

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

<b>In the Matter of the Application and</b>	)	
<b>Request of United Telephone</b>	)	
<b>Association, Inc. for an Increase in its</b>	)	<b>Docket No.</b>
<b>Cost-Based Kansas Universal Service</b>	)	<b>20-UTAT-032-KSF</b>
<b>Fund Support</b>	)	

**DIRECT TESTIMONY**

**PREPARED BY**

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**UTILITIES DIVISION**

**KANSAS CORPORATION COMMISSION**

**December 13, 2019**

Contents

How Does Setting KUSF Support Levels Differ From a Rate Case ..... 2

Executive Summary ..... 4

Corporate Structure ..... 6

Standards for a Just & Reasonable Rate of Return ..... 7

    Summary of Cost of Equity Models ..... 10

    Risk-Premium Provided by a 9.60% ROE ..... 14

Capital Structure ..... 19

Cost of Debt ..... 21

Discussion of Staff’s Cost of Equity Analysis ..... 21

    Proxy Group Selection ..... 21

    DCF Analysis ..... 24

    Forecasted Growth Rates for the DCF Model ..... 30

    CAPM Analysis ..... 41

    Risk Premium Analysis..... 53

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?**

1 A. I graduated from Washburn University with a B.A. in Economics in 1987 and a Masters of  
2 Business Administration in 1996. I have filed testimony on cost of capital, capital structure,  
3 and related issues before the Commission in more than 120 proceedings. I have also filed  
4 cost of capital testimony before the Federal Energy Regulatory Commission in natural gas  
5 pipeline and electric transmission revenue requirement dockets.

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

7 A. My testimony contains Staff's rate of return (ROR) for United Telephone Association, Inc.  
8 (United or Applicant). The rate of return is an input to Staff's revenue requirement study  
9 that determines United's Kansas Universal Service Fund (KUSF) support.

10 **Q. Describe United.**

11 A. United is organized as a cooperative with 4,066 access lines in Kansas serving Hodgeman,  
12 Finney, Gray, Ford, Haskell, Meade, and Clark counties in Kansas.

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

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

16 A. In a typical rate case, the revenue requirement is only collected from a utility's customers.  
17 In determining an RLEC's KUSF support, the Commission is not setting a revenue  
18 requirement to determine rates solely paid by the RLEC customers, rather the KUSF support  
19 is coming from all Kansans who pay into the KUSF, transferring money from users of

1 telecommunications services in Kansas to the ratepayers of an RLEC so that they do not  
2 have to pay the full cost of those RLEC telephony services. In essence, all Kansans, either  
3 directly or indirectly, are paying a portion of the RLECs' revenue requirements. In setting  
4 revenue requirements for any rate regulated industry, a regulatory agency has to balance the  
5 interests of a regulated entity and the consumer. In this instance, "consumers' interests"  
6 encompass all who contribute to the KUSF support mechanism.

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

10 A. Yes, there are challenges in estimating the allowed returns for these KUSF Dockets that are  
11 not present in rate cases for gas and electric utilities. It is difficult because we are estimating  
12 the capital costs associated with providing a very narrow set of telecommunications  
13 services.<sup>1</sup> The foremost issue is a lack of publicly traded companies whose primary  
14 business is the provision of land-line telephony services in rural areas. Of the few  
15 companies that do provide land-line services to rural areas, that segment of their operations  
16 is a small percent of their total revenues and earnings. As a result of this limited exposure  
17 to RLEC services, investors do not evaluate those companies based on the risks associated  
18 with providing RLEC services, but instead, it is the risks and growth potential of providing  
19 other telecommunications services such as cellular, internet, and cable television. Despite

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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 these nuances, it is possible to estimate the cost of equity for companies providing RLEC  
 2 services, but the stakeholders in this process will have to accept a less precise estimate than  
 3 we would otherwise have if we had access to a robust proxy group for the analysis. This  
 4 data limitation creates a challenge and it is a matter of fact that parties must accept. In spite  
 5 of this challenge, there is ample evidence that demonstrates Staff's recommended return on  
 6 equity meets the legal requirements of a just and reasonable return to United's members.

## 7 **Executive Summary**

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

9 A. I recommend that the Commission adopt an allowed return (ROR) of 7.76% for the purpose  
 10 of setting United's KUSF revenue requirement that incorporates a 9.60% return on equity  
 11 and a 60% equity ratio.

<b>Staff Cost of Capital Recommendation United Telephone Association, Inc. 20-UTAT-032-KSF</b>			
	Weight	Cost	Weighted Avg Cost
Equity	60%	9.60%	5.76%
Debt	40%	5.00%	2.00%
Rate of Return			7.76%

12

13 **Q. Please summarize United's rate of return request.**

14 A. United requests the Commission grant it an ROR equal to the 10.25% ROR authorized by

1 the Federal Communications Commission (FCC) to calculate federal high-cost support.<sup>2</sup>

<b>Effective Rate of Return Requested by United Telephone Association, Inc. 20-UTAT-032-KSF</b>			
	Weight	Cost	Weighted Avg Cost
Equity	100%	*	*
Debt	0%	*	*
Rate of Return			10.25%
Source: Section 7; Schedule 1 of Application; Annual Report			

2

3 The FCC's generic ROR does not meet the cost-based standard that this Commission  
 4 applies when setting revenue requirements for KUSF support. Because the FCC ROR does  
 5 not differentiate between costs of debt and equity capital that is employed by a specific  
 6 RLEC, it does not recognize the cost savings that can result from utilizing debt capital. Nor  
 7 does it reflect the current capital markets as the FCC has not updated the study for several  
 8 years. A review of the FCC's Order indicates that the 10.75% ROR set by the FCC  
 9 incorporates an ROE greater than the cost of equity set by this Commission (and virtually  
 10 all regulatory bodies) since the early 2000s. By some measures, the FCC's generic allowed  
 11 ROR would result in an ROE in excess of 14.00%.<sup>3</sup> United's requested rate of return has

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

<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 Intercarrier Compensation Regime (WC Docket No. 10-90; WC Docket No. 14-58; and CC Docket No. 01-92) Released March 30, 2016. See paragraph 322.

1 no link to returns available in the current capital markets. United’s request fails to conform  
2 the Commission’s established practice and fails the basic principles set out in the key legal  
3 decisions rendered by the U.S. Supreme Court, commonly referred to as the “Hope and  
4 Bluefield” decisions that are the cornerstone to establishing a fair return.<sup>4</sup> For these reasons,  
5 the Commission should reject the FCC ROR for United, as it has in all past KUSF Dockets.

## 6 **Corporate Structure**

7 **Q. Please describe United.**

8 A. United is a Kansas rural local exchange carrier (RLEC) organized as a cooperative  
9 association.

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

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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 14.37percent. 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.

<sup>4</sup> 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). \*603 [8] [9] The rate-making process under the Act, i.e., the fixing of ‘just and reasonable’ rates, involves a balancing of the investor and the consumer interests. Thus, we stated in the Natural Gas Pipeline Co. case that ‘regulation does not insure that the business shall produce net revenues.’ But such considerations aside, the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view, it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. The conditions under which more or less might be allowed are not important here. Nor is it important to this case to determine the various permissible ways in which any rate base on which the return is computed might be arrived at. For we are of the view that the end result in this case cannot be condemned under the Act as unjust and unreasonable from the investor or company viewpoint.

1 A. It is an important fact, but it does not change the methodology that Staff uses to estimate  
2 the allowed return for KUSF support. The decision was made when Staff began the KUSF  
3 audits that we would estimate the cost of capital for RLECs organized as cooperatives using  
4 data from the financial markets as we do for the investor-owned RLECs. Staff's  
5 methodology, which uses competitive, market-based financial estimates to determine the  
6 cost of equity in KUSF support calculations, is reasonable because it balances the competing  
7 interests of setting the KUSF support at a level that provides affordable services to rural  
8 customers, while not burdening the KUSF.

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

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

19 Q. What standards should public utility commissions consider when authorizing a rate  
20 of return?



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

21 In general, United States Supreme Court decisions state that returns granted to regulated

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<sup>5</sup> *Bluefield Water Works & Improvement Co. v. Pub. Svc. Comm'n of West Virginia*, 262 U.S. 679, 692-3 (1923).

1 public utilities should: 1) be commensurate with returns on investments of similar risk; 2)  
2 be sufficient to assure the financial integrity of the utility under efficient economic  
3 management; and 3) change over time with changes in the money market and business  
4 conditions.<sup>6</sup> An important take-away from these decisions is that the Supreme Court of the  
5 United States has afforded regulatory agencies a significant amount of latitude in  
6 establishing an appropriate ROR and ROE for a utility. The Kansas Supreme Court has  
7 recognized and follows this body of law.<sup>7</sup> This Commission has noted this fact in Orders  
8 issued in previous dockets.<sup>8</sup>

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

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

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

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<sup>6</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>7</sup> *Kansas Gas & Elec. Co. v. State Corp. Comm’n*, 239 Kan. 483, 491, 720 P. 2d 1063, 1072 (1986).

<sup>8</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           3) *Capital Attraction* – a utility is entitled to a return sufficient to  
2           support its credit and raise capital; and

3           4) *Changing Level of Returns* – a fair return can change along with  
4           economic conditions and capital markets.<sup>9</sup>

5           As a financial analyst formulating rate of return analyses for our state commission, I take  
6           from *Bluefield* that the Court requires a rate Order that allows a utility an opportunity to  
7           earn a return consistent with the utility’s risk profile and consistent with observations in the  
8           capital markets. The Court’s decision in *Hope*,<sup>10</sup> like that in *Bluefield*, dealt with both  
9           valuation of rate base, as well as rate of return on that rate base. With respect to the rate of  
10          return, the Court in *Hope* affirmed the four standards set out in *Bluefield*.

## 11          Summary of Cost of Equity Models

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

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

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<sup>9</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>10</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.”

1 companies. I also performed a survey of the cost of capital trends in the time since the  
2 recent KUSF Docket with Golden Belt Telephone Association, Inc. which occurred in the  
3 third quarter of 2019 to ascertain how the market cost of capital may have changed.

4 **Q. What are your impressions of the capital markets?**

5 A. My overall impression is that there has been no substantial change in capital costs since I  
6 filed testimony in that Golden Belt Docket (19-GNBT-505-KSF) on October 11, 2019. Just  
7 as I concluded in that Docket, it is still the case that there is no upward pressure on capital  
8 costs from the levels seen over the past decade; if there is a trend in capital costs, it has been  
9 downward. I reviewed the capital markets from several perspectives and found that the  
10 global capital markets continue to be in the same low inflation, slow economic growth, and  
11 low capital market returns that became known as the “new-normal”<sup>11</sup> after the Great  
12 Recession. Interest rates on public utility bonds, forecasted returns published by asset  
13 management firms, and the returns set by public utility commissions for regulated utilities  
14 all indicate the continuation of low cost capital, global growth that is far lower than historic  
15 averages, and low inflation. In fact, corporate bond yields began dropping in December of  
16 2018 and continued through September of 2019, to levels lower than those observed  
17 following the Great Recession and not seen since the mid 1950’s.

18 **Q. Please discuss your observations of interest rates on public utility debt over the past**

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<sup>11</sup> Navigating the New Normal in Industrial Countries, Mohamed A. El-Erian, The Per Jacobsson Lecture (Per Jacobsson Foundation), Washington D.C. October 10, 2010.  
<https://www.imf.org/en/News/Articles/2015/09/28/04/53/sp101010>  
<http://www.perjacobsson.org/lectures/101010.pdf>

1 **four years?**

2 A. The average yield on public utility bonds has declined to the mid-4.00% range since 2013.

<b>Average Utility Debt Yields Reported By Value-Line Investment Survey Annual Averages</b>		
	<u>A/A</u>	<u>Baa/BBB</u>
2006	6.00%	6.34%
2007	6.07%	6.24%
2008	6.32%	6.65%
2009	5.87%	6.90%
2010	5.50%	5.97%
2011	5.03%	5.55%
2012	3.98%	4.42%
2013	4.35%	4.79%
2014	4.29%	4.60%
2015	4.15%	4.54%
2016	3.95%	4.45%
2017	4.01%	4.35%
2018	4.26%	4.61%
2019	3.97%	4.33%

Source: Value-Line Investment Survey

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<b>Average Utility Debt Yields Reported By Value-Line Investment Survey Monthly Averages for 2019</b>		
	<u>A/A</u>	<u>Baa/BBB</u>
January	4.36%	4.76%
February	4.29%	4.66%
March	4.20%	4.56%
April	4.11%	4.47%
May	4.02%	4.37%
June	4.25%	4.60%
July	3.68%	4.02%
August	3.25%	3.63%
September	3.37%	3.75%
October	3.38%	3.75%
November		
December		

Source: Value-Line Investment Survey

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5 Interest rates on public utility debt and the cost of equity move in the same direction,

1           although not in lock-step with one another. Current interest rates have moved downward,  
2           below levels seen in past dockets, which is an indication that there is a downward movement  
3           in the cost of capital from 2008 to the present.

