

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

<b>In the Matter of the Application and</b>	<b>)</b>	
<b>Request of Blue Valley Tele-</b>	<b>)</b>	
<b>Communications, Inc. for an Increase</b>	<b>)</b>	<b>Docket No.</b>
<b>in its Cost-Based Kansas Universal</b>	<b>)</b>	<b>20-BLVT-218-KSF</b>
<b>Service Fund Support</b>	<b>)</b>	

**DIRECT TESTIMONY**

**PREPARED BY**

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**UTILITIES DIVISION**

**KANSAS CORPORATION COMMISSION**

**March 20, 2020**

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

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

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

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

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

7   A.     I graduated from Washburn University with a B.A. in Economics in 1987 and a Masters of

1 Business Administration in 1996. I have filed testimony on cost of capital, capital structure,  
2 and related issues before the Commission in more than 120 proceedings. I have also filed  
3 cost of capital testimony before the Federal Energy Regulatory Commission in natural gas  
4 pipeline and electric transmission revenue requirement complaint dockets.

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

6 A. My testimony contains Staff's rate of return (ROR) for Blue Valley Tele-Communications,  
7 Inc. (Blue Valley or Applicant). The rate of return is an input to Staff's revenue requirement  
8 study that determines Blue Valley's Kansas Universal Service Fund (KUSF) annual  
9 support.

## 10 **How Does Setting KUSF Support Levels Differ From a Rate Case**

11 **Q. How do KUSF Dockets in which the Commission is setting the level of KUSF support**  
12 **for a rural local exchange carrier (RLEC) differ from a typical rate case?**

13 A. In a typical rate case, the revenue requirement is only collected from a utility's customers.  
14 In determining an RLEC's KUSF support, the Commission is not setting a revenue  
15 requirement to determine rates *solely* paid by the RLEC customers; rather, the KUSF  
16 support is coming from all Kansans who pay into the KUSF, which transfers money from  
17 users of telecommunications services in Kansas to the ratepayers of an RLEC so that they  
18 do not have to pay the full cost of those RLEC telephony services. In essence, all Kansans,  
19 either directly or indirectly, are paying a portion of the RLECs' revenue requirements. In  
20 setting revenue requirements for any rate regulated industry, a regulatory agency has to

1 balance the interests of a regulated entity and the consumer. In this instance, “consumers’  
2 interests” encompass all who contribute to the KUSF support mechanism.

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

6 A. Yes, there are challenges in estimating the allowed returns for these KUSF Dockets that are  
7 not present in rate cases for gas and electric utilities. In KUSF Dockets, we are estimating  
8 the capital costs associated with providing a very narrow set of telecommunications  
9 services.<sup>1</sup> The foremost issue is a lack of publicly traded companies whose primary  
10 business is the provision of land-line telephony services in rural areas. Of the few  
11 companies that do provide land-line services to rural areas, that segment of their operations  
12 is a small percent of their total revenues and earnings. As a result of this limited exposure  
13 to RLEC services, investors do not evaluate those companies based on the risks associated  
14 with providing RLEC services, but instead, the risks and growth potential of providing other  
15 telecommunications services such as cellular, internet, and cable television. Despite these  
16 nuances, it is possible to estimate the cost of equity for companies providing RLEC services,  
17 but the stakeholders in this process have to accept a less precise estimate than we would  
18 otherwise have if we had access to a robust proxy group for the analysis. This data  
19 limitation creates a challenge and it is a matter of fact that parties must accept. In spite of

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<sup>1</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           this challenge, there is ample evidence that demonstrates Staff's recommended return on  
2           equity meets the legal requirements of a just and reasonable return to Blue Valley's  
3           members/shareholders.

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

5       A.     Staff overcomes these challenges by relying on data that reflects long-run, forward-looking  
6           returns available in the capital markets applied to financial models like the DCF and CAPM.  
7           Seasoned experts in the financial industry universally rely on these two models to evaluate  
8           investment opportunities.

9       **Q.     Staff has recommended 9.60% return on equity be used in the recent KUSF support**  
10       **calculations. Why has Staff presented the same recommendation?**

11      A.     Staff wants to strike a balance between accurately reflecting the prevailing cost of equity  
12           capital with applying a return uniformly across the entire group of Kansas RLECs. It is the  
13           individual RLECs that decide when to file for a change in KUSF support, and needless to  
14           say, financial market conditions will vary across time. But, as their requests are filed in  
15           close sequence of one another, Staff will attempt to apply a consistent return on equity as  
16           long as it can be justified by the prevailing financial markets. Based on the market data of  
17           the past six months, despite the increased volatility in the markets, I found that the recent  
18           9.60% allowed return on equity is reasonable and should be applied to Blue Valley.

## 19    **Executive Summary**

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

- 1 A. I recommend that the Commission adopt an allowed return (ROR) of 7.22% for the purpose  
2 of setting Blue Valley's KUSF revenue requirement that incorporates a 9.60% return on  
3 equity and a 60% equity ratio.

<b>Staff Cost of Capital Recommendation</b>			
<b>Blue Valley Tele-Communications, Inc</b>			
<b>20-BLVT-218-KSF</b>			
	Weight	Cost	Weighted Avg Cost
Equity	60%	9.60%	5.76%
Debt	40%	3.64%	1.46%
		Rate of Return	7.22%

- 4
- 5 **Q. Please summarize Blue Valley's rate of return request.**

- 6 A. Blue Valley requests the Commission grant it an ROR equal to the 10.25% ROR authorized  
7 by the Federal Communications Commission (FCC) to calculate federal high-cost support.<sup>2</sup>  
8 Section 7 of Blue Valley's Application does not state a specific ROE, just a 10.25% ROR.  
9 Given Blue Valley's capital structure, the requested ROR embodies an ROE of about a  
10 10.50%.

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<sup>2</sup> Connect America Fund, WC Docket No. 10-90, Rate of Return Order, March 23, 2016.

Rate of Return Requested By Blue Valley Tele-Communications, Inc 20-BLVT-218-KSF				
	Balance	Weight	Cost	Weighted Avg Cost
Equity	\$ 43,903,076	97.38%	*	*
Debt	\$ 1,182,936	2.62%	3.64%	*
	\$ 45,086,012		<b>Requested ROR</b>	<b>10.25%</b>
Source: Section 7; Schedule 1 of Application				

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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 it 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) incorporates an ROE greater than the cost of equity set by this Commission (and virtually all regulatory bodies) since the early 2000s. By some measures, the FCC's generic allowed ROR would result in an ROE in excess of 14.00%.<sup>3</sup>

The FCC Report & Order indicates that it is ratcheting down the Authorized ROR each year

<sup>3</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 Inter-carrier 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 from 2016 through 2021. The Authorized ROR for 2020 is 10%. Based on all of the cost  
 2 of capital studies I have prepared from 2016 to the present, the FCC's annual reduction has  
 3 not kept pace with the market reductions in the cost of capital.

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 9.75% and phased in over time
2017	10.75%	
2018	10.50%	
2019	10.25%	*9.75% WACC embodies a 5.87% cost of debt 14.37% ROE with a 54.34% debt ratio
2020	10.00%	
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		

4  
 5 Blue Valley's requested rate of return has no link to returns available in the capital markets.  
 6 Therefore, it fails to conform to the Commission's established practice and fails the basic  
 7 principles set out in the key legal decisions rendered by the U.S. Supreme Court, commonly  
 8 referred to as the "Hope and Bluefield" decisions that are the cornerstone to establishing a  
 9 fair return.<sup>4</sup> For these reasons, the Commission should reject the FCC ROR for Blue Valley,

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<sup>4</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



1 as it has in all past KUSF Dockets.

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

3 **Q. How does your recommendation in this Docket compare to those in recent KUSF**  
 4 **Dockets?**

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

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%
Average Risk Premium of Recent KUSF Dockets						5.47%
* 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						

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 In the far right column is the resulting risk premium provided by the return on equity  
2 advocated by Staff in each docket. The risk premium is the Staff recommended ROE minus  
3 the average yield on Baa/BBB utility bonds reported each week by Value-Line Investment  
4 Survey. For that time period, the risk premium averaged 5.47%. Given the downward trend  
5 of bond yields during 2019 and 2020, an ROE of 9.60% provides Blue Valley a risk  
6 premium of 5.77%, which is slightly more than the risk premiums of past KUSF Dockets  
7 and greater than those observed in gas and electric rate cases. As a point of comparison, in  
8 February of 2020, the Commission granted Atmos Energy Corporation a 9.10% ROE which  
9 was 4.67% premium over BBB/Baa public utility bonds at the time of Staff's analysis in  
10 mid-2019.

11 Allowing for a risk premium over less risky debt investments, as Staff has done, is  
12 consistent with the principles espoused by the Supreme Court in its *Hope* and *Bluefield*  
13 decisions. These types of income producing securities are viewed as alternatives to  
14 investments in utility stocks because, like utility stocks, bonds offer stable valuations and  
15 higher current income, relative to the equity market. Risk premiums vary over time and  
16 across economic and market conditions; thus, there is not a benchmark risk premium or  
17 formula that sets a reasonable return on equity at a given interest rate. The Court's decision  
18 makes it clear that a fair and reasonable return for a utility's equity investors must offer the  
19 opportunity for investors to earn a premium over less risky investment vehicles. The  
20 following table demonstrates that Staff's proposed 9.60% ROE meets that standard; in each  
21 instance, Staff's recommendation provides a premium ranging from 5.77% to 7.87% over  
22 the returns offered by less risky fixed income investments as measured in the current capital

1 markets.

KCC Staff's Risk Premium Over Fixed Income Yields  
Based on a 9.60% Return on Equity

Monthly Averages	10-Year T-Bond Yield <sup>1</sup>	30-Year T-Bond Yield <sup>2</sup>	Baa Corporate Bond Yield <sup>3</sup>	BBB/Baa Utility Bond Yield <sup>4</sup>
October, 2019	1.69%	2.17%	3.92%	3.75%
November, 2019	1.81%	2.28%	3.94%	3.81%
December, 2019	1.86%	2.29%	3.88%	3.79%
January, 2020	1.78%	2.23%	3.78%	3.66%
February, 2020	1.50%	1.97%	3.61%	3.48%
Six Month Average	1.73%	2.19%	3.83%	3.70%

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

Staff Recommended Allowed ROE9.60%

Six Month Average 10-Year Treasury Bond Yield1.73%

Premium Over Average 10-Year Treasury Bond Yield7.87%

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

Staff Recommended Allowed ROE9.60%

Six Month Average 30-Year Treasury Bond Yield2.19%

Premium Over Average 30-Year Treasury Bond Yield7.41%

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

Staff Recommended Allowed ROE9.60%

Six-Month Average BBB/Baa Corporate Bond Yield3.83%

Premium Over Average BBB/Baa Utility Bond Yield5.77%

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

Staff Recommended Allowed ROE9.60%

Six-Month Average BBB/Baa Utility Bond Yield3.70%

Premium Over Average BBB/Baa Utility Bond Yield5.90%

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

5 **A.** There is ample information on the allowed returns granted to gas distribution and electric  
 6 utilities; unfortunately, there is virtually no reporting of the returns granted to local  
 7 exchange carriers across the nation. This comparison to other rate-of-return regulated

1 industries is helpful as allowed returns on other rate of return regulated industries have  
 2 moved in parallel with broad measures of capital costs. Thus, there have been many  
 3 opportunities for regulatory commissions to evaluate evidence on investors' required  
 4 returns. From this data, it is apparent that regulatory commissions concluded that capital  
 5 costs of regulated utilities have trended downward over the past 19 years.

