capture any further increases in Treasury  
 5 Bond yields. On September 6, 2022, that market yield was 3.74% so that is what I applied  
 6 in calculation.

| <b>Capital Asset Pricing Model-- Kroll Forecasted Risk Premium<br/>Using Forecasted Market Returns &amp; Treasury Bond Yields<br/>22-COST-546-KSF</b> |          |           |          |
|---|----------|-----------|----------|
|   | Low Beta | High Beta | Avg Beta |
| 1) Kroll U.S. ERP   | 5.50%    | 5.50%     | 5.50%    |
| 2) Beta Coefficient   | x 0.60   | 1.00      | 0.84     |
| 3) Proxy Group Risk Premium   | 3.30%    | 5.50%     | 4.62%    |
| 4) Kroll U.S. Risk-Free Rate of Return*   | +        | 3.74%     | 3.74%    |
| 5) Proxy Group Cost of Equity   | 7.04%    | 9.24%     | 8.36%    |

1) Kroll U.S. Equity Risk Premium as of June 16, 2022  
 2) Beta coefficient range of proxy group reported by Value-Line.  
 3) Resulting risk premium for proxy group (1-2).  
 4) Kroll U.S. Risk-Free Rate of Return as of June 16, 2022\*  
 5) Forecasted Cost of Equity Range for Proxy Group

\*As of June 16, 2022, Kroll recommends a risk-free rate of the higher of 3.50% OR spot market yield on 20-Year U.S. Treasury Bond. On September 6, 2022, spot yield was 3.74%

Sources:  
<https://www.kroll.com/-/media/kroll-images/pdfs/kroll-increases-us-risk-free-rate.pdf>  
<https://www.federalreserve.gov/releases/h15/>

7

8 **Q. Does the historic CAPM corroborate the findings of your forecasted CAPM analyses?**

9 A. The cost of equity calculated using purely historical data are greater than found with the  
 10 three scenarios using forecasted returns. For the historical CAPM, I relied on data of returns  
 11 earned from 1928 through 2021. This outcome is expected in light of the published research  
 12 discussed earlier that future returns in the capital market are unlikely to match those of the  
 13 past 80 years.

**Capital Asset Pricing Model -- Historic Risk Premium  
Based on Historic Arithmetic Risk Premiums  
from 1928 to 2021  
22-COST-546-KSF**

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|  | Low Beta | High Beta | Average<br>Beta |
|--|----------|-----------|-----------------|
| 1) Total Returns on Common Stocks                      | 11.82%   | 11.82%    | 11.82%          |
| 2) Total Return on Government Bonds                    | -        | 5.11%     | 5.11%           |
| 3) Resulting Risk Premium                              | 6.71%    | 6.71%     | 6.71%           |
| 4) Beta Coefficient                                    | x 0.60   | 1.00      | 0.84            |
| 5) Risk Premium  | 4.03%    | 6.71%     | 5.64%           |
| 6) Historic Yield on Government Bonds                  | +        | 4.78%     | 4.78%           |
| 7) Forecasted Cost of Equity Based on Historic Returns | 8.81%    | 11.49%    | 10.42%          |

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- 1) Historic returns on common stocks 1928-2021
- 2) Historic returns on intermediate-term government bonds 1928-2021
- 3) Resulting risk premium (1-2)
- 4) Beta coefficient of the proxy group (Reported by Value-Line)
- 5) Row 3 x Row 4 = Asset Specific Risk Premium
- 6) Historic year-end yield on intermediate-term government bonds 1928-2021
- 7) Forecasted cost of equity capital, row 5 + row 6

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Sources: Damodaran Online  
[http://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/datafile/histretSP.html](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html)  
 & Value-Line Investment Survey.

1

2 If we rely on purely historic data, we have to assume that economic growth rates observed  
 3 in the past 80 years will continue in the future. It is well established that the U.S. economy  
 4 is projected to grow at a slower rate than that experienced in the past. The projected growth  
 5 rate is 4.36% compared to the historic growth rate of 5.93%.<sup>26</sup> This projected growth rate  
 6 is based on long-run projections published by the Social Security Administration, Energy  
 7 Information Administration, Congressional Budget Office, and ExxonMobile.

---

| Historic<br>Nominal GDP (Billion \$'s) |           |
|--|-----------|
| 1929 \$                                | 104.60    |
| 2021 \$                                | 22,996.10 |
| 6.04%                                  |           |

Source: Bureau of Economic Analysis  
[www.bea.gov](http://www.bea.gov)

26



1           Additionally, it would assume that this historical stock market data accurately measures the  
2           past returns. There is evidence that these frequently-quoted historic returns do not present  
3           a complete picture in part due to the beginning period that is often used in the calculation.<sup>27</sup>  
4           The simple step of beginning the measurement period in 1920's brings questions as to  
5           whether the time period represents all of the modern-era securities trading. The beginning  
6           years of that time period is the bottom of the Great Depression and market returns for the  
7           decade coming out of that event were very high. Whether or not 1920's is the best point in  
8           time to begin measuring historic returns, these historic returns are widely reported and  
9           frequently referred to in discussions of the capital markets and potential returns. There are  
10          well-regarded financial publications that focus solely on this type of historic data and how  
11          to apply it in cost of capital studies. Thus, measurements from this time period influences  
12          expectations despite warnings that surround historic economic growth rates and market  
13          returns. I have to agree that the historic data is often cited and is part of the cost of capital  
14          universe, but I believe it has significant limitations and policy makers should give it only  
15          light consideration in their final decision.