4   **Q.    Why do you believe that 9.60% return on equity is reasonable for United?**

5   A.    First, my analysis demonstrates that a 9.60% return on equity offers investors (United's  
6           members) a significant premium over the returns available on less risky fixed income  
7           investments. Second, it is also a risk premium that is wholly consistent with that granted to  
8           its peers in recent KUSF Dockets (see table on p. 15).

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

11 A.    I would not place equal weight to each of the results shown in the table as a couple of those  
12           financial models incorporate data that may not be wholly representative of the RLEC  
13           industry. To arrive at the 9.60% ROE recommendation, I place greater reliance on the  
14           CAPM analyses that incorporates expected returns. I find these to be most persuasive as  
15           these CAPM analyses recognize that market returns and interest rates are expected to be  
16           lower in the future than those experienced historically. These forward looking CAPM  
17           analyses are also not tied to forecasted earnings growth rates for the proxy group where  
18           most of the drivers for earnings growth are not related to traditional land-line services of a  
19           rural carrier. Because of that, I am placing little weight on the DCF analysis that  
20           incorporates forecasted earnings growth of the proxy companies.

<b>Summary of Staff's Cost of Equity Estimates 20-UTAT-032-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	11.80%	13.28%	12.54%
Single-Stage Growth DCF Model: Based on the Long-Term nGDP Forecasts	8.20%	9.69%	8.94%
<b><u>Capital Asset Pricing Models</u></b>			
Based on Historical Return Data, gathered from 1928 to 2018, Reported by Damodaran Online	9.26%	12.08%	10.67%
Based on Forecasted Return Data, gathered from J.P. Morgan Asset Management Long-Term Capital Market Assumptions (2019 edition)	5.67%	7.22%	6.44%
Based on Forecasted Return Data, gathered from BlackRock Investments Projected Long-run Returns Market Assumptions - Geometric Returns (2019 edition)	6.52%	8.91%	7.71%
Based on Forecasted Return Data, gathered from Duff & Phelps Projected Market Risk Premium & Risk Free Return	7.35%	9.83%	8.59%

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## 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 that the allowed ROE provides the  
6 RLEC investors over bond yields that we observe in the capital markets. This table contains  
7 the KUSF Dockets of the last seven years beginning in 2012. In these Dockets, Staff's  
8 recommendations have been in the range of 9.60% to 10.50%. As a clearer picture on the  
9 post-recession economy materialized with slower economic growth rates and lower capital  
10 costs, Staff recommended an ROE of 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-ZRNT-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%
<b>Average Risk Premium of Recent KUSF Dockets</b>						<b>5.45%</b>
* Yield on Baa/BBB Utility Bonds reported by Value-Line Investment Survey at date of Staff's testimony						
**Risk premium of Staff's ROE Recommendation over the Baa/BBB Utility Bond Yield						

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In the far right column is the resulting risk premium provided by the return on equity advocated by Staff in each docket. The risk premium is the Staff recommended ROE minus the average yield on Baa/BBB utility bonds reported each week by Value-Line Investment Survey. For that time period, the risk premium averaged 5.45%. Given the downward trend of bond yields during 2019, an ROE of 9.60% provides a risk premium of 5.93%, which is slightly more than the risk premiums of past KUSF Dockets and greater than those observed in gas and electric rate cases.

Allowing for a risk premium over less risky debt investments, as Staff has done, is consistent with the principles espoused by the Supreme Court in its *Hope* and *Bluefield* decisions. These types of income producing securities are viewed as alternatives to investments in utility stocks because, like utility stocks, bonds offer stable valuations and higher current income, relative to the equity market. Risk premiums vary over time and across market conditions; thus, there is not a benchmark risk premium or formula that sets



1 a reasonable return on equity at a given interest rate. But the Court's decision makes it clear  
 2 that a fair and reasonable return for a utility's equity investors must offer the opportunity  
 3 for investors to earn a premium over less risky investment vehicles. The following table  
 4 demonstrates that Staff's proposed 9.60% ROE meets that standard; in each instance, Staff's  
 5 recommendation provides a premium ranging from 5.28% to 7.52% over the returns offered  
 6 by less risky fixed income investments as measured in the current capital markets.

<b>KCC Staff's Risk Premium Over Fixed Income Yields</b>				
<b>Based on a 9.60% Return on Equity</b>				
<b>Monthly Averages</b>	<b>10-Year T-Bond Yield<sup>1</sup></b>	<b>30-Year T-Bond Yield<sup>2</sup></b>	<b>Baa Corporate Bond Yield<sup>3</sup></b>	<b>BBB/Baa Utility Bond Yield<sup>4</sup></b>
March, 2019	2.60%	3.00%	4.86%	4.57%
April, 2019	2.54%	2.94%	4.70%	4.43%
May, 2019	2.31%	2.75%	4.60%	4.31%
June, 2019	2.05%	2.56%	4.40%	4.12%
July, 2019	2.08%	2.59%	4.30%	4.02%
August, 2019	1.68%	2.09%	3.86%	3.63%
September, 2019	1.70%	2.15%	3.91%	3.75%
October, 2019	1.69%	2.17%	3.92%	3.74%
<b>Six Month Average</b>	<b>2.08%</b>	<b>2.53%</b>	<b>4.32%</b>	<b>4.07%</b>
<u>Staff's Risk Premium Over the Six-Month Average 10-Year Treasury Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six Month Average 10-Year Treasury Bond Yield	2.08%
			<b>Premium Over Average 10-Year Treasury Bond Yield</b>	<b>7.52%</b>
<u>Staff's Risk Premium Over the Six-Month Average 30-Year Treasury Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six Month Average 30-Year Treasury Bond Yield	2.53%
			<b>Premium Over Average 30-Year Treasury Bond Yield</b>	<b>7.07%</b>
<u>Staff's Risk Premium Over the Six-Month Average BBB/Baa Utility Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six-Month Average BBB/Baa Utility Bond Yield	4.32%
			<b>Premium Over Average BBB/Baa Utility Bond Yield</b>	<b>5.28%</b>
<u>Staff's Risk Premium Over the Six-Month Average BBB/Baa Utility Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six-Month Average BBB/Baa Utility Bond Yield	4.07%
			<b>Premium Over Average BBB/Baa Utility Bond Yield</b>	<b>5.53%</b>
Sources:				
1) Yield on U.S. 10-Year Treasury Bond reported at <a href="https://fred.stlouisfed.org/">https://fred.stlouisfed.org/</a>				
2) Yield on U.S. 30-Year Treasury Bond reported at <a href="https://fred.stlouisfed.org/">https://fred.stlouisfed.org/</a>				
2) Yield on Baa Corporate Bonds reported at <a href="https://fred.stlouisfed.org/">https://fred.stlouisfed.org/</a>				
4) Yield on BBB/Baa Publicly Utility Bonds: Value-Line Investment Survey, Selections and Opinions				

7

1 **Q. For a point of comparison, could you please summarize ROE decisions by this**  
 2 **Commission and Commissions across the country?**

3 A. The first table contains allowed return on equity decisions made by this Commission in  
 4 litigated rate cases. As a point of reference to the prevailing capital markets at that time, I  
 5 included the yield on Baa rated public utility bonds as of the month of the Commission's  
 6 decision. In addition to these Commission determinations, in recent dockets, Staff, CURB,  
 7 intervenors, and Evergy, Inc. reached an agreement to set rates using a return on equity of  
 8 9.30% for Westar (18-WSEE-328-RTS) and Kansas City Power & Light, Company (18-  
 9 KCPE-480-RTS). The Commission issued Orders accepting the terms of these agreements  
 10 on September 27, 2018, and December 13, 2018, respectively.

<b>Risk Premium of Recent Electric and Gas Dockets</b>						
Docket	Testimony Date	Company	Equity Ratio	Staff Recmmd	*BBB/Baa Utility Bond	Resulting Rp
					yld.	
15-KCPE-116-RTS	5/11/2015	Kansas City Power & Light	50.48%	9.25%	4.62%	4.63%
15-WSEE-115-RTS	7/9/2015	Westar Energy	53.12%	9.25%	4.69%	4.56%
16-KGSG-491-RTS	9/7/2016	Kansas Gas Service	55.00%	8.75%	4.05%	4.70%
16-ATMG-079-RTS	12/21/2016	Atmos Energy	56.12%	9.10%	4.74%	4.36%
18-KCPE-095-MER	1/29/2018	Kansas City Power & Light	*	9.30%	4.18%	5.12%
18-WSEE-328-RTS	6/11/2018	Westar Energy	51.24%	9.30%	4.61%	4.69%
18-KCPE-480-RTS	9/12/2018	Kansas City Power & Light	49.09%	9.30%	4.66%	4.64%
18-KGSG-560-RTS	10/29/2018	Kansas Gas Service	55.00%	9.15%	4.96%	4.19%
19-EPDE-223-RTS	5/13/2019	Empire District Electric Co	51.65%	9.30%	4.37%	4.93%
19-ATMG-525-RTS	10/31/2019	Atmos Energy	56.32%	9.10%	3.78%	5.32%
<b>Average Risk Premium from Recent Gas &amp; Electric Dockets</b>						<b>4.71%</b>
* Yield on Baa/BBB Utility Bonds reported by Value-Line Investment Survey at date of Staff's testimony						

11

12 Last of all, we can review the actions of regulatory agencies that set allowed returns for  
 13 natural gas and electric utilities. There is ample information on the allowed returns granted

1 to gas and electric utilities; unfortunately, there is virtually no reporting of the returns  
 2 granted to local exchange carriers across the nation. This comparison to other rate-of-  
 3 return regulated industries is helpful as allowed returns on other rate of return regulated  
 4 industries have moved in parallel with broad measures of capital costs. Thus, there have  
 5 been many opportunities for regulatory commissions to evaluate evidence on investors'  
 6 required returns. From this data, it is apparent that regulatory commissions concluded that  
 7 capital costs have trended downward over the past 19 years.

<b>Median Return on Equity</b>		
	<b>Natural</b>	
<b>Date</b>	<b>Gas</b>	<b>Electric</b>
12/31/2000	11.16%	11.50%
12/31/2001	11.00%	11.00%
12/31/2002	11.00%	11.28%
12/31/2003	11.00%	10.75%
12/31/2004	10.50%	10.70%
12/31/2005	10.40%	10.35%
12/31/2006	10.50%	10.23%
12/31/2007	10.20%	10.20%
12/31/2008	10.45%	10.30%
12/31/2009	10.26%	10.50%
12/31/2010	10.10%	10.30%
12/31/2011	10.03%	10.17%
12/31/2012	10.00%	10.08%
12/31/2014	9.78%	9.78%
12/31/2015	9.68%	9.65%
12/31/2016	9.50%	9.75%
12/31/2017	9.60%	9.60%
12/31/2018	9.60%	9.58%
3/30/2019	9.70%	9.70%
6/30/2019	9.73%	9.50%
9/30/2019	9.90%	9.60%

Source: S&P Market Intelligence; RRA

8

9 I am not presenting this table to argue that RLEC services are either more or less risky than

1 gas and electric utility services. Instead, I am using this table to highlight that for rate of  
 2 return regulated companies, public service commissions across the country recognize the  
 3 decline in capital costs over the past two decades.

#### 4 **Capital Structure**

5 **Q. Please describe United's capital structure presented in Section 7 of its Application.**

6 A. United reports a capital structure of 100% equity. I verified that the 100% equity ratio in  
 7 Section 7 accurately depicts United's actual capitalization.