<b>Median Allowed Return on Equity</b>		
<b>Date</b>	<b>Natural</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	9.60
Source: S&P Market Intelligence; RRA		

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7 I am not presenting this table to argue that RLEC services are either more or less risky than  
 8 gas and electric utility services. Instead, I am using this table to highlight that for rate of  
 9 return regulated companies, public service commissions across the country recognize the  
 10 decline in capital costs over the past two decades. Decisions by this Commission have

1 followed the same downward trend.

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

3 **Q. Did you assess the underlying economic environment as you evaluated the capital**  
4 **markets?**

5 A. Yes, an assessment of the macro-economy is always part of Staff's cost of capital studies  
6 so that the Commission can have a broad view of the factors influencing the cost of capital  
7 to utilities they regulate. The information used in my analysis was gathered for the six-  
8 month time period of September 2019 into early March 2020. Within that time period,  
9 January through the first week of March shows increasing volatility in the capital markets  
10 as the novel coronavirus (COVID-19) spread throughout the globe. The World Health  
11 Organization first reported clusters of the virus on January 9, 2020.<sup>5</sup> Through the month of  
12 January, the Chinese government sought to contain the spread through quarantines, travel  
13 restrictions and business closures; these measures did not halt the spread. By late-February  
14 cases of COVID-19 were found on every continent. COVID-19 had an almost immediate  
15 impact on the global manufacturing supply-chain and lower demand for global travel.  
16 These and similar disruptions to a global economy caused immediate downward revisions  
17 to expected growth. In the November 2019 Economic Outlook, the International Monetary  
18 Fund projected the global economy to grow 2.9% in 2020; on March 2<sup>nd</sup> that was revised

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<sup>5</sup> Press release by the World Health Organization, January 9, 2020. <https://www.who.int/china/news/detail/09-01-2020-who-statement-regarding-cluster-of-pneumonia-cases-in-wuhan-china>

1 downward to 2.4%.<sup>6</sup> The OECD's revised outlook assumes that the epidemic in China has  
2 peaked and that outbreaks in other countries are "mild and contained". A longer lasting,  
3 more intensive worldwide epidemic could result in global economic growth as low as 1.5%  
4 for 2020.<sup>7</sup> Specific to the U.S. economy and capital markets, the epidemic has caused one  
5 U.S. investment bank to reduce its earnings forecast on the S&P 500 Index members to flat  
6 or zero growth from 2019 earnings. Prior to this revision, analysts forecasted a 7% growth  
7 in S&P 500 Index earnings for 2020.<sup>8</sup> The U.S. Federal Reserve's Federal Open Market  
8 Committee's (FOMC), recognizing that the U.S. economy is fundamentally strong but  
9 facing evolving risks from the epidemic, voted to cut the federal funds rate 50 basis points.<sup>9</sup>  
10 It is noteworthy that this action occurred outside of the FOMC scheduled meeting, it choose  
11 not to delay the decision until its scheduled meeting on March 17<sup>th</sup>. Inter-meeting actions  
12 are rare but not unprecedented.

13 Prior to COVID-19 epidemic the U.S. and global economies were exhibiting growth and  
14 interest rates that were lower than their historic averages. In addition, the U.S. economy is  
15 experiencing record low unemployment rates. As I discussed earlier, the consensus  
16 estimates projected GDP and earnings growth rates to be positive and consistent with those  
17 experienced in recent years. It appears that investors' expectations changed around mid-

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<sup>6</sup> OECD Interim Economic Assessment Coronavirus: The World Economy at Risk, March 2, 2020.

[https://www.oecd-ilibrary.org/docserver/7969896b-](https://www.oecd-ilibrary.org/docserver/7969896b-en.pdf?expires=1583269380&id=id&accname=guest&checksum=CA9742C0E473F35FE63C358D66EFB368)

[en.pdf?expires=1583269380&id=id&accname=guest&checksum=CA9742C0E473F35FE63C358D66EFB368](https://www.oecd-ilibrary.org/docserver/7969896b-en.pdf?expires=1583269380&id=id&accname=guest&checksum=CA9742C0E473F35FE63C358D66EFB368)

<sup>7</sup> Ibid, p 1.

<sup>8</sup> Seeing Opportunity in Uncertain Times, Barron's, Andrew Bary, March 2, 2020.

<sup>9</sup> Federal Reserve Issues FOMC Statement, March 3, 2020.

<https://www.federalreserve.gov/newsevents/pressreleases/monetary20200303a.htm>

1 February as it became clear that the epidemic would be a global issue affecting growth and  
2 earnings.

3 **Q. Is it necessary for the Commission to form a forecast of the broad economy in order**  
4 **to estimate a reasonable return on equity for the KUSF recipients?**

5 A. In my opinion, it is not necessary for the Commission (or any commission) to make a  
6 forecast of the economy's future or even adopt a specific perspective on the economy's  
7 direction when setting an allowed return. This is because the Commission's focus is on the  
8 investors' required return, which is a product of the investors' expectations for the economy  
9 (not the Commission's expectations). Investors' expectations for the economy are  
10 contained within the Commission's cost of capital decision, provided the Commission's  
11 decision is based on market-derived data such as current stock prices, interest rates, and  
12 other data that conveys investors' outlook for the economy.

13 It is a well-accepted premise that our capital markets are efficient, where investors factor  
14 all available information into their decisions to buy and sell debt and equity securities.  
15 Those decisions establish the prices that are used in cost of capital analyses. Furthermore,  
16 rational, profit-maximizing investors are forward looking. Accordingly, investors  
17 incorporate their own forecasts of the economy into their decisions in their best attempt to  
18 maximize returns. Therefore, the price data incorporates the investors' forecasts for the  
19 economy and those expectations are embedded in the investors' required return that we are  
20 measuring. Granted the market data, stock prices, and interest rates are volatile as market  
21 participants attempt to gauge the effect of the epidemic on the global economy. Market

1 data, as volatile as it is, will continue to be the best information available to estimate a  
2 reasonable cost of capital for KUSF recipients.

3 **Q. Is it reasonable to determine Blue Valley's allowed return at a time when the markets**  
4 **are volatile?**

5 A. Yes, I believe it is reasonable to do so because the financial markets are functioning as they  
6 are supposed to. The volatility is the result of investors revaluing and repricing bonds,  
7 equities, and commodities to reflect the rapidly evolving economic information. The market  
8 information is the best information we have to assess a reasonable return for KUSF  
9 recipients. We also have the benefit of three forward looking capital asset pricing models  
10 (CAPM) each based on long-run forecasts by institutional investors. Because the inputs are  
11 long-run forecasts, they are not moved by the day to day volatility.

## 12 **Corporate Structure**

13 **Q. Please describe Blue Valley.**

14 A. Blue Valley is a Kansas rural local exchange carrier (RLEC) organized as a cooperative  
15 association.

16 **Q. Is its corporate structure as a cooperative a factor in determining the allowed return?**

17 A. It is an important fact, but it does not change the methodology that Staff uses to estimate  
18 the allowed return for KUSF support. The decision was made when Staff began the KUSF  
19 audits that we would estimate the cost of capital for RLECs organized as cooperatives using



1 data from the financial markets as we do for the investor-owned RLECs. Staff's  
2 methodology, which uses market-based financial data to determine the cost of equity in  
3 KUSF support calculations, is reasonable because it balances the competing interests of  
4 setting the KUSF support at a level that provides affordable services to rural customers,  
5 while not burdening the KUSF.

6 Cooperative associations are different from investor-owned public utilities; cooperative  
7 associations' not-for-profit status is the underlying difference between the two.  
8 Cooperatives are set up for the sole purpose of serving the needs of its members who are its  
9 only customers and its only investors. The cooperative's members provide it with equity  
10 capital to finance plant and equipment just as investors provide investor-owned utilities with  
11 equity capital. The key difference between the two types of organizations lies in the  
12 investors' reason for providing equity capital. Common stock holders of investor-owned  
13 utilities make the investment because they expect to share in the company's profits. A  
14 cooperative's members/customers must provide equity capital to their cooperative  
15 associations to finance the plant and equipment that provides them with telephony services.

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

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

18 **A.** The standards for setting a just and reasonable rate of return require that, to be reasonable,  
19 the allowed return must reflect the risks associated with an equity investment in the utility.

1 For the allowed return to be in that reasonable range, it must compensate for those added  
2 risks while capturing a fair proportion of benefits for consumers. The allowed ROE is best  
3 described as the forward-looking discount rate that is necessary to induce equity investors  
4 to commit their capital to the enterprise. Standards used to gauge the fairness and  
5 reasonableness of an allowed ROE have been stated by courts, as the result of appeals of  
6 decisions issued by regulatory agencies. Financial analysts and policy-makers rely on the  
7 courts' decisions as a guide in estimating the appropriate cost of capital. The opinions do  
8 not articulate precisely how to estimate or model a reasonable cost of capital. Instead, the  
9 decisions provide critical questions for policy makers and analysts to consider in  
10 determining a reasonable return for a regulated utility. There are several court cases that,  
11 as a group, are viewed as the keystone to measuring the adequacy of a utility's allowed  
12 return. The earliest of these decisions go back to an era when it was not only the "rate of  
13 return" at issue but also the fundamental measurement of the investment in the utility  
14 enterprise, commonly referred to as rate base. This is less of an issue today as regulators,  
15 utility management, and investors readily accept actual historic-depreciated value as the  
16 measure of investment to estimate the value of a utility's rate base (as opposed to  
17 reproduction cost or market value). The Court's decision in *Bluefield* addressed both rate  
18 base and ROR.<sup>10</sup>

19 United States Supreme Court decisions state that returns granted to regulated public utilities  
20 should: 1) be commensurate with returns on investments of similar risk; 2) be sufficient to

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<sup>10</sup> *Bluefield Water Works & Improvement Co. v. Pub. Svc. Comm'n of West Virginia*, 262 U.S. 679, 692-3 (1923).