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<sup>27</sup> McQuarrie, Edward F, "The Myth of 1926: How Much Do We Know Long-Term Returns on U.S. Stocks?" The Journal of Investing; Winter 2009, p. 96.

| <b>Capital Asset Pricing Model -- Historic Risk Premium<br/>Based on Geometric Historic Risk Premiums<br/>from 1928 to 2021<br/>22-COST-546-KSF</b> |             |              |                 |
|---|-------------|--------------|-----------------|
|   | Low<br>Beta | High<br>Beta | Average<br>Beta |
| 1) Total Returns on Common Stocks   | 9.98%       | 9.98%        | 9.98%           |
| 2) Total Return on Government Bonds   | -           | 4.84%        | 4.84%           |
| 3) Resulting Risk Premium   | 5.14%       | 5.14%        | 5.14%           |
| 4) Beta Coefficient   | x           | 0.60         | 1.00            |
| 5) Risk Premium   | 3.08%       | 5.14%        | 4.32%           |
| 6) Historic Yield on Government Bonds   | +           | 4.78%        | 4.78%           |
| 7) Forecasted Cost of Equity Based on Historic Returns  | 7.86%       | 9.92%        | 9.10%           |

|  |
|--|
| 1) Historic returns on common stocks 1928-2021                             |
| 2) Historic returns on intermediate-term government bonds 1928-2021        |
| 3) Resulting risk premium (1-2)  |
| 4) Beta coefficient of the proxy group (Reported by Value-Line)            |
| 5) Row 3 x Row 4 = Asset Specific Risk Premium                             |
| 6) Historic year-end yield on intermediate-term government bonds 1928-2021 |
| 7) Forecasted cost of equity capital, row 5 + row 6                        |

Sources: Damodaran Online  
[http://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/datafile/histretSP.html](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html)  
 & Value-Line Investment Survey.

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The historic returns data is presented in arithmetic or average returns and as geometric returns. The arithmetic return is the average or mean of the annual returns for each year. A geometric average is the compound return from the series of annual returns; the same string of annual returns across time viewed using two different formulas. It is clear in these tables that are based on the same historic annual return data that these two measures convey drastically different results. The geometric average return is heavily influenced by the sequence of the annual returns while the arithmetic average the sequence does not affect the result. By sequence I refer to taking the same the same annual return data but changing the order in which they occur. Changing the order affects the geometric average, but not the arithmetic average. Which measure produces the best forecast for the future is not clearly

1           determined; there is ample evidence for and against both measure of historic data. Both  
2           historic measures are readily available to investors and cited as a means to establish  
3           expectations for the future, so I include both views in this analysis.

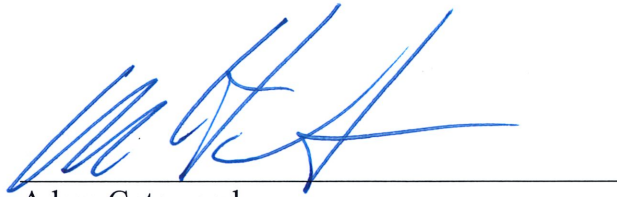
4   **Q.   Does this conclude your testimony?**

5   **A.   Yes.**

STATE OF KANSAS )  
 ) ss.  
COUNTY OF SHAWNEE )

**VERIFICATION**

Adam Gatewood, being duly sworn upon his oath deposes and states that he is a Senior Managing Financial Analyst for the Utilities Division of the Kansas Corporation Commission of the State of Kansas, that he has read and is familiar with the foregoing Direct Testimony, and attests that the statements contained therein are true and correct to the best of his knowledge, information and belief.



Adam Gatewood  
Senior Managing Financial Analyst  
State Corporation Commission of the  
State of Kansas

Subscribed and sworn to before me this 5 day of October, 2022.



Notary Public

My Appointment Expires: 4-28-25

 NOTARY PUBLIC - State of Kansas  
ANN M. MURPHY  
My Appt. Expires 4/28/25

## CERTIFICATE OF SERVICE

22-COST-546-KSF

I, the undersigned, certify that a true and correct copy of the above and foregoing Direct Testimony was served via electronic service this 6th day of October, 2022, to the following:

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*/s/ Ann Murphy*

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Ann Murphy