<b>Rate of Return Requested By United Telephone Association, Inc.</b>				
	Balance	Weight	Cost	Weighted Avg Cost
Equity	\$ 66,543,913	100.00%	*	*
Debt	-	0.00%	*	*
	\$ 66,543,913		<b>FCC ROR</b>	<b>10.25%</b>

Source: Section 7; Schedule 1 of Application; Annual Report

8

9 **Q. Did you use United's actual capital structure to calculate the ROR?**

10 A. No, I did not because it is exceedingly rare that a regulated utility can justify a debt-free  
 11 capital structure as the optimal, lowest-cost option. Applicants have the burden to  
 12 demonstrate that costs they seek to recover through rates (in this instance, KUSF payments)  
 13 are the lowest reasonable cost. United did not provide evidence that its proposed capital  
 14 structure is the lowest cost option. Instead of 100% equity, I recommend that the  
 15 Commission rely on a hypothetical capital structure that contains 40% debt capital and 60%

1 equity capital to calculate the ROR.

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

3 A. Establishing a subsidy payment out of the KUSF should balance the interests of the RLECs  
4 that receive the subsidy and Kansas telephony consumers who fund the subsidy, an act that  
5 requires that the revenue requirement be estimated using reasonable and cost-effective  
6 inputs. There is no evidence that an all-equity capital structure is cost-effective for an  
7 RLEC. United, like most Kansas RLECs, has access to relatively low cost debt capital. The  
8 KUSF subsidy should recognize that RLECs can employ a lower cost capital structure than  
9 one that is nearly all equity.

10 **Q. Is Staff recommending that United's management change its equity ratio?**

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

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

16 A. Over the course of performing KUSF audits during the past two decades, I have found that  
17 an equity ratio of 60% has been the high-end of the range observed for publicly traded  
18 telecommunications companies, utilities, and RLECs operating in Kansas. Staff believes  
19 the 60% equity ratio provides RLECs with a reasonable return and a reasonable cost  
20 structure for the KUSF subsidy.

1 **Cost of Debt**

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

3 A. I used a 5.00% cost of debt. Based on my survey of Kansas RLEC annual reports, 5.00%  
4 is a reasonable cost of debt to input for United's ROR calculation.

5 **Discussion of Staff's Cost of Equity Analysis**

6 **Proxy Group Selection**

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

8 A. I began with the FCC proxy group<sup>12</sup> and eliminated companies: 1) that do not pay a  
9 dividend; 2) that are not followed by Value Line Investment; and 3) that do not have growth  
10 rate estimates reported by Value-Line, YahooFinance or Zacks Research. These screens  
11 ensured that the analysis is performed on a group of companies in the relevant industry with  
12 publicly available financial data and growth forecasts.

---

<sup>12</sup> Prescribing the Authorized Rate of Return; Analysis of Methods for Establishing Just and Reasonable Rates for Local Exchange Carriers; Wireline Competition Bureau, Staff Report; WC Docket No. 10-90; May 16, 2013. Appendix I3.

**FCC Proxy Group**

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

Source:

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

1

2 With each passing year since the FCC Staff Report in 2013<sup>13</sup>, the number of  
3 telecommunications companies that can meet the three selection criteria falls. Several of  
4 those in the FCC Proxy Group have merged, and that group is smaller. At this point, there  
5 are five companies that meet Staff's selection criteria.

<sup>13</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.

**KCC Staff Proxy Group**

AT&T	T
Century Link	CTL
Shenandoah Telecommunications Co	SHEN
Telephone & Data Systems	TDS
Verizon	VZ

1

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

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

8 A Yes, each of the proxy companies is engaged in other segments of the telecommunications  
9 industry and these services have higher growth rates than services that are under the KUSF  
10 umbrella. These other services are provided in a competitive environment. The local, wire-  
11 line services that most RLECs in Kansas provide, do compete against other services, but at  
12 the same time, the Kansas RLECs have access to state and federal subsidies to stabilize  
13 cash-flows, recover invested capital, and earn their allowed return. Support from the KUSF  
14 and USF enable RLECs to recoup costs of providing service and capital investments without  
15 raising local rates, thus reducing their risks of recovering capital investments. In addition  
16 to these subsidies, a local telephone company that has opted for traditional rate of return  
17 regulation in Kansas can file for a revenue adjustment (either through the KUSF or local



1 rates) when it fails to earn its allowed return on capital. Rate of return established revenue  
2 streams and regulation are not an option for the business units of the proxy companies  
3 operating in a competitive environment, thus making those competitive services riskier than  
4 the KUSF supported services.

## 5 **DCF Analysis**

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

7 A. The DCF model is one of the most important and frequently cited tools of regulatory  
8 agencies for setting allowed returns because typically the publicly traded regulated utilities  
9 exhibit stable forecasted growth rates. Unfortunately, that is not the case for the  
10 telecommunications industry. Unlike the electric and natural gas distribution industries, the  
11 telecommunications growth rates vary widely across companies, as well as across time,  
12 from quarter to quarter.

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

14 A. Yes, a cost of equity estimate derived from the DCF model meets the legal standards  
15 discussed Court decisions if the model incorporates current information from the capital  
16 markets via current stock prices and accurate data that investors use to establish their  
17 discount rate. This market-based information ensures the cost of equity estimates evaluate  
18 investors' required rate of return or discount rate that reflects the current economic  
19 environment.

20 The DCF model is a valuation model used by investors to value different types of

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

15 The form of the DCF model that regulatory agencies are accustomed to seeing is often  
16 referred to as the Gordon Growth Model, which is a model that values the security at the  
17 present value of a stream of cash flows (dividends) growing at a constant rate into  
18 perpetuity. The basic form of this DCF equation is:

---

<sup>14</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

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

2

where:

3

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

4

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

5

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

6

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

7

Or

8

$$\text{Stock Price} = \text{Annual Dividend} / (\text{Req'd Rate of Return} - \text{Dividend Growth Rate})$$

9

This is the form of the equation commonly found in texts regarding finance, investments,

10

and asset valuation. Such texts are inclusive of both theory and practical application of the

11

DCF model in utility regulatory settings.

12

Regulatory agencies responsible for setting rates and revenue requirements want to know

13

the investors' required rate of return or  $Ke$  in the equation. So, we solve the equation for

14

that variable. The equation below shows the algebraic isolation of the investors' required

15

rate of return. By isolating investors' required rate of return in the equation, we can estimate

16

it by knowing the stock's dividend yield and the annual dividend growth rate expected by

17

investors. That form of the equation is:

18

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

19

This equation is frequently written out as:

20

$$\text{Req'd Rate of Return} = (\text{Dividend/Current Stock Price}) + \text{Dividend Growth Rate}$$

21

or

22

$$\text{Required Rate of Return} = \text{Dividend Yield} + \text{Dividend Growth Rate}$$

23

24

Or as commonly abbreviated by regulatory agencies

25

$$Ke = y + g$$

26

Where:  $y$  = Dividend Yield

27

$g$  = Expected Dividend Growth

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

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

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

12 A. The DCF model is attempting to emulate investors' behavior; distilling human behavior  
13 into a handful of inputs demands simplifying assumptions. The question becomes whether  
14 the assumptions are so contrary to investors' behavior in the real-world that the model  
15 output becomes meaningless or illogical. I do not believe the assumptions of the DCF  
16 model are contrary to investor behavior and I do not know of any regulatory agency that  
17 has dismissed the DCF as being contrary to human behavior. Moreover, there are methods  
18 I use to evaluate whether an output falls outside of the realm of reality. For example, the  
19 output can be compared with the returns available on other investments such as long-term  
20 corporate bonds. There were no observations eliminated using this screen.<sup>15</sup>

---

<sup>15</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 six month average Baa Utility Bond Yield cited in Staff's Risk Premium study was 4.20% + 1.00% minimum risk premium = 5.20% threshold.

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

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

<b>Discounted Cash Flow (DCF) Analysis Based on a Two-Stage Growth Estimate 20-UTAT-032-KSF</b>						
		1	2	3	4	5
		Dividend Yields		Growth	DCF Estimated	
		Min	Max	Rate	Required Return	
AT&T	T	5.26%	6.85%	4.53%	11.38%	9.79%
Century Link	CTL	6.57%	10.37%	2.66%	13.04%	9.24%
Shenandoah Telecom Co	SHEN	0.72%	1.08%	10.98%	12.06%	11.70%
Telephone & Data Systems	TDS	2.00%	3.17%	18.43%	21.60%	20.43%
Verizon	VZ	3.95%	4.46%	3.87%	8.33%	7.82%
Average of each column		3.70%	5.19%	8.10%	13.28%	11.80%
1) Dividend divided by maximum price observed from May 13, 2019, through November 11, 2019						
2) Dividend divided by minimum price observed						
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						

11

12 DCF calculations in this second table utilize forecasted nominal GDP growth as an

1 estimate of long-run growth for the proxy group's dividends. As I discuss later, this view  
 2 offers a more realistic expectation of potential growth in earnings and dividends from  
 3 these telecommunications companies. I place considerably more confidence in this view  
 4 of potential growth and the corresponding results.

<b>Discounted Cash Flow (DCF) Analysis</b>						
<b>Based on nGDP Growth Forecast of 4.50%</b>						
<b>20-UTAT-032-KSF</b>						
		1	2	3	4	5
		Dividend Yields		Growth	DCF Estimated	
		Min	Max	Rate	Required Return	
AT&T	T	5.26%	6.85%	4.50%	11.35%	9.76%
Century Link	CTL	6.57%	10.37%	4.50%	14.87%	11.07%
Shenandoah Telecom Co	SHEN	0.72%	1.08%	4.50%	5.58%	5.22%
Telephone & Data Systems	TDS	2.00%	3.17%	4.50%	7.67%	6.50%
Verizon	VZ	3.95%	4.46%	4.50%	8.96%	8.45%
Average of each column		3.70%	5.19%	4.50%	9.69%	8.20%
1) Dividend divided by maximum price observed from February 25, 2019, through August 26, 2019						
2) Dividend divided by minimum price observed						
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						

5

6

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

8 A. Historic and current dividend information is easily obtained from public subscription  
 9 services such as Value-Line and non-subscription services such as YahooFinance and Zacks  
 10 Research. The DCF model requires a forward-looking dividend payment which is often the  
 11 current year's dividend payment increased by the forecasted growth rate for next year. I  
 12 obtained the 2020 forecasted dividend per share information from Value-Line Investment

1 Survey. The Value-Line reports for each of the proxy companies are attached as Schedule  
2 AHG-2.

### **Forecasted Growth Rates for the DCF Model**

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

4 A. I relied on a combination of short-term and long-term growth forecasts, the same growth  
5 forecasts that investors apply to value common stocks. The appropriate growth estimate to  
6 use in the DCF model is that which is expected by the market and factored into investors'  
7 analyses to estimate stock prices. The growth rate for the RLEC segment of the  
8 telecommunications industry is difficult to determine because of the reasons I discussed  
9 regarding declining subscribership. The difficulty stems from trying to ascertain what  
10 growth estimate investors apply to the dividend stream over a very long time horizon and,  
11 in this instance, we are dealing with growth estimates for a specific segment of the  
12 telecommunications industry. At the broad level, the industry is growing while this segment  
13 of telephony services is not growing, it is contracting. Thus, as best we can ascertain, there  
14 is little to no positive growth for earnings and dividends from this narrow sector of the  
15 industry.

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

17 A. For my DCF analysis of the telecommunications service providers, I relied on two sources  
18 for projected earnings growth rates: Value-Line Investment Survey and ThomsonFN  
19 (formerly known as Institutional Brokers Estimation Service or I/B/E/S) reported at

1           YahooFinance.com and Zacks Research. I averaged these earnings growth forecasts  
2           together to arrive at a short-term growth estimate of the proxy companies.