1       assure the financial integrity of the utility under efficient economic management; and 3)  
2       change over time with changes in the money market and business conditions.<sup>11</sup> An  
3       important take-away from these decisions is that the Supreme Court of the United States  
4       has afforded regulatory agencies a significant amount of latitude in establishing an  
5       appropriate ROR and ROE for a utility. The Kansas Supreme Court has recognized and  
6       follows this body of law.<sup>12</sup> This Commission has noted this fact in Orders issued in previous  
7       dockets.<sup>13</sup>

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

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

- 14           1) *Comparable Earnings* – a utility is entitled to a return similar to that  
15           being earned by other enterprises with similar risks, but not as high  
16           as those earned by highly profitable or speculative ventures;  
17           2) *Financial Integrity* – a utility is entitled to a return level reasonably  
18           sufficient to assure financial soundness;  
19           3) *Capital Attraction* – a utility is entitled to a return sufficient to  
20           support its credit and raise capital; and

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<sup>11</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).

<sup>12</sup> *Kansas Gas & Elec. Co. v. State Corp. Comm’n*, 239 Kan. 483, 491, 720 P. 2d 1063, 1072 (1986).

<sup>13</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.

- 1           4) *Changing Level of Returns* – a fair return can change along with  
2           economic conditions and capital markets.<sup>14</sup>

3           As a financial analyst formulating rate of return analyses for our state commission, I take  
4           from *Bluefield* that the Court requires a rate Order that allows a utility an opportunity to  
5           earn a return consistent with the utility's risk profile and consistent with observations in the  
6           capital markets. The Court's decision in *Hope*,<sup>15</sup> like that in *Bluefield*, dealt with both  
7           valuation of rate base, as well as rate of return on that rate base. With respect to the rate of  
8           return, the Court in *Hope* affirmed the four standards set out in *Bluefield*.

## 9    **Capital Structure**

10   **Q.    Please describe Blue Valley's capital structure presented in Section 7 of its**  
11   **Application.**

12   **A.    Blue Valley reports a capital structure with over 97% equity. I verified that its equity ratio**  
13   **in Section 7 accurately depicts Blue Valley's actual capitalization.**

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<sup>14</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.

<sup>15</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."

Rate of Return Requested By Blue Valley Tele-Communications, Inc 20-BLVT-218-KSF				
	Balance	Weight	Cost	Weighted Avg Cost
Equity	\$ 43,903,076	97.38%	*	*
Debt	\$ 1,182,936	2.62%	3.64%	*
	\$ 45,086,012	<b>Requested ROR</b>		<b>10.25%</b>
Source: Section 7; Schedule 1 of Application				

1

2 **Q. Did you use Blue Valley's actual capital structure to calculate the ROR?**

3 A. No, I did not because it is exceedingly rare that a regulated utility can justify a nearly debt-  
 4 free capital structure as the optimal, lowest-cost option. Applicants have the burden to  
 5 demonstrate that costs they seek to recover through rates (in this instance, KUSF payments)  
 6 are the lowest reasonable cost. Blue Valley did not provide evidence that its proposed  
 7 capital structure is the lowest cost option. Instead of 97% equity ratio, I recommend that  
 8 the Commission rely on a hypothetical capital structure that contains 40% debt capital and  
 9 60% equity capital to calculate the ROR.

10 **Q. Why are you recommending something other than the actual capital structure?**

11 A. I did so to balance the interests of the RLEC with the competing interests the public  
 12 generally. Establishing a subsidy payment out of the KUSF should balance the interests of  
 13 the RLECs that receive the subsidy and Kansas telephony consumers who fund the subsidy,  
 14 an act that requires that the revenue requirement be estimated using reasonable and cost-  
 15 effective inputs. There is no evidence that an all-equity capital structure is cost-effective  
 16 for an RLEC. Blue Valley, like most Kansas RLECs, has access to relatively low cost debt

1 capital. The KUSF subsidy should recognize that RLECs can employ a lower cost capital  
2 structure than one that is nearly all equity.

3 **Q. Is Staff recommending that Blue Valley's management change its equity ratio?**

4 A. No, absolutely not. Staff's recommendation pertains only to the capital structure used to  
5 calculate the KUSF revenue requirement. Staff is not requesting that Blue Valley change  
6 its capitalization; Staff leaves these types of capitalization decisions to company  
7 management.

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

10 A. Over the course of performing KUSF audits during the past two decades, I have found that  
11 an equity ratio of 60% has been the high-end of the range observed for publicly traded  
12 telecommunications companies, utilities, and RLECs operating in Kansas. Staff believes  
13 the 60% equity ratio provides RLECs with a reasonable return and a reasonable cost  
14 structure for the KUSF subsidy while balancing the competing interests of consumers.

## 15 **Cost of Debt**

16 **Q. What cost of debt do you use in Blue Valley's ROR?**

17 A. Staff's recommendation relies on Blue Valley's embedded cost of debt of 3.64%.

18

1 **Summary of Cost of Equity Models**

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

3 A. To estimate the RLEC's cost of equity, I applied the same financial models as I do for  
4 regulated natural gas distribution and electric utilities. I applied a discounted cash flow  
5 (DCF) analysis and capital asset pricing model (CAPM) to a group of telecommunications  
6 companies.

7 **Q. Why do you believe that 9.60% return on equity is reasonable for Blue Valley?**

8 A. First, my analysis demonstrates that a 9.60% return on equity offers investors a significant  
9 premium over the returns available on less risky fixed income investments. Second, it offers  
10 a risk premium that is wholly consistent with that granted to its peers in recent KUSF  
11 Dockets (see table on page 8).

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

14 A. I am not placing equal weight to each of the results shown in the table because a couple of  
15 those financial models incorporate data that is not representative of the RLEC industry or  
16 the services subsidized under the KUSF umbrella. I place greater reliance on the CAPM  
17 analyses that incorporate long-run, expected returns formulated by institutional investors  
18 and money managers. I find these to be most persuasive as these CAPM analyses recognize  
19 that market returns and interest rates are expected to be lower in the future than those  
20 experienced historically. These forward looking CAPM analyses are also not tied to

1 forecasted earnings growth rates for the proxy group where most of the drivers for earnings  
 2 growth are not related to traditional land-line services of a rural carrier nor are they subject  
 3 to short-term market volatility. Because of that, I am placing little weight on the DCF  
 4 analysis that incorporates forecasted earnings growth of the proxy companies.

<b>Summary of Staff's Cost of Equity Estimates 20-BLVT-218-KSF</b>			
<b><u>Discounted Cash Flow Analyses</u></b>	<b><u>Low</u></b>	<b><u>High</u></b>	<b><u>Average</u></b>
Two-Stage Growth DCF Model: Based on the Average of Short-Term Growth Forecasts & Long-Term nGDP Forecasts	11.93%	13.14%	12.54%
Single-Stage Growth DCF Model: Based on the Long-Term nGDP Forecasts	8.24%	9.45%	8.84%
<b><u>Capital Asset Pricing Models</u></b>			
Based on Historical Return Data, gathered from 1928 to 2019, Reported by Damodaran Online	9.67%	12.55%	11.11%
Based on Forecasted Return Data, gathered from J.P. Morgan Asset Management Long-Term Capital Market Assumptions (2020 edition)	6.85%	9.04%	7.94%
Based on Forecasted Return Data, gathered from BlackRock Investments Projected Long-run Returns Market Assumptions - Geometric Returns (2020 edition)	6.64%	8.93%	7.78%
Based on Forecasted Return Data, gathered from Duff & Phelps Projected Market Risk Premium & Risk Free Return (affirmed September 30, 2019)	7.13%	9.60%	8.36%

5

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

### 7 **Proxy Group Selection**

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



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

<b><u>FCC Proxy Group</u></b>	
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	

6

7 With each passing year since the FCC Staff Report in 2013<sup>17</sup> and related follow up reports,  
 8 the number of telecommunications companies that can meet the selection criteria falls.

<sup>16</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.

<sup>17</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 Several of those in the FCC Proxy Group have merged or eliminated dividends, and that  
2 group is smaller. At this point, there are five companies that meet Staff's selection criteria.

<u><b>KCC Staff Proxy Group</b></u>	
AT&T	T
Century Link	CTL
Shenandoah Telecommunications Co	SHEN
Telephone & Data Systems	TDS
Verizon	VZ

3  
4 Each of the proxy companies provides local exchange services in addition to other services,  
5 such as digital subscriber line, broadband internet access, cable television, and wireless. It  
6 would be ideal to have a group of companies strictly in the business of providing local  
7 exchange services in rural areas; such companies simply do not exist.

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

10 A Yes, each of the proxy companies is engaged in other segments of the telecommunications  
11 industry and these services have higher growth rates than services that are under the KUSF  
12 umbrella. These other services are provided in a competitive environment. The local wire-  
13 line services that most RLECs in Kansas provide do compete against other services, but at  
14 the same time, the Kansas RLECs have access to state and federal subsidies to stabilize  
15 cash-flows, recover invested capital, and earn their allowed return. Support from the KUSF  
16 and USF enable RLECs to recoup costs of providing service and capital investments without

1 raising local rates, thus reducing their risks of recovering capital investments. In addition  
2 to these subsidies, a local telephone company that has opted for traditional rate of return  
3 regulation in Kansas can file for a revenue adjustment (either through the KUSF or local  
4 rates) when it fails to earn its allowed return on capital. Rate of return established revenue  
5 streams and regulation are not an option for the business units of the proxy companies  
6 operating in a competitive environment, thus making those competitive services riskier than  
7 the KUSF supported services.

## 8 **DCF Analysis**

9 **Q. Please discuss the DCF analysis that you performed.**

10 A. The DCF model is one of the most important and frequently cited tools of regulatory  
11 agencies for setting allowed returns because publicly traded regulated utilities exhibit stable  
12 forecasted growth rates and regular dividend payments. Unfortunately, that is not the case  
13 for the telecommunications industry. Unlike the electric and natural gas distribution  
14 industries, the telecommunications growth rates vary widely across companies, as well as  
15 across time, from quarter to quarter. This volatility and lack of predictable growth reduces  
16 the usefulness of a DCF analysis on this industry.

17 **Q. Does the DCF model meet the legal standards discussed earlier in your testimony?**

18 A. Yes, a cost of equity estimate derived from the DCF model meets the legal standards  
19 discussed in Court decisions, if the model incorporates current information from the capital  
20 markets via current stock prices and accurate data that investors use to establish their  
21 discount rate. This market-based information ensures the cost of equity estimates evaluate

1 investors' required rate of return or discount rate that reflects the current economic  
2 environment.