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

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



Growth Rate Summary 20-UTAT-032-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%	4.50%	4.53%
Century Link	CTL	-8.50% *		12.00%	-4.00%	1.00%	-12.50%	7.40%	7.40%	0.83%	4.50%	2.66%
Shenandoah Telecom Co	SHEN	5.00%	12.00%	8.00%	9.00%	20.50%	7.50%	24.40%		17.47%	4.50%	10.98%
Telephone & Data Systems	TDS	-4.50%	-4.50%	5.50%	5.50%	7.50%	3.00%	86.60%		32.37%	4.50%	18.43%
Verizon	VZ	5.00%	8.00%	3.00%	3.00%	4.50%	2.00%	2.34%	4.15%	3.25%	4.50%	3.87%
	Min	-8.50%	-4.50%	3.00%	-4.00%	1.00%	-12.50%	2.34%	4.15%	0.83%		2.66%
	Max	5.00%	12.00%	12.00%	9.00%	20.50%	7.50%	86.60%	7.40%	32.37%		18.43%
	Mean	-0.10%	5.38%	6.30%	3.10%	7.80%	0.90%	24.91%	5.33%	11.69%		<b>8.10%</b>

Columns: 1) - 6) Historic 5 & 10 Year & Forecasted growth rates as reported by Value-Line on September 14, 2019  
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 September 14, 2019  
8) 5-year forecasted annual earnings per share growth rate. Consensus forecasts gathered by Zack's Investments gathered on November 14, 2019  
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

1

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

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

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

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

1 industry, earnings have been volatile. As you can see in the Value-Line reports in Schedule  
2 AHG-2 and the previous/following table, the proxy group exhibits historic earnings that  
3 have gone from strongly negative to forecasts of double-digit positive growth. This  
4 volatility does not lend itself to estimating a long-run growth rate necessary for use in DCF  
5 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>16</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>16</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 very carefully because using an incorrect growth estimate will lead to incorrectly valuing  
7 an asset. Institutions directly involved in asset valuation and asset management that apply  
8 valuation models to analyze potential acquisition and merger transactions recognize that  
9 estimates of firm-specific growth are a driver to the value of an asset; overstating growth  
10 would cause a model to overestimate the value of the asset, which would result in an  
11 economic loss to the investor. These experts also warn of a ceiling to earnings growth rates  
12 as being no more 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>17</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>18</sup>

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

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

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<sup>17</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>18</sup> Earnings Growth: The Two Percent Dilution, William J. Bernstein and Robert D. Arnot, Financial Analysts Journal, September/October 2003, pp 47-55.

1 A For the past 20 years, there is a definitive trend in the growth of land-line subscription; that  
2 trend is negative, driven by substituting wireless telephone service.<sup>19</sup> Based on reports and  
3 industry research, that trend is likely to continue. I have not found any research material to  
4 suggest that land-line growth will be positive or even flat. For example, Standard & Poors  
5 had this to say regarding growth expectations in the telecommunications industry and its  
6 sub-categories.

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

20  
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>20</sup>  
28

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<sup>19</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>20</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 Standard & Poor’s reiterated this sentiment in a recent update on the industry, “In wireline,  
2 we expect revenues to decline in the mid-single-digit percent area in the U.S. due to the loss  
3 of voice access lines to wireless substitution, and broadband customers to cable.”<sup>21</sup> Thus,  
4 the sentiment underlying the substitution of other services for traditional land-line telephony  
5 service has been in place and recognized by analysts for at least six years.

6 The capital markets recognize that the traditional wire-line services and the basic telephony  
7 services that fall under the KUSF umbrella are not driving the telecommunications  
8 industry’s growth. This point is important when it comes to applying the DCF models to  
9 estimate the required return on equity in KUSF audits, such as we are doing here. In  
10 applying the DCF model, it is vital to review the growth forecasts to make certain that they  
11 represent a realistic expectation for the future. Based on the research cited above, we cannot  
12 simply apply a forecasted growth rate of the telecommunications industry or  
13 telecommunications companies in the proxy group because that would include the potential  
14 of wireless, broadband, and cable television services. Those are not KUSF covered  
15 services. And because of these growth expectations, I believe the best information available  
16 for a DCF analysis of land-line segment of this industry is a forecast of the broad U.S.  
17 economy such as nGDP.<sup>22</sup> The rationale for using this estimate in a DCF analysis is that,  
18 despite volatility of short-term corporate earnings or dividend forecasts, a mature industry,  
19 such as provision of basic telecommunications services, is likely to experience long-term

---

<sup>21</sup> Industry Top Trends 2019: Telecommunications, Standard & Poors’ Ratings, November 15, 2018, p. 6.

<sup>22</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 growth *no greater than* that of the general economy. The Commission has found that Staff's  
 2 use of nGDP growth forecasts in the DCF model is reasonable and appropriate.<sup>23</sup> In Staff's  
 3 view, even the nGDP growth forecast could be overly optimistic for landline telephony  
 4 services given the rate of product substitutions occurring.

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

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

<b><u>Nominal GDP Estimates</u></b>	
Energy Information Agency (EIA) 2017 - 2050	4.67%
Social Security Administration (SSA) OADSIS Trustees Report 2018 - 2095	4.36%
Average	4.51%
Sources:	
EIA Annual Energy Outlook 2019, Table B4	
Forecasted Nominal GDP, 2019, OADSIS Trustees Report Office of the Chief Actuary, Table V.B1.—Principal Economic Assumptions Table V.B2.—Additional Economic Factors	

11

12 **Q. Are these two the only two sources for long-run GDP forecasts?**

<sup>23</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.



- 1 A. There are other source shown in the table and they are wholly consistent with the EIA and  
2 SSA forecasts.

<b>Additional GDP Estimates</b>	
<hr/>	
Exxon-Mobile 2018 Outlook for Energy 2018 - 2040 2.2% Real GDP + 2.2 GDP Deflator from SSA	4.40%
Congressional Budget Office Nominal GDP Forecast	4.28%
Federal Reserve Open Market Committee Long-run Forecast <hr/> 2.0% Real GDP + 1.9% PCE Inflation	<hr/> 3.90%
Sources:	
ExxonMobile 2018 Outlook for Energy: A View to 2040, p. 60	
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	

3

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

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

<b>Discounted Cash Flow (DCF) Analysis Based on a Two-Stage Growth Estimate 20-UTAT-032-KSF</b>						
		1	2	3	4	5
		Dividend Yields		Growth	DCF Estimated	
		Min	Max	Rate	Required Return	
AT&T	T	5.26%	6.85%	4.53%	11.38%	9.79%
Century Link	CTL	6.57%	10.37%	2.66%	13.04%	9.24%
Shenandoah Telecom Co	SHEN	0.72%	1.08%	10.98%	12.06%	11.70%
Telephone & Data Systems	TDS	2.00%	3.17%	18.43%	21.60%	20.43%
Verizon	VZ	3.95%	4.46%	3.87%	8.33%	7.82%
Average of each column		3.70%	5.19%	8.10%	13.28%	11.80%
1) Dividend divided by maximum price observed from May 13, 2019, through November 11, 2019						
2) Dividend divided by minimum price observed						
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 **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. Why do you incorporate a capital asset pricing model (CAPM) analysis in your**  
11 **evaluation of United's cost of equity?**

1 A. The CAPM is one of the cornerstone financial models. For example, every merger and  
 2 acquisition analysis performed by an investment banker involving a Kansas utility has  
 3 incorporated a CAPM analysis as a critical component of the valuation process.

4 **Q. Would you please describe the CAPM?**

5 A. The CAPM is an important tool of finance because it offers an explanation of the positive  
 6 relationship between risk and ROR required by investors.<sup>24</sup> It is appealing to regulators  
 7 because it meets the legal standards I discussed above, as it can be structured to incorporate  
 8 current data from the financial markets and the unique risks of the utility in question.

9 
$$K_e = R_f + \text{Beta} (R_m - R_f) \text{ or}$$

10 
$$K_e = R_f + \text{Beta} (R_p)$$

11 Where:

12  $K_e$  = required return on equity

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

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

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

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

19 **Rf**

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

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

1 maturity.

2 **Beta**

3 The beta coefficient measures the volatility of the return earned by the utility's stock relative  
4 to the volatility of the returns earned by the broader equity market. The broad equity market  
5 is frequently measured using the S&P 500 Index. This measure provides a look at the risk  
6 and volatility of a stock relative to other investments. A stock with a beta of 1 is equally as  
7 volatile as the market as a whole. A stock with a beta of 0.5 is half as volatile as the market.  
8 Value-Line reports that the proxy group has a beta coefficient of 0.94 with a range of 0.75  
9 to 1.15.

10 **Rm**

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

14 **Rp**

15 The risk premium is the difference between investors' expected return from the stock  
16 market and their expected return from the risk-free investment over the same time period.  
17 The risk premium is written as  $R_m - R_f$ . The market return and the risk-free return should  
18 be taken from the same time period so as to accurately measure the additional return  
19 required by investors to take on the risk of common stocks over the risk-free investment  
20 over that forecasted or historic time period. The risk-premium itself is an important topic

1 in financial research as it telegraphs the additional return investors demand when taking of  
2 the added risks of investing in equity capital instead of a U.S. Treasury Bond.

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

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

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

12 A. I took two distinct approaches to the CAPM analysis that are commonly found in both cost  
13 of capital studies in regulatory and asset-valuation arenas. I performed one analysis using  
14 purely historic measures of returns from the stock and bond markets. The second analysis  
15 incorporates forecasted returns on debt and equity capital from three different sources. The  
16 results are very different with the two approaches because historic returns on equity capital  
17 are drastically higher, 11.36%, compared to forecasted returns of 6.76% to 9.00%. This  
18 reflects the overwhelming evidence that expectations for future returns on capital  
19 investments are much lower than those experienced by investors over the past century.  
20 Keep in mind that there are several unique and distinct sources for the forecasted returns  
21 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	5.67%	7.22%
Black Rock	6.52%	8.91%
Duff & Phelps	7.35%	9.83%
Historic Data:		
Arithmetic Returns	9.26%	12.08%

1

2

3

4

5

Both forms of my CAPM analyses incorporate the high and low beta coefficients observed in the proxy group. The average beta of the proxy group is about 92% of that exhibited by the broad equity market, indicating that telecommunications companies are viewed as slightly less volatile (and less risky) than the broad stock market.

<b>Beta Coefficients</b>		
AT&T	T	0.750
Century Link	CTL	1.050
Shenandoah Telecommunications Co	SHEN	0.950
Telephone & Data Systems	TDS	1.150
Verizon	VZ	0.700
		0.920
Source: Value-Line Investment Survey, September 14, 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 equity and U.S. Treasury Bonds from three distinct sources: J.P. Morgan Asset Management (JPMAM); BlackRock Investments (BlackRock); and Duff & Phelps. Combined, JPMAM and BlackRock oversee more than \$8.5 trillion dollars with individual and institutional clients worldwide. Thus, it is reasonable to assume their published

10

11

12

1 forecasts influence the expectations of investors beyond just their own client base. JPMAM  
2 and BlackRock each publish annually their views of long-run (more than 15 years) returns  
3 available of numerous asset classes. Their respective forecasts are not identical and taken  
4 together, they provide a range for long-run returns on asset classes by the largest asset  
5 management companies. Duff & Phelps is a global provider of advisory services to the  
6 financial industry and corporations.

<b>Summary of Market Returns Used in CAPM Studies</b>	
Forecasted Market Return	
J.P. Morgan	6.76%
Black Rock	7.00%
Duff & Phelps	9.00%
Historic Market Returns	
Damodarn - Arithmetic Returns	11.36%
Damodarn - Geometric Returns	9.49%

7

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

10 A. For another perspective of the capital markets, I reviewed returns expected on common  
11 stocks over the next 10 to 15 years. JPMAM directly manages more than one-trillion dollars  
12 of assets making their forecasts an important indicator of the expectations of sophisticated,  
13 institutional investment advisors. J.P. Morgan's forecast is not unique, the expectations of  
14 other money management firms are similar. In the last three years, these firms maintained  
15 relatively low expected returns on common stocks and corporate bonds. This information  
16 is an indication that sophisticated institutional investors continue to expect low returns on

1 investments into the future and that has been their expectation for each of the last six years.  
 2 The following table shows the 10 to 15-year projected returns published by JPMAM for  
 3 each of the previous six years; the same time period that Staff has advocated the 9.60%  
 4 ROE for RLECs.