3 The DCF model is a valuation model used by investors to value different types of  
4 investments such as real estate, bonds, and equity securities. The DCF model is a useful  
5 tool to value any investment that involves regular, periodic cash flows. The notion of  
6 discounting a future receipt of cash back to the present so as to place a price or value on an  
7 investment goes back centuries.<sup>18</sup> The premise of the DCF model in the valuation of  
8 common stock is that investors determine the value of a company's common stock by  
9 discounting its future dividend payments back to the present. The foundation of the DCF  
10 model is the process of discounting those future cash flows back to the present at the  
11 investors' required return. An investor's required rate of return is risk-sensitive and  
12 sensitive to the returns available on investments of comparable risk throughout the global  
13 capital markets. In other words, as the risk of the investment increases, so will the investors'  
14 required return. A higher required rate of return decreases the present value of the stream  
15 of dividends that equates to the price of the stock. So, all other variables being equal,  
16 investors price the riskier of two common stocks lower because the cash flows or dividends  
17 are discounted back to the present at a higher rate.

18 The form of the DCF model that regulatory agencies are accustomed to seeing is often  
19 referred to as the Gordon Growth Model, which is a model that values the security at the

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<sup>18</sup> The formal presentation of the DCF model as we use it today dates back to the 1930's in Irving Fisher's book: The Theory of Interest and John Burr Williams' 1938 text: The Theory of Investment Value. These two authors expressed the DCF model in modern economic terms.

1 present value of a stream of cash flows (dividends) growing at a constant rate into  
 2 perpetuity. The basic form of this DCF equation is:

$$3 \quad P_0 = \frac{D_0(1 + g)}{(Ke - g)}$$

4 where:

5  $P_0$  = the value of the common stock or asset

6  $D_0$  = the current dividend of the stock or annual cash flow from the asset

7  $g$  = the annual growth rate of the dividend or cash flow forever

8  $Ke$  = cost of equity or required rate of return for the stockholders

9 Or

10 Stock Price = Annual Dividend / (Req'd Rate of Return – Dividend Growth Rate)

11 This is the form of the equation commonly found in texts regarding finance, investments,  
 12 and asset valuation. Such texts are inclusive of both theory and practical application of the  
 13 DCF model in utility regulatory settings.

14 Regulatory agencies responsible for setting rates and revenue requirements want to know  
 15 the investors' required rate of return or  $Ke$  in the equation. So, we solve the equation for  
 16 that variable. The equation below shows the algebraic isolation of the investors' required  
 17 rate of return. By isolating investors' required rate of return in the equation, we can estimate  
 18 it by knowing the stock's dividend yield and the annual dividend growth rate expected by  
 19 investors. That form of the equation is:

$$20 \quad Ke = \frac{D_0(1 + g)}{P_0} + g$$

21 This equation is frequently written out as:

22 Req'd Rate of Return = (Dividend/Current Stock Price) + Dividend Growth Rate

23 or

24 Required Rate of Return = Dividend Yield + Dividend Growth Rate

Or as commonly abbreviated by regulatory agencies

$$K_e = y + g$$

Where:  $y$  = Dividend Yield

$g$  = Expected Dividend Growth

Through a handful of inputs, the DCF model distills down to an equation, a complex cognitive process performed by investors to value a security. As with any equation that attempts to model behavior, there are a host of assumptions that come along with it. Those assumptions are:

- $K_e$  corresponds only to the specific stream of future dividends, rather than earnings, and that constitutes the source of value;
- the discount rate ( $K_e$ ) must exceed the growth rate ( $g$ );
- the constant growth rate will continue for an indefinite future;
- investors require the same discount rate ( $K_e$ ) each year; and
- there is no external financing.

**Q. Why is it reasonable to accept these assumptions?**

A. The DCF model is attempting to emulate investors' behavior; distilling human behavior into a handful of inputs demands simplifying assumptions. The question becomes whether the assumptions are so contrary to investors' behavior in the real-world that the model output becomes meaningless or illogical. I do not believe the assumptions of the DCF model are contrary to investor behavior and I do not know of any regulatory agency that has dismissed the DCF as being contrary to human behavior. Moreover, there are methods I use to evaluate whether an output falls outside of the realm of reality. For example, the output can be compared with the returns available on other investments such as long-term

1 corporate bonds. There were no observations eliminated using this screen.<sup>19</sup>

2 **Application of the DCF Model**

3 **Q. How did you calculate the dividend yield (y) component of the DCF model?**

4 A. The dividend yield (y) is the easier of the two components to measure as it is easily  
5 observable in daily stock price reports. It is calculated by dividing the stock's annual  
6 dividend payment per share by its market price per share. The calculations of the DCF  
7 model along with the proxy-company growth forecasts appear in the following tables. The  
8 stock prices used in the calculation of the dividend yield appear in Schedule AHG-1. The  
9 first table incorporates a growth forecast based on forecasted earnings per share growth  
10 rates and forecasted long-run nominal GDP growth. As I discuss later, the instability  
11 exhibited in the earnings of these telecommunications companies makes it unwise to place  
12 any weight on these DCF results.

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<sup>19</sup> Staff applies this screen using the interest rates of Baa Utility Bonds and the yields on utility-specific debt shown in the Risk Premium Table. Staff adds 100 basis points to these yields as a minimum risk premium test. Cost of equity observations below this level are eliminated from the average. FERC proceedings apply a similar test for outliers.

The five month average Baa Utility Bond Yield cited in Staff's Risk Premium study was 3.70% + 1.00% minimum risk premium = 4.70% threshold.

<b>Discounted Cash Flow (DCF) Analysis</b> <b>Based on a Two-Stage Growth Estimate</b> <b>20-BLVT-218-KSF</b>						
		1	2	3	4	5
		Dividend Yields		Growth	DCF Estimated	
		Min	Max	Rate	Required Return	
AT&T	T	5.48%	6.58%	4.43%	11.01%	9.91%
Century Link	CTL	6.83%	9.29%	2.56%	11.85%	9.39%
Shenandoah Telecom Co	SHEN	0.67%	1.13%	10.88%	12.01%	11.55%
Telephone & Data Systems	TDS	2.65%	3.89%	18.33%	22.22%	20.98%
Verizon	VZ	4.06%	4.85%	3.77%	8.62%	7.84%
Average of each column		3.94%	5.15%	8.00%	13.14%	11.93%
1) Dividend divided by maximum price observed from August 30, 2019, through March 3, 2020 2) Dividend divided by minimum price observed from August 30, 2019, through March 3, 2020 3) Forecasted long-run growth rate is the average of forecasted 3 to 5 year earnings per share growth and forecasted long-run GDP growth 4) Low-end estimate = col 1 + col 3 5) High-end estimate = col 2 + col 3						

1

2

3

4

5

DCF calculations in this second table utilize forecasted nominal GDP growth as an estimate of long-run growth for the proxy group's dividends. As I discuss later, this view offers a more realistic expectation of potential growth in earnings and dividends from these telecommunications companies.



<b>Discounted Cash Flow (DCF) Analysis</b> <b>Based on nGDP Growth Forecast of 4.30%</b> <b>20-BLVT-218-KSF</b>						
		1	2	3	4	5
		Dividend Yields		Growth	DCF Estimated	
		Min	Max	Rate	Required Return	
AT&T	T	5.48%	6.58%	4.30%	10.88%	9.78%
Century Link	CTL	6.83%	9.29%	4.30%	13.59%	11.13%
Shenandoah Telecom Co	SHEN	0.67%	1.13%	4.30%	5.43%	4.97%
Telephone & Data Systems	TDS	2.65%	3.89%	4.30%	8.19%	6.95%
Verizon	VZ	4.06%	4.85%	4.30%	9.15%	8.36%
Average of each column		3.94%	5.15%	4.30%	9.45%	8.24%
1) Dividend divided by maximum price observed from August 30, 2019, through March 3, 2020 2) Dividend divided by minimum price observed from August 30, 2019, through March 3, 2020 3) Forecasted long-run growth rate is forecasted long-run growth for U.S. nominal GDP 4) Low-end estimate = col 1 + col 3 5) High-end estimate = col 2 + col 3						

1

2 **Q. What is the source of the dividend information?**

3 A. Historic and current dividend information is easily obtained from public subscription  
 4 services such as Value-Line and non-subscription services such as YahooFinance and Zacks  
 5 Research. The DCF model requires a forward-looking dividend payment which is often the  
 6 current year's dividend payment increased by the forecasted growth rate for next year. I  
 7 obtained the 2021 forecasted dividend per share information from Value-Line Investment  
 8 Survey. The Value-Line reports for each of the proxy companies are attached as Schedule  
 9 AHG-2. The following table details the dividend yield calculations for the proxy group.

**Dividend Yields**  
**Prices from August 30, 2019, through March 3, 2020**  
**20-BLVT-218-KSF**

		1	2	3	4	5
		Dividends	Stock Prices		Dividend Yield	
		2021	Low	High	Max.	Min.
AT&T	T	\$ 2.17	\$ 33.01	\$ 39.70	6.58%	5.48%
Century Link	CTL	\$ 1.05	\$ 11.25	\$ 15.30	9.29%	6.83%
Shenandoah Telecom Co	SHEN	\$ 0.33	\$ 29.61	\$ 49.80	1.13%	0.67%
Telephone & Data Systems	TDS	\$ 0.71	\$ 18.28	\$ 26.84	3.89%	2.65%
Verizon	VZ	\$ 2.53	\$ 52.18	\$ 62.22	4.85%	4.06%
				<b>Range:</b>	<b>9.29%</b>	<b>0.67%</b>
				<b>Average:</b>	<b>5.15%</b>	<b>3.94%</b>

- 1) 2020 Dividends per Share Forecasted by Value-Line Investment Survey; December 13, 2019  
2) Minimum 6 month price observed from August 30, 2019 through March 3, 2020  
3) Maximum 6 month price observed from August 30, 2019 through March 3, 2020  
4) Maximum dividend yield available in the market from time period  
5) Minimum dividend yield available in the market from time period

### Forecasted Growth Rates for the DCF Model

**Q. How did you estimate the growth rate in the DCF model?**

A. I relied on a combination of short-term and long-term growth forecasts, the same growth forecasts that investors apply to value common stocks. The appropriate growth estimate to use in the DCF model is that which is expected by the market and factored into investors' analyses to estimate stock prices. The growth rate for the RLEC segment of the telecommunications industry is difficult to determine because of the reasons I discussed regarding declining subscribership. The difficulty stems from trying to ascertain what growth estimate investors apply to the dividend stream over a very long time horizon and, in this instance, we are dealing with growth estimates for a specific segment of the telecommunications industry. At the broad level, the industry is growing while this segment of telephony services is not growing; it is contracting. Thus, as best we can ascertain, there

1 is little to no positive growth for earnings and dividends from this narrow sector of the  
2 industry.