<b>J.P. Morgan Asset Management Long-Term Capital Market Assumptions Forecasted 10 to 15 Year 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%	
Sources: <a href="https://am.jpmorgan.com/us/">https://am.jpmorgan.com/us/</a>			

5

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

7 A. For this CAPM analysis, we are interested in their forecasted returns on common stock in  
 8 the U.S. and U.S. Treasury Bonds published by JPMAM to establish the expected return for  
 9 the market. JPMAM publishes 10 to 15-year forecasts of expected returns on dozens of  
 10 investment asset classes in its annual publication, the Long Term Capital Market Return



1 Assumptions (LTCMRA).<sup>25</sup> JPMAM forecasts an annual return on common stocks of  
2 6.76%. The JPMAM's forecasted returns on common stocks has declined over the past four  
3 years, generally a product of the increase in stock prices. Following the calculations and  
4 inputs through the CAPM equation in line 2 of the following table, the forecasted return on  
5 a risk-free investment, 10-Year U.S. Treasury Bonds, is subtracted from the expected return  
6 on common stocks, resulting in a risk premium of 3.45%. This risk premium is the  
7 additional return necessary to induce investors to take on the added risk associated with  
8 common stocks over the risk-free investment in a U.S. Treasury Bond. The beta coefficient  
9 is applied to the risk premium to ascertain how much of a risk premium is necessary for  
10 investors to take on risks of investing in utility stocks as opposed to the risk free U.S.  
11 Treasury Bond.

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<sup>25</sup> J.P. Morgan Asset Management, Long-term Capital Market Return Assumptions, 2019 Edition, J.P. Morgan Asset Management (published October of 2018).  
[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-UTAT-032-KSF**

	Low Beta	High Beta
1) Forecasted Returns on Common Stocks	6.76%	6.76%
2) Forecasted Total Return on 10- Year T-Bonds	-	3.31%
3) Equity Risk Premium	3.45%	3.45%
4) Beta Coefficient	x 0.70	1.15
5) Beta Adjusted Risk Premium	2.42%	3.97%
6) Forecasted Yield on 10- Year T-Bonds	+	3.25%
7) For Cost of Equity	5.67%	7.22%

- 1) Forecasted 10 to 15-year annual arithmetic return on stocks, J.P. Morgan Asset Management, 2019 Edition
- 2) Forecasted 10 to 15-year annual arithmetic return on intermediate term U.S. Government bonds, J.P. Morgan Asset Management, 2019 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, 2019 Edition (page 57)
- 7) Forecasted cost of equity capital row 5 + row 6

Sources:

J.P. Morgan Asset Management, Long-term Capital Market Return Assumptions, 2019 Edition, J.P. Morgan Asset Management (published October of 2018)

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2 The expected risk-free yield of 3.25% 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 1.15.

4 As you can see in the next table, a CAPM analysis that incorporates BlackRock's long-term  
5 return projections are modestly higher than those published by JPMAM.

**Capital Asset Pricing Model -- Duff & Phelps' Forecasted Risk Premium  
Using Forecasted Market Returns & Treasury Bond Yields  
20-UTAT-032-KSF**

	Low Beta	High Beta
1) Duff & Phelps U.S. ERP	5.50%	5.50%
2) Beta Coefficient	x 0.70	1.15
3) Proxy Group Risk Premium	3.85%	6.33%
4) Duff & Phelps U.S. Risk-Free Rate of Return	+ 3.50%	3.50%
5) Proxy Group Cost of Equity	7.35%	9.83%

- 
- 1) Duff & Phelps U.S. Equity Risk Premium (effective December 31, 2018)
  - 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 December 31, 2018)
  - 5) Forecasted Cost of Equity Range for Proxy Group
- 

Sources:

Valuation Insights, First Quarter 2019, U.S. Equity Premium Recommendation;  
February 19, 2019; Duff & Phelps  
<https://www.duffandphelps.com>

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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 changes its ERP and risk-free return estimates.

**Capital Asset Pricing Model -- Duff & Phelps' Forecasted Risk Premium  
Using Forecasted Market Returns & Treasury Bond Yields  
20-UTAT-032-KSF**

	Low Beta	High Beta
1) Duff & Phelps U.S. ERP	5.50%	5.50%
2) Beta Coefficient	x 0.70	1.15
3) Proxy Group Risk Premium	3.85%	6.33%
4) Duff & Phelps U.S. Risk-Free Rate of Return	+ 3.50%	3.50%
5) Proxy Group Cost of Equity	7.35%	9.83%

- 1) Duff & Phelps U.S. Equity Risk Premium (effective December 31, 2018)  
 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 December 31, 2018)  
 5) Forecasted Cost of Equity Range for Proxy Group

Sources:

Valuation Insights, First Quarter 2019, U.S. Equity Premium Recommendation;  
 February 19, 2019; Duff & Phelps  
<https://www.duffandphelps.com>

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

8

A. No, the cost of equity or expected returns calculated using purely historical data are significantly greater than found with the three scenarios using forecasted return. For the historical CAPM, I relied on data of returns earned from 1928 through 2018. This outcome is expected in light of the published research discussed earlier that future returns in the capital market are unlikely to match those of the past 80 years.

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<b>Capital Asset Pricing Model -- Historic Risk Premium Based on Historic Arithmetic Risk Premiums from 1928 to 2018 20-UTAT-032-KSF</b>			
		High Beta	Low Beta
1) Total Return on Common Stocks		11.36%	11.36%
2) Total Return on Government Bonds	-	5.10%	5.10%
3) Resulting Risk Premium		6.26%	6.26%
4) Beta Coefficient	x	0.70	1.15
5) Risk Premium		4.38%	7.20%
6) Historic Yield on Government Bonds	+	4.88%	4.88%
7) Forecasted Cost of Equity Based on Historic Returns		9.26%	12.08%

1) Historic returns on common stocks 1928-2017
2) Historic returns on intermediate-term government bonds 1928-2017
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 1928-2017
7) Forecasted cost of equity capital, row 5 + row 6

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

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If we rely on purely historic data, we have to assume that certain trends, particularly economic growth, observed in the past 80 years will continue in the future. It is well established that the U.S. economy is projected to grow at a slower rate than that experienced in the past. The projected growth rate is 4.50% compared to the historic growth rate of 6.11%.<sup>26</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

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

26

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

## 12 **Risk Premium Analysis**

13 **Q. Did you determine whether a 9.60% ROE is adequate in the current capital markets?**

14 A. Yes, the following table calculates the difference between the 9.60% allowed return and the  
15 return available on less risky fixed income investments. The basics of capital markets  
16 theory is that riskier investments, such as equity, demand a higher return than less risky  
17 fixed income investments, such as bonds. This is known as a risk-premium. A positive risk  
18 premium is necessary to induce investors to take the additional risk of an equity investment  
19 over the safety of a bond that offers a regular interest payment. The following table shows  
20 the risk premium of a 9.60% ROE over the current market yield on various fixed income

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

1 securities. As a historic comparison, over the past 80 years, common stocks have provided  
 2 a 6.26% risk premium over the returns on U.S. Treasury Bonds. Thus, I conclude that using  
 3 a 9.60% ROE provides a reasonable level of compensation over less risky investments.

<b>KCC Staff's Risk Premium Over Fixed Income Yields</b>				
<b>Based on a 9.60% Return on Equity</b>				
<b>Monthly Averages</b>	<b>10-Year T-Bond Yield<sup>1</sup></b>	<b>30-Year T-Bond Yield<sup>2</sup></b>	<b>Baa Corporate Bond Yield<sup>3</sup></b>	<b>BBB/Baa Utility Bond Yield<sup>4</sup></b>
March, 2019	2.60%	3.00%	4.86%	4.57%
April, 2019	2.54%	2.94%	4.70%	4.43%
May, 2019	2.31%	2.75%	4.60%	4.31%
June, 2019	2.05%	2.56%	4.40%	4.12%
July, 2019	2.08%	2.59%	4.30%	4.02%
August, 2019	1.68%	2.09%	3.86%	3.63%
September, 2019	1.70%	2.15%	3.91%	3.75%
October, 2019	1.69%	2.17%	3.92%	3.74%
<b>Six Month Average</b>	<b>2.08%</b>	<b>2.53%</b>	<b>4.32%</b>	<b>4.07%</b>
<u>Staff's Risk Premium Over the Six-Month Average 10-Year Treasury Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six Month Average 10-Year Treasury Bond Yield	2.08%
			<b>Premium Over Average 10-Year Treasury Bond Yield</b>	<b>7.52%</b>
<u>Staff's Risk Premium Over the Six-Month Average 30-Year Treasury Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six Month Average 30-Year Treasury Bond Yield	2.53%
			<b>Premium Over Average 30-Year Treasury Bond Yield</b>	<b>7.07%</b>
<u>Staff's Risk Premium Over the Six-Month Average BBB/Baa Utility Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six-Month Average BBB/Baa Utility Bond Yield	4.32%
			<b>Premium Over Average BBB/Baa Utility Bond Yield</b>	<b>5.28%</b>
<u>Staff's Risk Premium Over the Six-Month Average BBB/Baa Utility Bond Yield</u>				
			Staff Recommended Allowed ROE	9.60%
			Six-Month Average BBB/Baa Utility Bond Yield	4.07%
			<b>Premium Over Average BBB/Baa Utility Bond Yield</b>	<b>5.53%</b>
Sources:				
1) Yield on U.S. 10-Year Treasury Bond reported at <a href="https://fred.stlouisfed.org/">https://fred.stlouisfed.org/</a>				
2) Yield on U.S. 30-Year Treasury Bond reported at <a href="https://fred.stlouisfed.org/">https://fred.stlouisfed.org/</a>				
2) Yield on Baa Corporate Bonds reported at <a href="https://fred.stlouisfed.org/">https://fred.stlouisfed.org/</a>				
4) Yield on BBB/Baa Public Utility Bonds; Value-Line Investment Survey, Selections and Opinions				

4

1 **Q. How does the risk-premium shown above, calculated at this time, compare to those of**  
 2 **past KUSF dockets?**

3 A. The risk-premium resulting from a 9.60% allowed ROE and the interest rates in the current  
 4 fixed income market compares favorably to the risk-premiums of past KUSF dockets. In  
 5 the following table, I compare Staff’s recommendations in recent KUSF dockets to the  
 6 interest rates on BBB/Baa public utility bonds. As an additional point of comparison, the  
 7 risk-premium from recent electric and natural gas dockets is 4.79%. On average, the risk-  
 8 premium in KUSF dockets has averaged 5.45%, with a range of 4.56% to 6.23%. In this  
 9 Docket, the comparable risk-premium is 5.53%.

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%
<b>Average Risk Premium of Recent KUSF Dockets</b>						<b>5.45%</b>
* Yield on Baa/BBB Utility Bonds reported by Value-Line Investment Survey at date of Staff's testimony						
**Risk premium of Staff's ROE Recommendation over the Baa/BBB Utility Bond Yield						

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11 There is no definitive risk-premium to apply to assess whether an allowed return for a utility  
 12 is reasonable. The tenets of the Hope and Bluefield Decisions demand that an allowed  
 13 return on equity be set at a rate that reflects the risks of the investment. The risk-premium  
 14 is a useful tool to measure the difference between market determined capital costs of a less  
 15 risky investment in public utility debt (in this instance a BBB/Baa public utility bond) and



1           the allowed return set for stockholders. The risk-premium of 5.53% from an allowed return  
2           on equity of 9.60% meets this threshold test of the Hope and Bluefield Decisions in that it  
3           offers a premium above lower risk investments and it is comparable to risk-premiums  
4           offered in similar capital market conditions.

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

6   **A.    Yes.**

**20-UTAT-032-KSF**

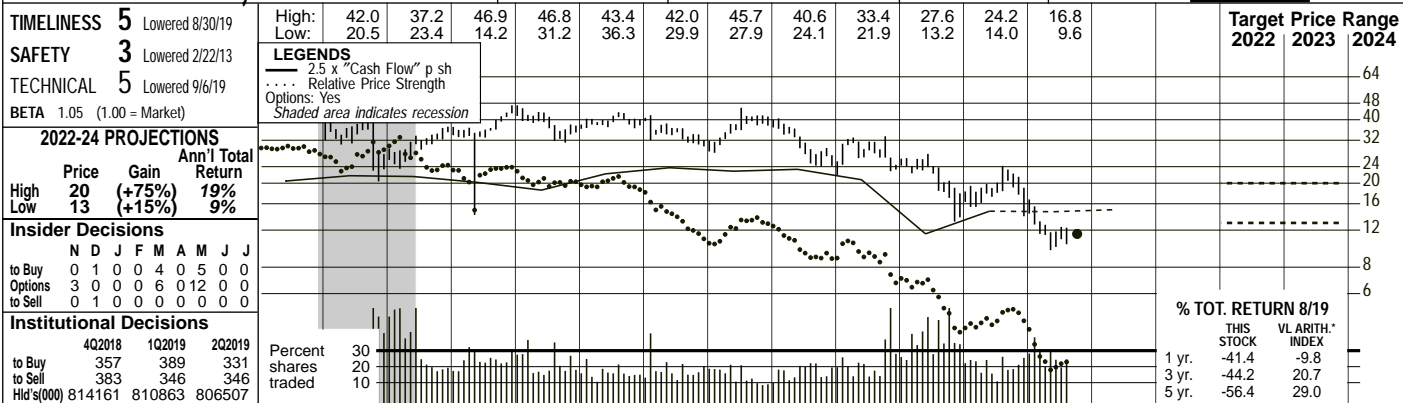
**Schedule AHG-1**

Date	AT&T (T)		CenturyLink (CTL)		Shenandoah Tele. Co (SHEN)		Telephone & Data Systems (TDS)		Verizon (VZ)	
	High	Low	High	Low	High	Low	High	Low	High	Low
5/13/2019	\$ 32.00	\$ 30.62	\$ 11.06	\$ 10.50	\$ 42.59	\$ 40.60	\$ 31.44	\$ 30.37	\$ 58.48	\$ 56.17
5/20/2019	\$ 33.08	\$ 31.93	\$ 10.57	\$ 9.64	\$ 44.46	\$ 41.91	\$ 31.84	\$ 30.12	\$ 60.54	\$ 58.00
5/27/2019	\$ 32.42	\$ 30.38	\$ 10.86	\$ 10.11	\$ 43.24	\$ 40.16	\$ 30.91	\$ 28.73	\$ 59.87	\$ 54.26
6/3/2019	\$ 32.70	\$ 30.68	\$ 10.62	\$ 9.98	\$ 41.33	\$ 38.33	\$ 30.51	\$ 28.86	\$ 58.14	\$ 54.56
6/10/2019	\$ 33.00	\$ 31.86	\$ 11.20	\$ 10.29	\$ 39.35	\$ 37.58	\$ 30.35	\$ 28.79	\$ 58.56	\$ 55.95
6/17/2019	\$ 32.70	\$ 32.17	\$ 11.57	\$ 11.10	\$ 41.11	\$ 37.67	\$ 34.00	\$ 28.99	\$ 58.33	\$ 56.93
6/24/2019	\$ 33.55	\$ 32.45	\$ 11.83	\$ 10.67	\$ 40.15	\$ 36.40	\$ 32.73	\$ 29.62	\$ 58.67	\$ 56.83
7/1/2019	\$ 34.37	\$ 33.37	\$ 11.97	\$ 11.54	\$ 39.78	\$ 38.06	\$ 31.72	\$ 30.08	\$ 58.51	\$ 56.60
7/8/2019	\$ 34.36	\$ 33.26	\$ 12.22	\$ 11.61	\$ 39.75	\$ 38.06	\$ 31.93	\$ 30.97	\$ 58.30	\$ 56.26
7/15/2019	\$ 33.74	\$ 32.77	\$ 12.34	\$ 11.25	\$ 39.23	\$ 37.68	\$ 33.15	\$ 31.31	\$ 57.80	\$ 56.57
7/22/2019	\$ 34.23	\$ 31.52	\$ 11.77	\$ 10.86	\$ 41.63	\$ 36.66	\$ 33.61	\$ 31.13	\$ 57.23	\$ 54.56
7/29/2019	\$ 34.64	\$ 33.54	\$ 12.44	\$ 11.57	\$ 41.41	\$ 35.97	\$ 33.64	\$ 25.41	\$ 57.60	\$ 54.77
8/5/2019	\$ 34.59	\$ 33.19	\$ 11.95	\$ 10.29	\$ 36.85	\$ 32.96	\$ 27.50	\$ 25.47	\$ 56.06	\$ 54.41
8/12/2019	\$ 35.00	\$ 33.96	\$ 11.72	\$ 10.50	\$ 34.28	\$ 32.76	\$ 25.87	\$ 24.37	\$ 56.69	\$ 55.07
8/19/2019	\$ 35.50	\$ 34.64	\$ 11.71	\$ 11.17	\$ 32.98	\$ 31.21	\$ 25.17	\$ 24.11	\$ 57.50	\$ 55.62
8/26/2019	\$ 35.35	\$ 34.53	\$ 11.75	\$ 11.21	\$ 32.34	\$ 30.81	\$ 25.44	\$ 24.26	\$ 58.41	\$ 55.82
9/2/2019	\$ 36.37	\$ 34.92	\$ 11.97	\$ 11.21	\$ 32.90	\$ 31.16	\$ 25.85	\$ 24.74	\$ 59.10	\$ 57.59
9/9/2019	\$ 38.75	\$ 36.71	\$ 13.62	\$ 11.91	\$ 34.76	\$ 32.26	\$ 27.44	\$ 25.81	\$ 60.55	\$ 58.64
9/16/2019	\$ 38.01	\$ 36.49	\$ 13.07	\$ 12.48	\$ 33.46	\$ 32.07	\$ 26.83	\$ 25.50	\$ 60.40	\$ 59.19
9/23/2019	\$ 37.85	\$ 37.18	\$ 12.99	\$ 12.39	\$ 33.09	\$ 30.70	\$ 26.26	\$ 25.22	\$ 61.00	\$ 59.93
9/30/2019	\$ 37.96	\$ 36.66	\$ 12.61	\$ 11.34	\$ 32.40	\$ 30.13	\$ 26.13	\$ 24.01	\$ 60.90	\$ 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	\$ 39.48	\$ 39.05	\$ 15.21	\$ 14.37	\$ 37.50	\$ 35.32	\$ 23.87	\$ 23.30	\$ 59.94	\$ 58.80
<b>Min</b>	<b>\$ 30.38</b>		<b>\$ 9.64</b>		<b>\$ 29.61</b>		<b>\$ 21.44</b>		<b>\$ 54.26</b>	
<b>Max</b>	<b>\$ 39.58</b>		<b>\$ 15.21</b>		<b>\$ 44.46</b>		<b>\$ 34.00</b>		<b>\$ 61.34</b>	
<b>Mean</b>	<b>\$ 35.05</b>		<b>\$ 11.81</b>		<b>\$ 35.85</b>		<b>\$ 27.71</b>		<b>\$ 58.14</b>	



# CENTURYLINK, INC. NYSE-CTL

RECENT PRICE **11.52** P/E RATIO **8.6** (Trailing: 8.5 Median: 20.0) RELATIVE P/E RATIO **0.53** DIV'D YLD **8.7%** VALUE LINE



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
16.48	18.19	18.91	21.61	24.02	25.91	25.59	23.09	24.82	29.37	31.00	31.72	32.92	31.96	16.51	21.70	<b>20.25</b>	<b>19.80</b>	Revenues per sh	<b>20.35</b>
5.65	6.33	6.61	7.89	8.21	8.69	8.61	8.07	7.44	8.88	9.47	9.15	10.48	9.59	4.61	5.91	<b>5.90</b>	<b>6.00</b>	"Cash Flow" per sh	<b>6.40</b>
2.39	2.40	2.49	3.07	3.13	3.37	3.46	3.41	1.07	1.25	1.64	2.61	2.72	2.45	1.58	1.19	<b>1.35</b>	<b>1.35</b>	Earnings per sh <sup>A</sup>	<b>1.40</b>
.22	.23	.24	.25	.26	1.54	2.80	2.90	2.90	2.90	2.16	2.16	2.16	2.16	2.16	2.16	<b>1.00</b>	<b>1.00</b>	Div'ds Decl'd per sh <sup>B</sup>	<b>1.00</b>
2.62	2.91	3.17	2.77	3.01	2.86	2.52	2.83	3.90	4.67	5.22	5.36	5.28	5.45	2.91	2.94	<b>3.40</b>	<b>3.30</b>	Cap'l Spending per sh	<b>3.50</b>
24.04	25.70	27.54	28.11	31.42	31.55	31.64	31.64	33.67	30.83	29.46	26.42	25.86	24.52	21.97	18.36	<b>14.05</b>	<b>15.45</b>	Book Value per sh <sup>C</sup>	<b>18.80</b>
144.36	132.37	131.07	113.25	108.49	100.28	299.19	304.95	618.51	625.66	583.64	568.52	543.80	546.55	1069.2	1080.2	<b>1100.00</b>	<b>1100.00</b>	Common Shs Outst'g <sup>D</sup>	<b>1100.00</b>
13.4	12.9	13.4	12.5	14.5	10.0	8.9	10.9	36.2	31.4	21.3	14.0	11.6	11.4	13.9	15.8	<b>11.5</b>	<b>11.5</b>	Avg Ann'l P/E Ratio	<b>12.0</b>
.76	.68	.71	.67	.77	.60	.59	.69	2.27	2.00	1.20	.74	.59	.59	.70	.85	<b>1.00</b>	<b>1.00</b>	Relative P/E Ratio	<b>.65</b>
.7%	.7%	.7%	.7%	.6%	4.6%	9.1%	7.8%	7.5%	7.4%	6.2%	5.9%	6.9%	7.7%	9.8%	11.5%	<b>11.5%</b>	<b>11.5%</b>	Avg Ann'l Div'd Yield	<b>6.0%</b>

CAPITAL STRUCTURE as of 6/30/19		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Debt \$34788 mill. Due in 5 Yrs \$12200 mill. LT Debt \$33193 mill. LT Interest \$2000 mill.		7655.7	7041.5	15351	18376	18095	18031	17900	17470	17656	23443	<b>22300</b>	<b>21800</b>	Revenues (\$mill)	<b>22400</b>				
(Total interest coverage: 1.0x) (71% of Cap'l)		1033.6	1028.3	573.0	777.0	988.0	1483.9	1507.0	1325.0	993.0	1265.0	<b>1475</b>	<b>1485</b>	Net Profit (\$mill)	<b>1540</b>				
Pension Assets-12/18 \$10033 mill. Oblig. \$11594 mill.		37.4%	37.8%	39.6%	37.8%	38.8%	30.5%	33.3%	38.6%	38.6%	24.3%	<b>25.0%</b>	<b>25.0%</b>	Income Tax Rate	<b>25.0%</b>				
Common Stock 1,090,137,000 shares		13.5%	14.6%	3.7%	4.2%	5.5%	8.2%	8.4%	7.6%	5.6%	5.4%	<b>6.6%</b>	<b>6.8%</b>	Net Profit Margin	<b>6.9%</b>				
MARKET CAP: \$12.6 billion (Large Cap)		43.4%	43.1%	50.6%	50.1%	54.0%	57.3%	57.1%	57.6%	61.3%	64.1%	<b>65.0%</b>	<b>65.0%</b>	Long-Term Debt Ratio	<b>65.0%</b>				
		56.6%	56.9%	49.4%	49.9%	46.0%	42.7%	42.9%	42.4%	38.7%	35.9%	<b>35.0%</b>	<b>35.0%</b>	Common Equity Ratio	<b>35.0%</b>				
		16720	16963	42183	38689	37372	35144	32782	31584	60774	55237	<b>59000</b>	<b>61500</b>	Total Capital (\$mill)	<b>66000</b>				
		9097.1	8754.5	19436	19032	18646	18433	18069	17039	26852	26408	<b>27000</b>	<b>27500</b>	Net Plant (\$mill)	<b>29000</b>				
		7.9%	7.7%	2.6%	3.7%	4.4%	4.1%	4.7%	4.1%	2.8%	4.1%	<b>2.5%</b>	<b>2.5%</b>	Return on Total Cap'l	<b>2.5%</b>				
		10.9%	10.7%	2.8%	4.0%	5.7%	8.0%	10.7%	9.9%	4.2%	6.4%	<b>9.5%</b>	<b>8.5%</b>	Return on Shr. Equity	<b>7.5%</b>				
		10.9%	10.7%	2.8%	4.0%	5.7%	8.0%	10.7%	9.9%	4.2%	6.4%	<b>9.5%</b>	<b>8.5%</b>	Return on Com Equity	<b>7.5%</b>				
		5.0%	1.6%	NMF	NMF	NMF	2.0%	2.2%	1.1%	NMF	NMF	<b>2.0%</b>	<b>2.0%</b>	Retained to Com Eq	<b>2.0%</b>				
		54%	85%	NMF	NMF	NMF	83%	79%	88%	NMF	NMF	<b>74%</b>	<b>74%</b>	All Div'ds to Net Prof	<b>71%</b>				