3 **Q. Where did you obtain the short-term growth rate estimates?**

4 A. For my DCF analysis of the telecommunications service providers, I relied on two sources  
5 for projected earnings growth rates: Value-Line Investment Survey and ThomsonFN  
6 (formerly known as Institutional Brokers Estimation Service or I/B/E/S) reported at  
7 YahooFinance.com and Zacks Research. I averaged these earnings growth forecasts  
8 together to arrive at a short-term growth estimate of the proxy companies.

9 Value-Line is a respected source for financial analyses, capital market commentary, and  
10 financial forecasts of publicly traded stocks. Its forecasts and commentary are readily  
11 available to institutional and individual investors. Value-Line's forecasts have been  
12 scrutinized in numerous academic studies and demonstrated to be a good source for  
13 financial forecasts used in the DCF and similar models. As a result, Value-Line is the most  
14 frequently-quoted source for growth forecasts used in regulatory proceedings.

15 ThomsonFN is owned by Thomson-Reuters and its five-year growth estimates are reported  
16 through YahooFinance. The forecasted growth rates it reports provide a different  
17 perspective from Value-Line. These are not growth estimates prepared by ThomsonFN;  
18 they are the forecasts of analysts who actively follow the companies. I incorporated  
19 ThomsonFN forecasts because these are the product of analysts working for institutional  
20 money managers; their decisions and forecasts affect investors' expectations and valuations  
21 of a stock's price.

Growth Rate Summary 20-BLVT-218-KSF												
		Value-Line Historic Data				Forecasted Growth Rates						
		Earnings Growth		Dividend Growth		Value Line		IBES	Zacks	Short-run	Long-term	Average
		10 Year	5 Year	10 Year	5 Year	EPS	DPS	EPS	EPS	Average	nGDP	Growth Rate
AT&T	T	2.50%	6.00%	3.00%	2.00%	5.50%	4.50%	3.79%	4.45%	4.56%	4.30%	4.43%
Century Link	CTL	-8.50%	*	12.00%	-4.00%	1.00%	-12.50%	7.40%	7.40%	0.83%	4.30%	2.56%
Shenandoah Telecom Co	SHEN	5.00%	12.00%	8.00%	9.00%	20.50%	7.50%	24.40%		17.47%	4.30%	10.88%
Telephone & Data Systems	TDS	-4.50%	-4.50%	5.50%	5.50%	7.50%	3.00%	86.60%		32.37%	4.30%	18.33%
Verizon	VZ	5.00%	8.00%	3.00%	3.00%	4.50%	2.00%	2.34%	4.15%	3.25%	4.30%	3.77%
	Min	-8.50%	-4.50%	3.00%	-4.00%	1.00%	-12.50%	2.34%	4.15%	0.83%		2.56%
	Max	5.00%	12.00%	12.00%	9.00%	20.50%	7.50%	86.60%	7.40%	32.37%		18.33%
	Mean	-0.10%	5.38%	6.30%	3.10%	7.80%	0.90%	24.91%	5.33%	11.69%		8.00%

Columns: 1) - 6) Historic 5 & 10 Year & Forecasted growth rates as reported by Value-Line on March 4, 2020

7) 5-year forecasted annual earnings per share growth rate. Consensus forecasts gathered by Thomson-Reuters (aka I/B/E/S) and reported at YahooFinance on March 4, 2020

8) 5-year forecasted annual earnings per share growth rate. Consensus forecasts gathered by Zack's Investments gathered on March 4, 2020

9) Average of 3 to 5-year forecasted annual growth rates (columns 5 through 9)

Long-term forecasted nominal GDP growth rate. Average of long-term forecasts by the U.S. Energy Information Agency and Social Security Administration Office of the Chief Actuary. SSA-OADSI 2019 Trustee Report

11) Average of short-term and long-term growth rates applied in DCF analysis

**Q. Please discuss the importance of the growth rate in the DCF equation.**

A. The growth rate represents the anticipated annual growth rate in cash-flows that investors expect to receive through dividends from the stock. This is a challenging and contentious issue in a DCF analysis for two reasons. First, it is a key element in the DCF model, or any form of a discounted cash flow analysis, because the growth rate has a one-for-one effect on the required return produced by the model. All other factors being equal, a higher growth rate results in an equally higher cost of equity for the utility. Second, it is highly subjective due to the uncertainty about future earnings and dividends, as well as the economy.

**Q Do you believe these short-term, three to five-year earnings growth forecasts are useful for estimating the cost of equity for RLECs in Kansas in these KUSF audits?**

A I believe these growth estimates are of very limited value in a DCF analysis of RLEC segment of the telecommunications industry. In the broad picture of the

1 telecommunications industry, earnings have been volatile. As you can see in the Value-  
2 Line reports in Schedule AHG-2 and the previous table, the proxy group exhibits historic  
3 earnings that have gone from strongly negative to forecasts of double-digit positive growth.  
4 This volatility does not lend itself to estimating a long-run growth rate necessary for use in  
5 DCF analysis.

6 **Q. How do investors estimate the dividend growth rate beyond the three to five-year**  
7 **horizon of the short-term growth forecasts?**

8 A. For the long-term perspective of potential growth, investors rely on forecasts of the broad  
9 economy as measured by annual changes forecasted for the nation's gross domestic product  
10 (GDP). There are sources for long-term growth estimates of this country's GDP that extend  
11 out more than 20 years. Academic texts and investment professionals use these forecasts  
12 in DCF models as a forecast of potential long-term growth of corporate dividend payments.

13 GDP refers to the market value of all final goods and services produced within a country in  
14 a given period. Nominal GDP (nGDP) is that measure of goods and services which includes  
15 effects of price changes - better known as inflation. Inflation must be included for our  
16 forecast because the DCF analysis is interested in the nominal required return. That is to  
17 say, investors' expectations of inflation are contained in their required return. Keep in mind  
18 that the "headline" GDP reported in the media is *real* GDP, which is GDP *less* the inflation  
19 experienced over the measurement period.

20 **Q. Is there evidence that investors depend on forecasts of GDP growth to value common**  
21 **stocks?**

1 A. Yes, academic research has shown that nGDP growth forecasts are an important input to  
2 valuation studies because the analyst has to consider whether a company's annual earnings  
3 can grow as fast as, or even faster than, the broad economy. In two of his books devoted to  
4 the subject of asset valuation, Dr. Aswath Damodaran discusses the nature of a stable  
5 growth rate for DCF models.<sup>20</sup> He argues for viewing nominal economic growth as the  
6 absolute maximum when using a stable-growth model, such as the DCF model we are using.

7 "The stable growth rate cannot exceed the growth rate of the  
8 economy in which a firm operates, but it can be lower. There is  
9 nothing that prevents us from assuming that mature firms will  
10 become a smaller part of the economy and it may, in fact, be the more  
11 reasonable assumption to make. Note that the growth rate of an  
12 economy reflects the contributions of both young, higher growth  
13 firms and mature, stable growth firms. If the former grow at a rate  
14 much higher than the growth rate of the economy, the latter have to  
15 grow at a rate that is lower." (Damodaran on Valuation: Security  
16 Analysis for Investment and Corporate Finance, 2<sup>nd</sup> edition, Aswath  
17 Damodaran, p. 148)

18 "The growth rate of a company cannot be greater than that of the  
19 economy but it can be less. Firms can become smaller over time  
20 relative to the economy. Thus, even though the cap on the growth  
21 rate may be the nominal growth rate of the economy, analysts may  
22 use growth rates much lower than this value for individual  
23 companies." (Damodaran on Valuation: Security Analysis for  
24 Investment and Corporate Finance, 2<sup>nd</sup> edition, Aswath Damodaran,  
25 p.159)

26 It is worth noting that Professor Damodaran cites the nGDP growth projection as a *ceiling*  
27 for long-term growth in most valuation studies. Certainly, there are industries that will

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<sup>20</sup> Investment Valuation: Tools and Techniques for Determining the Value of Any Asset, 2<sup>nd</sup> Edition and Damodaran on Valuation: Security Analysis for Investment and Corporate Finance, 2<sup>nd</sup> Edition.

1           exceed the average for a period of time, but even for those industries, such growth cannot  
2           continue forever.

3   **Q.   Does the view that nGDP growth is a ceiling on long-term earnings growth exist**  
4   **outside of academia?**

5   A.   Yes, valuation analysts carefully consider the long-run growth rates used to value assets  
6       because using an incorrect growth estimate will lead to incorrectly valuing an asset.  
7       Institutions directly involved in asset valuation and asset management that apply valuation  
8       models to analyze potential acquisition and merger transactions recognize that estimates of  
9       firm-specific growth are a driver to the value of an asset; overstating growth would cause a  
10      model to overestimate the value of the asset, which would result in an economic loss to the  
11      investor. These experts also warn of a ceiling to earnings growth rates as being no more  
12      than that of broad economic growth.

13                   “Growth rate: Few companies can be expected to grow faster than the  
14                   economy for long periods. The best estimate is probably the expected long-  
15                   term rate of consumption growth for the industry’s products, plus inflation.”  
16                   (Valuation: Measuring and Managing the Value of Companies, Tim Koller,  
17                   Mark Goedhart, and David Wessels, McKinsey & Co; 4<sup>th</sup> ed, p. 275.)

18       The following quote from J.P. Morgan Asset Management (JPMAM) addresses the macro  
19       or economy-wide measures of profits, and it is consistent with the firm-specific view  
20       expressed by asset valuation experts in that analysts must be aware of the forecasted growth  
21       rates applied in valuation models and how those growth forecasts comport with broad  
22       measures of forecasted economic growth.

1 “One common mistake is to assume that earnings and dividends received by  
2 investors can grow in line with—or even in excess of—overall economic  
3 growth (GDP) in perpetuity. Granted, it is almost a truism that aggregate  
4 earnings must grow at the same pace as the overall economy in the very long  
5 run; otherwise, profits would eventually outstrip the size of the entire  
6 economy or dwindle to an insignificant share of it. But not all of this  
7 earnings growth accrues to existing shareholders. On the contrary, a large  
8 portion of economic growth comes from the birth of new enterprises. Some  
9 commentators suggest (for example, Bernstein and Arnott, 2003; Cornell,  
10 2010) that new enterprises account for more than half of GDP growth in the  
11 U.S., while in some rapidly developing economies new enterprises may  
12 account for the lion’s share of overall economic growth.”<sup>21</sup>

13 Peter L. Bernstein and Robert D. Arnott, referenced in the quote, have both published in  
14 peer-reviewed academic journals and books on investment strategy, as well as building  
15 careers in the field of asset management and investment strategy. Their research suggests  
16 that relying on GDP as the long-run growth estimate could actually be overly optimistic.  
17 Research by Bernstein and Arnott warns practitioners that a portion of nGDP growth is  
18 created by new enterprises and that portion of nGDP growth does not contribute to the  
19 earnings growth of existing enterprises.<sup>22</sup> That notion is particularly important when  
20 evaluating the wire-line operations of the telecommunications industry because it is not  
21 growing even at a rate close to that of the broad economy.