CURRENT POSITION (\$MILL)	2017	2018	6/30/19
Cash Assets	551	488	410
Other	3643	3332	3468
Current Assets	4194	3820	3878
Accts Payable	1555	1933	1634
Debt Due	443	652	1595
Other	2859	2946	3266
Current Liab.	4857	5531	6495

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	--	-4.0%	-2.0%
"Cash Flow"	-2.5%	-6.0%	.5%
Earnings	-8.5%	--	1.0%
Dividends	12.0%	-4.0%	-12.5%
Book Value	-3.5%	-7.0%	-2.5%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	4401	4398	4382	4289	17470
2017	4209	4090	4034	5323	17656
2018	5945	5902	5818	5778	23443
2019	5647	5578	<b>5550</b>	<b>5525</b>	<b>22300</b>
2020	<b>5450</b>	<b>5450</b>	<b>5450</b>	<b>5450</b>	<b>21800</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.71	.63	.56	.54	2.45
2017	.52	.46	.42	.18	1.58
2018	.25	.26	.30	.37	1.19
2019	.34	.34	<b>.33</b>	<b>.34</b>	<b>1.35</b>
2020	<b>.33</b>	<b>.34</b>	<b>.34</b>	<b>.34</b>	<b>1.35</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2015	.540	.540	.540	.540	2.16
2016	.540	.540	.540	.540	2.16
2017	.540	.540	.540	.540	2.16
2018	.540	.540	.540	.540	2.16
2019	.250	.250	.250		

**CenturyLink shares have stabilized since our last full-page report in June.** Although the large-cap stock is still down significantly over the past year, recent results suggest that the worst may finally be over. In fact, second-quarter share net of \$0.34, on a non-GAAP basis, easily surpassed our \$0.31 estimate and was up 31% year over year. While revenues of \$5.6 billion came in just shy of our \$5.7 billion call, much of the shortfall was due to management spurning unprofitable lines of business, particularly in the legacy Consumer product division. CenturyLink has in recent months placed a premium on margin expansion and bottom-line profitability. The company has cut costs, improved its digital capabilities, and explored strategic options for certain noncore businesses. These initiatives, when combined with modest improvements elsewhere, have put the telecom provider's dividend—which has already been slashed once—on much firmer ground, in our view. **CenturyLink unveiled a new investment strategy for its computing infrastructure.** Management plans to invest several hundred million dollars in 100

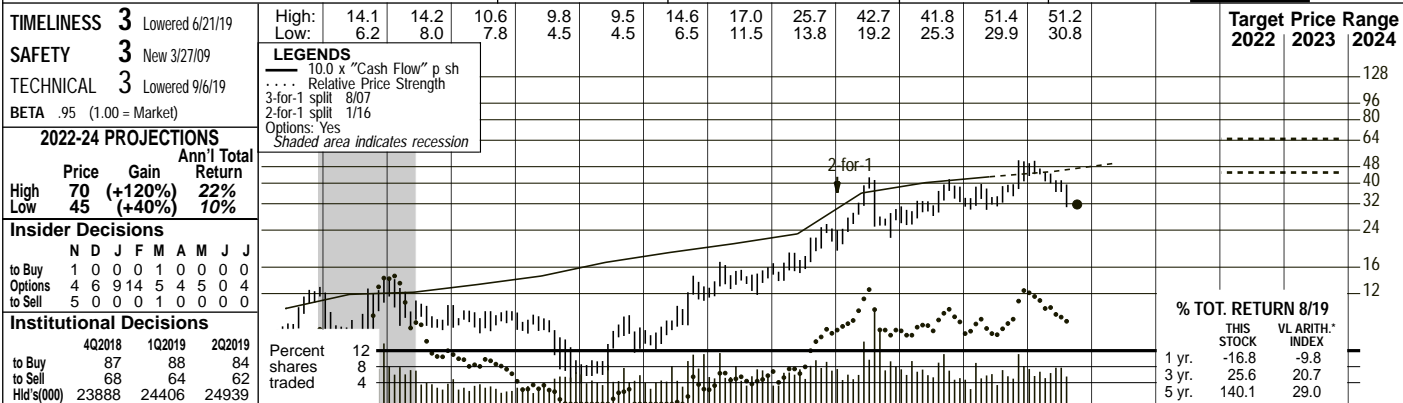
"edge-computing" locations across the U.S. That term refers to storing data closer to where it's created, thereby shortening response times and lowering bandwidth usage. The plan is to offer a range of hybrid cloud and managed-service solutions, with the aim of helping companies integrate their IT infrastructure. **Management continues to weigh options for the Consumer division.** Consumer revenues make up about a quarter of CenturyLink's business, and a potential sale could bring in several billion dollars. While the unit still generates a healthy amount of free cash flow, competition has undermined prices, and CTL has lost market share in recent years. A strategic review of the segment is expected to conclude in late 2019 or early 2020. **Long-term, value-oriented investors may want to take a look here.** Although some may question whether the current dividend is sustainable, we think CTL's overall business is healthy enough to support the \$0.25-a-share quarterly payout. With regard to Timeliness, the equity is poorly ranked for the year ahead. *Daniel Henigson, CFA September 13, 2019*

(A) Diluted earnings. Excludes nonrecurring items: '03, d1c; '04, 4c. Next earnings report due early Nov. (B) Dividends historically paid in mid-March, June, September, and December. (C) Includes intangibles. In 2018: \$29,899 million; \$27.68 per share. (D) In millions.	Dividend reinvestment plan available. Excludes one-time dividend: Q3 '08, \$0.633.	Company's Financial Strength	B
		Stock's Price Stability	45
		Price Growth Persistence	5
		Earnings Predictability	55



# SHENANDOAH TELCM. NDQ-SHEN

RECENT PRICE **31.70** P/E RATIO **25.0** (Trailing: 27.6 / Median: 22.0) RELATIVE P/E RATIO **1.55** DIV'D YLD **0.9%** VALUE LINE



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
2.32	2.64	3.17	3.63	3.00	3.06	3.39	4.10	5.27	6.01	6.43	6.77	7.07	10.94	12.41	12.71	<b>12.90</b>	<b>13.60</b>	Revenues per sh	16.00
.58	.64	.72	.97	1.02	1.19	1.22	1.33	1.45	1.69	1.88	2.07	2.30	3.60	4.03	4.29	<b>4.55</b>	<b>5.00</b>	"Cash Flow" per sh	6.20
.21	.22	.23	.39	.40	.56	.53	.43	.29	.35	.62	.70	.83	.83	.44	.93	<b>1.20</b>	<b>1.50</b>	Earnings per sh <sup>A</sup>	2.25
.07	.07	.08	.08	.14	.15	.16	.17	.17	.17	.18	.24	.24	.25	.26	.27	<b>.30</b>	<b>.32</b>	Div'ds Decl'd per sh <sup>B</sup>	.40
.27	.74	.64	.46	.62	1.39	1.12	1.18	1.57	1.86	2.43	1.41	1.44	3.54	2.97	2.75	<b>3.10</b>	<b>3.20</b>	Cap'l Spending per sh	3.80
2.33	2.49	2.64	2.90	3.21	3.55	3.71	4.00	4.15	4.34	4.87	5.35	5.98	6.05	7.10	8.91	<b>9.50</b>	<b>10.50</b>	Book Value per sh	12.50
45.56	45.78	46.12	46.57	47.02	47.25	47.36	47.53	47.68	47.92	48.08	48.26	48.48	48.94	49.33	49.63	<b>50.00</b>	<b>50.00</b>	Common Shs Outst'g <sup>C</sup>	50.00
16.7	19.3	26.2	19.3	23.2	16.2	18.8	21.1	26.5	19.2	15.5	20.1	22.3	34.1	NMF	39.3	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	25.0
.95	1.02	1.40	1.04	1.23	.97	1.25	1.34	1.66	1.22	.87	1.06	1.12	1.79	NMF	2.12			Relative P/E Ratio	1.40
1.8%	1.7%	1.3%	1.1%	1.5%	1.7%	1.6%	1.8%	2.2%	2.5%	1.9%	1.7%	1.3%	.9%	.8%	.7%			Avg Ann'l Div'd Yield	.7%

**CAPITAL STRUCTURE as of 6/30/19**  
Total Debt \$747.0 mill. Due in 5 Yrs \$275.0 mill.  
LT Debt \$719.1 mill. LT Interest \$30.0 mill.  
(Total interest coverage: 3.2x)  
(61% of Cap'l)  
**No Defined Benefit Pension Plan**  
**Leases, Uncapitalized** Annual rentals \$55.1 mill.  
**Common Stock** 49,856,914 shares as of 7/31/19  
**MARKET CAP: \$1.6 billion (Mid Cap)**

CURRENT POSITION	2017	2018	6/30/19
(\$MILL.)			
Cash Assets	78.6	85.1	98.1
Receivable	54.2	54.4	59.6
Other	40.1	70.7	64.4
Current Assets	172.9	210.2	222.1
Accts Payable	29.0	36.0	27.7
Debt Due	64.4	20.6	27.9
Other	44.2	31.9	72.2
Current Liab.	137.6	88.5	127.8

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
of change (per sh)	14.0%	15.5%	5.0%
Revenues	14.0%	19.0%	7.5%
"Cash Flow"	5.0%	12.0%	20.5%
Earnings	8.0%	9.0%	7.5%
Dividends	8.5%	10.5%	9.0%
Book Value			

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	92.6	130.3	156.8	155.6	535.3
2017	154.1	153.9	152.4	151.6	612.0
2018	154.2	156.5	158.7	161.5	630.9
2019	158.8	158.9	<b>162</b>	<b>165.3</b>	<b>645</b>
2020	<b>165</b>	<b>170</b>	<b>170</b>	<b>175</b>	<b>680</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.28	.27	.15	.13	.83
2017	.13	.08	.09	.14	.44
2018	.13	.19	.31	.30	.93
2019	.28	.26	<b>.32</b>	<b>.34</b>	<b>1.20</b>
2020	<b>.35</b>	<b>.35</b>	<b>.40</b>	<b>.40</b>	<b>1.50</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2015	--	--	--	.24	.24
2016	--	--	--	.25	.25
2017	--	--	--	.26	.26
2018	--	--	--	.27	.27
2019	--	--	--		

**Shenandoah Telecommunications Corp. (Shentel) has a vested interest in the outcome of the pending Sprint-T-Mobile merger.** The deal recently received Department of Justice approval, thus clearing another hurdle. If the transaction is completed, the new T-Mobile will have a number of options regarding its relationship with Shentel. (Shentel currently has an affiliate agreement with Sprint.) For one, T-Mobile could purchase the operating assets of Shentel's wireless business. It could also amend the current affiliate agreement. Another option would be for T-Mobile to allow Shentel to purchase its network and subscribers in its coverage area. At present, Shentel management does not have any hint on which option T-Mobile may choose. We will not speculate either, as there are too many moving parts involved, the most important one being the final approval of the merger.

**Second-quarter results were below our expectations.** The top-line tally of \$158.9 million was about \$6 million below our target, although it was up 1.5% year over year. In Wireless, revenues declined slightly due to the suspension of travel

fees from Sprint. Still, the subscriber base rose modestly. The Cable unit fared a bit better, climbing roughly 8%, thanks to growth in average revenue per user and the effect of the Big Sandy Broadband acquisition. Meanwhile, earnings of \$0.26 per share missed our call by \$0.04, but still climbed from the year-earlier period.

**We have trimmed \$10 million and \$0.05 per share off of our respective 2019 top- and bottom-line estimates.** The second half of the year should be in line with our previous expectations.

**Shentel is set to launch its fiber-to-the-home initiative.** The plan is to focus on areas where fiber assets exist to offer very high-speed Internet to customers, which could be beneficial down the road.

**These shares have slid one notch in Timeliness to 3 (Average).** This stock has lost over 20% in value since our last full-page review in June as investors were not pleased with the latest earnings release. Too, while long-term capital appreciation is above average, the picture should become clearer when the Sprint T-Mobile situation sorts itself out.

Kevin P. O'Sullivan     September 13, 2019

(A) Diluted earnings. Excludes gains / (losses) from discontinued operations: '08, (4¢); '09, (21¢); '10, (2¢); '11, (1¢). Excludes nonrecurring gain / (loss): '10, (4¢); '16, (85¢); '17, 89¢.  
(B) Dividends paid in early December.  
(C) In mill., adj. for splits.

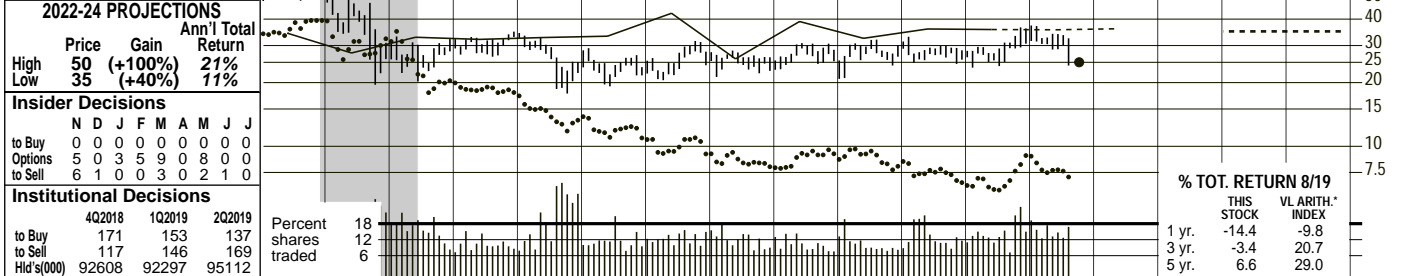
Company's Financial Strength	B
Stock's Price Stability	30
Price Growth Persistence	85
Earnings Predictability	40

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# TELEPHONE&DATA NYSE-TDS

RECENT PRICE **24.98** P/E RATIO **23.8** (Trailing: 18.8; Median: 22.0) RELATIVE P/E RATIO **1.48** DIV'D YLD **2.7%** VALUE LINE

TIMELINESS <b>4</b> Lowered 8/16/19	High: 60.9	33.1	34.9	34.4	29.1	31.5	28.4	30.8	32.0	33.0	36.5	37.3	Target Price Range
SAFETY <b>3</b> New 9/28/07	Low: 19.5	20.2	26.5	17.8	19.2	20.6	21.3	23.0	20.8	24.6	23.5	24.1	2022 2023 2024
TECHNICAL <b>3</b> Lowered 7/19/19	LEGENDS — 4.0 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession												
BETA 1.15 (1.00 = Market)													



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
27.76	29.77	31.50	34.38	37.76	41.75	43.62	44.14	43.94	49.52	45.06	46.42	47.50	46.40	45.44	44.82	<b>45.20</b>	<b>46.90</b>	Revenues per sh	<b>54.80</b>
5.40	5.68	7.15	7.08	8.57	6.92	8.20	8.01	8.20	8.30	10.67	6.49	9.76	8.12	8.98	8.93	<b>8.80</b>	<b>8.90</b>	"Cash Flow" per sh	<b>9.30</b>
.60	.34	1.75	1.26	2.63	.74	1.63	1.25	1.68	.75	1.29	d1.26	1.98	.39	1.37	1.17	<b>1.05</b>	<b>1.10</b>	Earnings per sh <sup>A</sup>	<b>1.50</b>
.29	.30	.32	.34	.36	.38	40	41	43	49	51	54	56	59	.62	.64	.66	.68	Div'ds Decl'd per sh <sup>B</sup>	<b>.74</b>
6.26	6.39	5.73	5.69	5.47	6.03	5.83	6.68	8.24	9.22	8.13	7.41	7.35	5.78	6.17	6.81	<b>9.00</b>	<b>8.85</b>	Cap'l Spending per sh	<b>7.15</b>
24.98	25.53	26.65	28.12	30.70	30.88	32.81	33.75	33.60	37.16	37.85	36.39	37.86	37.67	38.45	40.00	<b>39.90</b>	<b>39.90</b>	Book Value per sh	<b>40.50</b>
124.10	124.96	125.72	126.94	127.87	121.96	115.11	112.99	117.90	107.94	108.76	107.91	108.97	110.00	111.00	114.00	<b>114.00</b>	<b>113.00</b>	Common Shs Outst'g <sup>C</sup>	<b>104.00</b>
39.2	NMF	20.9	30.9	21.8	51.0	16.8	24.4	16.0	31.8	19.8	--	13.8	NMF	20.5	24.8	<b>20.5</b>	<b>24.8</b>	Avg Ann'l P/E Ratio	<b>27.5</b>
2.23	NMF	1.11	1.67	1.16	3.07	1.12	1.55	1.00	2.02	1.11	--	.69	NMF	1.03	1.34	<b>1.03</b>	<b>1.34</b>	Relative P/E Ratio	<b>1.55</b>
1.2%	.9%	.9%	.9%	1.6%	1.0%	1.4%	1.4%	1.6%	2.1%	2.0%	2.1%	2.1%	2.1%	2.2%	2.2%	<b>2.2%</b>	<b>2.2%</b>	Avg Ann'l Div'd Yield	<b>1.9%</b>

CAPITAL STRUCTURE as of 6/30/19				2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Debt \$2430.0 mill. Due in 5 Yrs \$212.0 mill.				5020.7	4986.8	5180.5	5345.3	4901.2	5009.4	5176.2	5104.0	5044.0	5109.0	5150	5300	Revenues (\$mill)	5700						
LT Debt \$2409.0 mill. LT Interest \$109.6 mill.				193.9	143.8	200.5	81.8	141.9	d136.4	219.0	43.0	153.0	135.0	120	125	Net Profit (\$mill)	145						
(LT interest earned: 2.1x; total interest coverage: 2.1x)				34.5%	32.8%	31.2%	37.5%	43.0%	--	39.6%	43.5%	43.5%	20.8%	26.0%	26.0%	Income Tax Rate	26.0%						
No Defined Benefit Pension Plan				3.9%	2.9%	3.9%	1.5%	2.9%	NMF	4.2%	.8%	3.0%	2.6%	2.3%	2.4%	Net Profit Margin	2.6%						
Pfd Stock \$.8 mill. Pfd Div'd \$.3 mill.				25.2%	25.2%	25.0%	27.0%	26.9%	30.9%	34.1%	33.9%	33.2%	31.3%	31.0%	31.0%	Long-Term Debt Ratio	30.0%						
Incl. 9,000 shares, liquidation value of \$100 per share.				63.6%	64.0%	64.6%	62.9%	64.4%	60.9%	57.7%	57.7%	58.2%	59.1%	61.0%	61.0%	Common Equity Ratio	58.0%						
Common Stock 114,512,300 shs.				5935.3	5959.8	6131.7	6377.1	6389.3	6447.8	7145.1	7184.0	7330.0	7722.0	7300	7300	Total Capital (\$mill)	7600						
(Includes 7,293,800 Series A com. shs.)				3507.8	3558.3	3784.5	3997.3	3878.1	3846.1	3764.5	3555.0	3424.0	3346.0	3700	3700	Net Plant (\$mill)	4000						
MARKET CAP: \$2.9 billion (Mid Cap)				4.9%	3.8%	4.7%	2.2%	3.3%	NMF	4.4%	1.9%	3.5%	3.2%	2.0%	2.0%	Return on Total Cap'l	2.0%						
CURRENT POSITION				5.1%	3.8%	5.1%	2.0%	3.4%	NMF	5.3%	1.0%	3.6%	3.0%	2.0%	2.0%	Return on Shr. Equity	2.0%						
2017				5.1%	3.8%	5.1%	2.0%	3.4%	NMF	5.3%	1.0%	3.6%	3.0%	2.0%	2.0%	Return on Com Equity	2.0%						
2018				3.9%	2.5%	3.8%	.7%	2.1%	NMF	3.8%	NMF	2.0%	1.4%	2.0%	2.0%	Retained to Com Eq	2.0%						
6/30/19				24%	33%	24%	65%	39%	NMF	28%	NMF	45%	53%	60%	56%	All Div'ds to Net Prof	52%						

**BUSINESS:** Telephone & Data Systems, Inc. is a telecommunications service company with cellular and landline operations. As of 12/31/18, served about 6.2 million customers in 34 states. Cellular oper. provided 78% of '18 revenue, telephone operations, 22%. Subsidiaries include 82.0%-owned U.S. Cellular and wholly owned TDS Telecom. '18 depreciation rate: 7.3%. About 9,400 employees.

Off. & dir. control 97.8% of Series A common shares (and 56% of voting power), BlackRock, Inc., 11.5% of common (not Series A), Dimensional Fund Advisors LP, 9.0% (4/19 Proxy). President and CEO: LeRoy T. Carlson, Jr. Incorporated: Delaware. Address: 30 North LaSalle St., Suite 4000, Chicago, Illinois 60602. Telephone: 312-630-1900. Internet: www.teldta.com.

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18	'22-'24
of change (per sh)	10 Yrs.	5 Yrs.	to '22-'24	
Revenues	2.0%	-5%	3.0%	
"Cash Flow"	1.5%	-1.0%	1.0%	
Earnings	-4.5%	-4.5%	7.5%	
Dividends	5.5%	5.5%	3.0%	
Book Value	2.5%	1.5%	1.0%	

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	1242	1282	1301	1278	5104.0
2017	1238	1247	1251	1308	5044.0
2018	1225	1255	1297	1332	5109.0
2019	1257	1261	1309	1323	5150
2020	1275	1300	1350	1375	5300

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.07	.25	.11	d.04	.39
2017	.33	.09	d1.64	2.54	1.37
2018	.34	.29	.41	.13	1.17
2019	.50	.28	.20	.07	1.05
2020	.50	.25	.23	.12	1.10

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2015	.141	.141	.141	.141	.56
2016	.148	.148	.148	.148	.59
2017	.155	.155	.155	.155	.62
2018	.16	.16	.16	.16	.62
2019	.165	.165			

**Telephone & Data Systems seems poised for roughly a 10% year-over-year drop in share net.** The company posted June-interim earnings of \$0.28 a share, a few cents higher than our estimate, but a penny shy of the year-ago figure, on lower-than-expected sales of \$1.261 billion. The U.S. Cellular division's performance during the period was nothing to write home about, and the TDS Telecom segment provided a modest counterbalance, thanks to increased broadband penetration. All told, we look for the company to post 2019 earnings of \$1.05 a share, with a nickel-a-share earnings improvement likely in the cards for next year.

**And Wall Street has taken notice.** Notably, Telephone & Data Systems stock has fallen about 14% in value since our June review, versus a 4.4% uptick in the S&P 500 Index over the same period.

**We would not be surprised to see the company complete bolt-on acquisitions going forward.** To wit, over the last few years, management has made it clear that it hopes to allocate roughly 75% of its cash to acquisitions of cable/broadband and hosted and managed services companies.

**The balance sheet is in solid shape.** The company ended the second quarter with \$852 million in cash on hand (down from \$873 million this time last year), and long-term debt of \$2.409 billion (down from \$2.427 billion a year ago).

**Momentum-seeking accounts would do well to turn the page for the time being.** Based on recent price and earnings momentum, TDS stock's Timeliness rank has tumbled a notch and it is now an uninspiring choice for the next six to 12 months.

**Conversely, those with an eye toward 2022-2024 may find this an attractive entry point.** Indeed, given aforementioned drop in its value, the equity now offers above-average capital-appreciation potential over that time frame. However, we would be remiss if we did not point out that this issue is best suited for risk-tolerant investors, as it scores low marks for Price Growth Persistence and Earnings Predictability, and it carries a relatively high Beta coefficient.

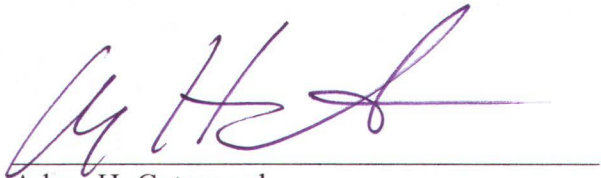




STATE OF KANSAS                    )  
  ) ss.  
COUNTY OF SHAWNEE            )

**VERIFICATION**

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

Subscribed and sworn to before me this 13<sup>th</sup> day of December, 2019.

  
Notary Public

My Appointment Expires: June 30, 2022



**CERTIFICATE OF SERVICE**

20-UTAT-032-KSF

I, the undersigned, certify that a true and correct copy of the above and foregoing Direct Testimony was served via electronic service this 13th day of December, 2019, to the following:

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Vicki Jacobsen