22 It is clear that the linkage between expected economic growth and the growth potential of  
23 corporate earnings and dividends is more than just an academic principle in finance;  
24 professional money managers accept the relationship between GDP growth and corporate  
25 earnings growth when forming their long-run forecasts.

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<sup>21</sup> Long-term Capital Market Return Assumptions: 2015 Estimates and Thinking Behind the Numbers, J.P. Morgan Asset Management, p. 25, <https://am.jpmorgan.com/us/institutional/lcmra>

<sup>22</sup> Earnings Growth: The Two Percent Dilution, William J. Bernstein and Robert D. Arnot, Financial Analysts Journal, September/October 2003, pp 47-55.



1     **Q     Is there a definitive growth trend for the RLEC industry?**

2     A     For the past 20 years, there is a definitive trend in the growth of land-line subscriptions; that  
3           trend is negative, driven by substituting wireless telephone service.<sup>23</sup> Based on reports and  
4           industry research, that trend is likely to continue. I have not found any research material to  
5           suggest that land-line growth will be positive or even flat. For example, Standard & Poors  
6           had this to say regarding growth expectations in the telecommunications industry and its  
7           sub-categories:

8                     Under our baseline economic assumptions, while we expect revenues  
9                     across the telecommunications and cable-TV sectors to be fairly flat  
10                    on an aggregate basis, there are varying prospects for different  
11                    segments. For the wireline sub-segment, we anticipate generally flat  
12                    to negative revenue trends as residential voice customers are lost to  
13                    wireless and to cable competition, and as the pace of new digital  
14                    subscriber-line (DSL) customer additions wanes. In contrast,  
15                    prospects for the wireless industry are considerably better and we  
16                    anticipate that increasing data usage, spurred by the growing  
17                    proportion of smartphones, should somewhat offset lower voice  
18                    yields, which, combined with some increase in subscribers, should  
19                    enable the largest wireless operators to post modest revenue increases  
20                    in 2012. (p4)

21                    In marked contrast to a still-growing wireless industry, landline  
22                    telephone companies continue to see mid-single- to low-double-digit  
23                    erosion of their residential voice customer base. While some of those  
24                    losses are to cable telephony, the more important longer term issue for  
25                    the wireline industry is the continuing, significant loss of voice access  
26                    lines to wireless substitution, as more customers--especially younger  
27                    ones--increasingly choose to have only a wireless device. (p6)<sup>24</sup>  
28

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<sup>23</sup> Wireless Substitution: Early Release of Estimates From National Interview Survey, July-December 2018; National Center for Health Statistics, U.S. Department of Health and Human Services; released June 2019, <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201906.pdf>

<sup>24</sup> Industry Report Card: U.S. Telecommunications And Cable: Some Islands Of Weakness In A Relatively Stable Sea, Standard & Poors' Ratings Direct on the Global Credit Portal, April 25, 2012; [www.standardandpoors.com/ratingsdirect](http://www.standardandpoors.com/ratingsdirect)

1

2 Standard & Poor's reiterated this sentiment in a recent update on the industry: "[i]n wireline,  
3 we expect revenues to decline in the mid-single-digit percent area in the U.S. due to the loss  
4 of voice access lines to wireless substitution, and broadband customers to cable."<sup>25</sup> Thus,  
5 the sentiment underlying the substitution of other services for traditional land-line telephony  
6 service has been in place and recognized by analysts for at least six years.

7 The capital markets recognize that the traditional wire-line services and the basic telephony  
8 services that fall under the KUSF umbrella are not driving the telecommunications  
9 industry's growth. This point is important when it comes to applying the DCF models to  
10 estimate the required return on equity in KUSF audits, such as we are doing here. In  
11 applying the DCF model, it is vital to review the growth forecasts to make certain that they  
12 represent a realistic expectation for the future. Based on the research cited above, we cannot  
13 simply apply a forecasted earnings or dividend growth rate of the telecommunications  
14 industry or telecommunications companies in the proxy group because that would include  
15 the potential of wireless, broadband, and cable television services. Those are not KUSF  
16 covered services. And because of these growth expectations, I believe the best information  
17 available for a DCF analysis of land-line segment of this industry is a forecast of the broad  
18 U.S. economy such as nGDP.<sup>26</sup> The rationale for using this estimate in a DCF analysis is  
19 that, despite volatility of short-term corporate earnings or dividend forecasts, a mature  
20 industry, such as provision of basic telecommunications services, is likely to experience

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<sup>25</sup> Industry Top Trends 2019: Telecommunications, Standard & Poors' Ratings, November 15, 2018, p. 6.

<sup>26</sup> nGDP is a measure of the United States' economic output -- the market value of all final goods and services made within the borders of the country in a year and includes the year-to-year effects of general price increases or inflation.

1 long-term growth *no greater than* that of the general economy, if not lower. The  
2 Commission has found that Staff's use of nGDP growth forecasts in the DCF model is  
3 reasonable and appropriate.<sup>27</sup> In Staff's view, even the nGDP growth forecast could be  
4 overly optimistic for landline telephony services given the rate of product substitutions  
5 occurring.

6 **Q. How did you estimate long-run nominal GDP growth?**

7 A. I averaged the long-run nGDP forecasts of the Energy Information Agency (EIA) and the  
8 Social Security Administration (SSA). The average of these two forecasts composes the  
9 long-run growth estimate in the DCF analysis. The nGDP growth forecasts published by  
10 EIA and SSA are the same sources that I have relied on over the past decade. FERC also  
11 uses these two sources for nGDP estimates.

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<sup>27</sup> Order Setting Annual Cost-Based Kansas Universal Fund Support For LaHarpe Telephone Company, Inc.; June, 26, 2013; Docket No. 12-LHPT-875-AUD; para 20.

### **Nominal GDP Estimates**

Energy Information Agency (EIA) 2019 - 2050	4.23%
Social Security Administration (SSA)	
<u>OADSITrustees Report 2019 - 2095</u>	<u>4.36%</u>
Average	4.29%

Sources:

EIA Annual Energy Outlook 2020, Table B4

Forecasted Nominal GDP, 2019, OADSITrustees Report Office  
of the Chief Actuary, Table V.B1.—Principal Economic Assumptions  
Table V.B2.—Additional Economic Factors

1

2     **Q.     Are these two sources that FERC relies on, the only for long-run GDP forecasts?**

3     A.     There are other sources shown in the table and they are slightly lower, but still consistent  
4     with the EIA and SSA forecasts.

### **Additional GDP Estimates**

Congressional Budget Office Nominal GDP Forecast	3.70%
Federal Reserve Open Market Committee Long-run Forecast	
<u>2.0% Real GDP + 1.9% PCE Inflation</u>	<u>3.95%</u>

Sources:

An Update to the Economic Outlook: 2019-2029,  
Congressional Budget Office, August 2019

Economic Projections of Federal Reserve Board Members  
& Bank Presidents Under Their Individual Assessment  
of Projected Appropriate Monetary Policy, June 2019

5

1     **Q     What do you believe to be an appropriate estimate of growth for this segment of the**  
2     **telecommunications industry?**

3     A     For the services covered by the KUSF and the limited growth expected of those services  
4     provided by the RLEC, I believe the best alternative available for a DCF analysis is using a  
5     forecast of the broad U.S. economy such as nGDP, and even this growth estimate is likely  
6     generous. The rationale for using this estimate in a DCF analysis is that a mature industry  
7     that is in decline, such as provision of basic land-line telecommunications services, is likely  
8     to experience long-term growth no greater than that of the general economy. Below are two  
9     tables of DCF inputs and results. The first table utilizes forecasted earnings and dividend  
10    growth rates for the short-term and forecasted nGDP growth as a long-run growth estimate.  
11    The second table relies only on the nGDP forecasted growth rate, leaving out the volatile  
12    short-term growth forecasts.

<b>Discounted Cash Flow (DCF) Analysis</b> <b>Based on a Two-Stage Growth Estimate</b> <b>20-BLVT-218-KSF</b>						
		1	2	3	4	5
		Dividend Yields		Growth	DCF Estimated	
		Min	Max	Rate	Required Return	
AT&T	T	5.48%	6.58%	4.43%	9.91%	11.01%
Century Link	CTL	6.83%	9.29%	2.56%	9.39%	11.85%
Shenandoah Telecom Co	SHEN	0.67%	1.13%	10.88%	11.55%	12.01%
Telephone & Data Systems	TDS	2.65%	3.89%	18.33%	20.98%	22.22%
Verizon	VZ	4.06%	4.85%	3.77%	7.84%	8.62%
Average of each column		3.94%	5.15%	8.00%	11.93%	13.14%
1) Dividend divided by maximum price observed from August 30, 2019, through March 3, 2020 2) Dividend divided by minimum price observed from August 30, 2019, through March 3, 2020 3) Forecasted long-run growth rate is the average of forecasted 3 to 5 year earnings per share growth and forecasted long-run GDP growth 4) Low-end estimate = col 1 + col 3 5) High-end estimate = col 2 + col 3						

13

<b>Discounted Cash Flow (DCF) Analysis</b> <b>Based on nGDP Growth Forecast of 4.30%</b> <b>20-BLVT-218-KSF</b>						
		1	2	3	4	5
		Dividend	Yields	Growth	DCF Estimated	
		Min	Max	Rate	Required Return	
AT&T	T	5.48%	6.58%	4.30%	9.78%	10.88%
Century Link	CTL	6.83%	9.29%	4.30%	11.13%	13.59%
Shenandoah Telecom Co	SHEN	0.67%	1.13%	4.30%	4.97%	5.43%
Telephone & Data Systems	TDS	2.65%	3.89%	4.30%	6.95%	8.19%
Verizon	VZ	4.06%	4.85%	4.30%	8.36%	9.15%
Average of each column		3.94%	5.15%	4.30%	8.24%	9.45%
1) Dividend divided by maximum price observed from August 30, 2019, through March 3, 2020 2) Dividend divided by minimum price observed from August 30, 2019, through March 3, 2020 3) Forecasted long-run growth rate is forecasted long-run growth for U.S. nominal GDP 4) Low-end estimate = col 1 + col 3 5) High-end estimate = col 2 + col 3						

1

2 **Q What is your conclusion from the DCF analyses?**

3 A. As I discussed in the Executive Summary, I am placing minimal weight on the DCF  
 4 analyses that contain forecasted earnings and dividend growth rates because those growth  
 5 rates are volatile and do not reflect growth associated with land-line telephony services.  
 6 The DCF analyses that relies on long-term growth of the broad economy is somewhat  
 7 informative as it is indicative of the expected returns on equity securities generally, even  
 8 though it is not directly tied to RLEC telephony services.

## 9 **CAPM Analysis**

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

11 A. The CAPM is an important tool of finance because it offers an explanation of the positive

1 relationship between risk and ROR required by investors.<sup>28</sup> It is one of the cornerstone  
2 financial models. For example, every merger and acquisition analysis performed by an  
3 investment banker involving a Kansas utility has incorporated a CAPM analysis as a critical  
4 component of the valuation process. It is appealing to regulators because it meets the legal  
5 standards I discussed above, as it can be structured to incorporate current data from the  
6 financial markets and the unique risks of the utility in question.

7 
$$K_e = R_f + \text{Beta} (R_m - R_f) \text{ or}$$

8 
$$K_e = R_f + \text{Beta} (R_p)$$

9 Where:

10  $K_e$  = required return on equity

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

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

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

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

## 17 **Rf**

18 The  $R_f$  estimate is the interest rate investors believe represents a riskless return. Although  
19 it is a simple concept, the answer is not universally agreed upon. It is widely accepted that  
20 a debt instrument issued by the U.S. Government is a risk-free instrument. An investment  
21 in U.S. Treasury Bonds is a risk-free investment, if the investor plans to hold it until  
22 maturity.

## 23 **Beta**

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<sup>28</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       The beta coefficient measures the volatility of the return earned by the utility's stock relative  
2       to the volatility of the returns earned by the broader equity market. The broad equity market  
3       is frequently measured using the S&P 500 Index. This measure provides a look at the risk  
4       and volatility of a stock relative to other investments. A stock with a beta of 1 is equally as  
5       volatile as the market as a whole. A stock with a beta of 0.5 is half as volatile as the market.  
6       Value-Line reports that the proxy group has a beta coefficient of 0.96 with a range of 0.75  
7       to 1.20.

8       **R<sub>m</sub>**

9       R<sub>m</sub> is the expected return on the stock market as measured by a broad market index such  
10      as the S&P 500. This represents the total return consisting of the price change of the index  
11      plus dividends earned for the year.

12      **R<sub>p</sub>**

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



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

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

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

10  A.     I took two distinct approaches to the CAPM analysis that are commonly found in both cost  
11       of capital studies in regulatory and asset-valuation arenas. I performed one analysis using  
12       purely historic measures of returns from the stock and bond markets. The second analysis  
13       incorporates forecasted returns on debt and equity capital from three different sources. The  
14       results are very different with the two approaches because historic returns on equity capital  
15       are drastically higher, 11.57%, compared to forecasted returns of 6.76% to 8.50%. This  
16       range reflects the overwhelming evidence that expectations for future returns on capital  
17       investments are much lower than those experienced by investors over the past century.  
18       Keep in mind that there are several unique and distinct sources for the forecasted returns  
19       and none of them are anywhere near the level of historic returns.

<b>Summary of CAPM Findings</b>		
	Low Beta	High Beta
Forecasted Data:		
J.P. Morgan Asset Management	6.85%	9.04%
Black Rock	6.64%	8.93%
Duff & Phelps	7.13%	9.60%
Historic Data:		
Arithmetic Returns	9.67%	12.55%

1

2 Both forms of my CAPM analyses incorporate the high and low beta coefficients observed  
3 in the proxy group. The average beta of the proxy group is about 96% of that exhibited by  
4 the broad equity market, indicating that telecommunications companies are viewed as  
5 slightly less volatile (and less risky) than the broad stock market.

<b>Beta Coefficients</b>		
AT&T	T	0.750
Century Link	CTL	1.100
Shenandoah Telecommunications Co	SHEN	1.000
Telephone & Data Systems	TDS	1.200
Verizon	VZ	0.750
		0.960
Source:		
Value-Line Investment Survey, December 13, 2019		

6

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

8 A. For the forecasted CAPM analyses, I obtained forecasts of long-run returns for common  
9 equity and U.S. Treasury Bonds from three distinct sources: J.P. Morgan Asset  
10 Management (JPMAM); BlackRock Investments (BlackRock); and Duff & Phelps.

1 Combined, JPMAM and BlackRock oversee more than \$8.5 trillion dollars with individual  
2 and institutional clients worldwide. Thus, it is reasonable to assume their published  
3 forecasts influence the expectations of investors beyond just their own client base. JPMAM  
4 and BlackRock each publish annually their views of long-run (more than 15 years) returns  
5 available of numerous asset classes. Their respective forecasts are not identical, taken  
6 together, they provide a range for long-run returns on asset classes by the largest asset  
7 management companies. Although it does not manage investments, Duff & Phelps is a  
8 global provider of advisory services to the financial industry and corporations. Those  
9 services include forecasts of expected market returns and risk premium.

<b>Summary of Market Returns Used in CAPM Studies</b>	
<hr/>	
<b>Forecasted Market Return</b>	
J.P. Morgan	6.76%
Black Rock	6.30%
Duff & Phelps	8.50%
 <b>Historic Market Returns 1928-2019</b>	
Arithmetic Returns	11.57%
Geometric Returns	9.71%
<hr/>	

10

11 **Q. Please discuss the expected returns on common stocks as forecasted and published by**  
12 **asset management companies.**

13 A. I reviewed returns expected on common stocks over the next 10 to 15 years. JPMAM  
14 directly manages more than one-trillion dollars of assets making their forecasts an important  
15 indicator of the expectations of sophisticated, institutional investment advisors. J.P.

1 Morgan's forecast is not unique; the expectations of other money management firms are  
 2 similar. In the last three years, these firms maintained relatively low expected returns on  
 3 common stocks and corporate bonds. This information is an indication that sophisticated  
 4 institutional investors continue to expect low returns on investments into the future and that  
 5 has been their expectation for each of the last six years. The following table shows the 10  
 6 to 15-year projected returns published by JPMAM for each of the previous six years; the  
 7 same time period that Staff has advocated the 9.60% ROE for RLECs.

<b>J.P. Morgan Asset Management            Long-Term Capital Market            Assumptions            Forecasted 10 to 15 Year            Annual Arithmetic Total Returns</b>		
	Large Companies	Mid-Size 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%
Source: <a href="https://am.jpmorgan.com/us/">https://am.jpmorgan.com/us/</a>		

8

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

10 A. For this CAPM analysis, we are interested in their forecasted returns on common stock in  
 11 the U.S. and U.S. Treasury Bonds published by JPMAM to establish the expected return for

1 the market. JPMAM publishes 10 to 15-year forecasts of expected returns on dozens of  
2 investment asset classes in its annual publication, the Long Term Capital Market Return  
3 Assumptions (LTCMRA).<sup>29</sup> JPMAM forecasts an annual return on common stocks of  
4 6.76%. The JPMAM's forecasted returns on common stocks has declined over the past four  
5 years, generally a product of the increase in stock prices during this bull market. Following  
6 the calculations and inputs through the CAPM equation in line 2 of the following table, the  
7 forecasted return on a risk-free investment, 10-Year U.S. Treasury Bonds, is subtracted  
8 from the expected return on common stocks, resulting in a risk premium of 4.86%. This  
9 risk premium is the additional return necessary to induce investors to take on the added risk  
10 associated with common stocks over the risk-free investment in a U.S. Treasury Bond. The  
11 beta coefficient is applied to the risk premium to ascertain how much of a risk premium is  
12 necessary for investors to take on risks of investing in utility stocks as opposed to the risk  
13 free U.S. Treasury Bond.

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<sup>29</sup> J.P. Morgan Asset Management, Long-term Capital Market Return Assumptions, 2020 Edition, J.P. Morgan Asset Management (published October of 2019).  
[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)

**Capital Asset Pricing Model -- Forecasted Risk Premium  
Using Forecasted Market Returns & Treasury Bond Yields  
by J.P. Morgan Asset Management  
20-BLVT-218-KSF**

	Low Beta	High Beta
1) Forecasted Returns on Common Stocks	7.26%	7.26%
2) Forecasted Total Return on 10-Year T-Bonds	- 2.40%	2.40%
3) Equity Risk Premium	4.86%	4.86%
4) Beta Coefficient	x 0.75	1.20
5) Beta Adjusted Risk Premium	3.65%	5.84%
6) Forecasted Yield on 10-Year T-Bonds	+ 3.20%	3.20%
7) For Cost of Equity	6.85%	9.04%

- 1) Forecasted 10 to 15-year annual arithmetic return on stocks,  
J.P. Morgan Asset Management, 2020 Edition
- 2) Forecasted 10 to 15-year annual arithmetic return on intermediate term  
U.S. Government bonds, J.P. Morgan Asset Management, 2020 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,  
J.P. Morgan Asset Management, 2020 Edition (page 60)
- 7) Forecasted cost of equity capital row 5 + row 6

Sources:

J.P. Morgan Asset Management, Long-term Capital Market Return Assumptions,  
2020 Edition, J.P. Morgan Asset Management (published October of 2019)

1

2 The expected risk-free yield of 3.20% forecasted by JPMAM is added to the beta specific  
3 risk premium to arrive at the cost of equity for the given beta coefficients of 0.75 to 1.20.

4 The next table applies the same methodology using inputs from BlackRock Investments.  
5 These two capital asset pricing models vary with respect to the precise return each projects  
6 that is demanded by investors going forward. What is very apparent is that the models from  
7 both of these sources project that returns on equity capital in the future will be lower than  
8 the historic returns. Their view of lower returns is virtually universally accepted across the  
9 investment banking and asset management industry.

**Capital Asset Pricing Model -- Forecasted Risk Premium  
Forecasted Market Returns & Treasury Bond Yields  
by BlackRock Investments  
20-BLVT-218-KSF**

	Low Beta	High Beta
1) Forecasted Returns on Common Stocks	6.30%	6.30%
2) Forecasted Total Return on 10+ Year U.S. T-Bonds	-	1.20%
3) Equity Risk Premium	5.10%	5.10%
4) Beta Coefficients of Proxy Group	x	0.75
5) Beta Adjusted Risk Premium	3.83%	6.12%
6) Forecasted Yield on 10-Year T-Bonds	+	2.81%
7) Cost of Equity	6.64%	8.93%

- 
- 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->

1

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

3 A. I relied on data published by Duff & Phelps, a global financial services company. Specific  
 4 to cost of capital estimation, Duff & Phelps provides forward-looking estimates of an equity  
 5 risk premium (ERP) and a risk-free return. Just as in the previous CAPM equations, the  
 6 ERP is multiplied by the beta coefficient of the proxy group and that product is added to the  
 7 risk-free rate of return to arrive at the cost of capital for those specific assets. As capital  
 8 markets change, Duff & Phelps adjusts its ERP and risk-free return estimates; the latest  
 9 update was issued on September 30, 2019.

**Capital Asset Pricing Model -- Duff & Phelps' Forecasted Risk Premium  
Using Forecasted Market Returns & Treasury Bond Yields  
20-BLVT-218-KSF**

	Low Beta	High Beta
1) Duff & Phelps U.S. ERP	5.50%	5.50%
2) Beta Coefficient	x 0.75	1.20
3) Proxy Group Risk Premium	4.13%	6.60%
4) Duff & Phelps U.S. Risk-Free Rate of Return	+ 3.00%	3.00%
5) Proxy Group Cost of Equity	7.13%	9.60%

- 
- 1) Duff & Phelps U.S. Equity Risk Premium (affirmed September 30, 2019)  
 2) Beta coefficient range of proxy group reported by Value-Line & Zack' Investment Research  
 3) Resulting risk premium for proxy group (1-2)  
 4) Duff & Phelps U.S. Risk-Free Rate of Return (affirmed September 30, 2019)  
 5) Forecasted Cost of Equity Range for Proxy Group
- 

Sources:

Valuation Insights, Third Quarter 2019, U.S. Equity Premium Recommendation;  
 September 30, 2019; Duff & Phelps  
<https://www.duffandphelps.com>

1

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

3 A. No, not at all as the cost of equity calculated using purely historical data are significantly  
 4 greater than found with the three scenarios using forecasted returns. For the historical  
 5 CAPM, I relied on data of returns earned from 1928 through 2019. This outcome is  
 6 expected in light of the published research discussed earlier that future returns in the capital  
 7 market are unlikely to match those of the past 80 years.



**Capital Asset Pricing Model -- Historic Risk Premium  
Based on Historic Arithmetic Risk Premiums  
from 1928 to 2019  
20-BLVT-218-KSF**

	High Beta	Low Beta
1) Total Return on Common Stocks	11.57%	11.57%
2) Total Return on Government Bonds	- 5.15%	5.15%
3) Resulting Risk Premium	6.42%	6.42%
4) Beta Coefficient	x 0.75	1.20
5) Risk Premium	4.82%	7.70%
6) Historic Yield on Government Bonds	+ 4.85%	4.85%
7) Forecasted Cost of Equity Based on Historic Returns	9.67%	12.55%

- 
- 1) Historic returns on common stocks 1928-2019  
2) Historic returns on intermediate-term government bonds 1928-2019  
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 1928-2019  
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

1

2 If we rely on purely historic data, we have to assume that certain trends, particularly  
3 economic growth, observed in the past 80 years will continue in the future. It is well  
4 established that the U.S. economy is projected to grow at a slower rate than that experienced  
5 in the past. The projected growth rate is 4.30% compared to the historic growth rate of

6.11% update to include 2019.<sup>30</sup> Additionally, it would assume that this historical stock market data accurately measures the past returns. There is evidence that these frequently-quoted historic returns do not present a complete picture in part due to the beginning period that is often used in the calculation.<sup>31</sup> The simple step of beginning the measurement period in 1920's brings questions as to whether the time period represents all of the modern-era securities trading. The beginning years of that time period is the bottom of the Great Depression and market returns for the decade coming out of that event were very high. Whether or not 1920's is the best point in time to begin measuring historic returns, these historic returns are widely reported and frequently referred to in discussions of the capital markets and potential returns. There are well-regarded financial publications that focus solely on this type of historic data and how to apply it in cost of capital studies. Thus, measurements from this time period likely influence expectations despite warnings that surround historic economic growth rates and market returns. I have to agree that the historic data is often cited and is part of the cost of capital universe, but I believe it has significant limitations and policy makers should give it only light consideration in their final decision.

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

Nominal GDP		
2018	\$	20,580.20
1929	\$	104.60
Growth Rate		6.11%
Source: <a href="http://www.bea.gov">www.bea.gov</a> Bureau of Economic Analysis		

<sup>30</sup>

<sup>31</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.

1     A.     Yes.

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## Schedule AHG-1

						Shenandoah Telecommunications Co (SHEN)			Telephone & Data Systems (TDS)			Verizon (VZ)		
AT&T (T)			CenturyLink (CTL)											
Date	High	Low	High	Low		High	Low		High	Low		High	Low	
9/30/2019	\$ 37.52	\$ 36.66	\$ 11.62	\$ 11.34		\$ 31.12	\$ 30.13		\$ 25.09	\$ 24.01		\$ 59.98	\$ 58.33	
10/7/2019	\$ 37.87	\$ 36.89	\$ 11.92	\$ 11.25		\$ 31.55	\$ 29.61		\$ 25.75	\$ 24.25		\$ 60.59	\$ 58.93	
10/14/2019	\$ 38.53	\$ 37.31	\$ 12.71	\$ 11.57		\$ 31.77	\$ 29.90		\$ 26.07	\$ 24.93		\$ 61.30	\$ 59.56	
10/21/2019	\$ 38.62	\$ 36.54	\$ 13.10	\$ 12.21		\$ 33.04	\$ 30.49		\$ 26.72	\$ 25.67		\$ 61.32	\$ 59.21	
10/28/2019	\$ 39.02	\$ 37.88	\$ 13.36	\$ 12.64		\$ 33.27	\$ 30.25		\$ 26.84	\$ 21.44		\$ 61.34	\$ 60.04	
11/4/2019	\$ 39.58	\$ 38.79	\$ 15.05	\$ 13.07		\$ 41.16	\$ 31.97		\$ 24.47	\$ 22.99		\$ 60.61	\$ 58.96	
11/11/2019	\$ 39.51	\$ 38.69	\$ 15.21	\$ 14.37		\$ 37.50	\$ 35.28		\$ 23.87	\$ 23.22		\$ 59.94	\$ 58.80	
11/18/2019	\$ 39.70	\$ 36.40	\$ 15.29	\$ 14.65		\$ 36.79	\$ 35.34		\$ 23.74	\$ 22.86		\$ 60.03	\$ 59.05	
11/25/2019	\$ 37.96	\$ 36.77	\$ 15.04	\$ 14.27		\$ 37.96	\$ 36.02		\$ 23.98	\$ 23.37		\$ 60.53	\$ 59.13	
12/2/2019	\$ 38.58	\$ 36.91	\$ 14.47	\$ 13.68		\$ 38.42	\$ 36.80		\$ 24.66	\$ 23.09		\$ 61.28	\$ 59.58	
12/9/2019	\$ 38.57	\$ 37.82	\$ 14.40	\$ 13.55		\$ 38.56	\$ 37.09		\$ 24.88	\$ 23.79		\$ 61.63	\$ 60.25	
12/16/2019	\$ 39.26	\$ 38.37	\$ 13.97	\$ 13.08		\$ 40.16	\$ 38.04		\$ 25.14	\$ 23.91		\$ 62.22	\$ 60.69	
12/23/2019	\$ 39.43	\$ 38.90	\$ 13.53	\$ 13.06		\$ 41.10	\$ 39.44		\$ 25.14	\$ 24.64		\$ 62.15	\$ 61.02	
12/30/2019	\$ 39.28	\$ 38.57	\$ 13.43	\$ 12.51		\$ 41.87	\$ 40.21		\$ 25.53	\$ 24.74		\$ 61.69	\$ 60.07	
1/6/2020	\$ 39.55	\$ 38.55	\$ 13.29	\$ 12.47		\$ 43.50	\$ 40.21		\$ 25.03	\$ 24.28		\$ 60.59	\$ 58.80	
1/13/2020	\$ 38.55	\$ 37.77	\$ 14.12	\$ 12.88		\$ 44.45	\$ 42.07		\$ 25.64	\$ 24.07		\$ 60.15	\$ 58.76	
1/20/2020	\$ 39.14	\$ 38.18	\$ 15.25	\$ 13.96		\$ 44.55	\$ 43.57		\$ 25.52	\$ 24.66		\$ 60.82	\$ 60.00	
1/27/2020	\$ 38.80	\$ 36.32	\$ 14.67	\$ 13.60		\$ 44.11	\$ 40.25		\$ 24.43	\$ 22.49		\$ 61.00	\$ 58.34	
2/3/2020	\$ 38.72	\$ 36.80	\$ 14.59	\$ 13.57		\$ 42.93	\$ 40.19		\$ 24.35	\$ 22.59		\$ 60.15	\$ 57.65	
2/10/2020	\$ 38.82	\$ 37.85	\$ 15.30	\$ 13.43		\$ 47.89	\$ 42.18		\$ 24.97	\$ 23.56		\$ 60.35	\$ 57.95	
2/17/2020	\$ 38.68	\$ 38.04	\$ 13.70	\$ 12.98		\$ 49.80	\$ 46.80		\$ 25.61	\$ 22.16		\$ 58.76	\$ 57.76	
2/24/2020	\$ 38.51	\$ 33.01	\$ 13.22	\$ 11.54		\$ 49.03	\$ 42.01		\$ 22.10	\$ 18.28		\$ 58.69	\$ 52.18	
3/2/2020	\$ 37.96	\$ 35.29	\$ 13.15	\$ 11.90		\$ 46.67	\$ 43.64		\$ 21.22	\$ 19.50		\$ 58.05	\$ 54.88	
Minimum		\$ 33.01		\$ 11.25			\$ 29.61			\$ 18.28			\$ 52.18	
Maximum	\$ 39.70		\$ 15.30			\$ 49.80			\$ 26.84			\$ 62.22		
Average	\$ 38.05		\$ 13.43			\$ 38.88			\$ 24.03			\$ 59.63		

Source: YahooFinance

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.



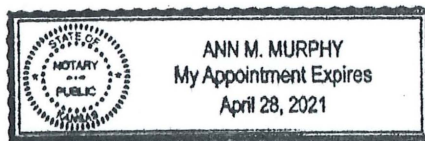
Adam Gatewood  
Senior Managing Financial Analyst  
State Corporation Commission of the  
State of Kansas

Subscribed and sworn to before me this 20 day of March, 2020.



Notary Public

My Appointment Expires: 4-28-21



## CERTIFICATE OF SERVICE

20-BLVT-218-KSF

I, the undersigned, certify that a true and correct copy of the above and foregoing Direct Testimony was served via electronic service this 20th day of March, 2020, to the following:

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