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APPENDIX 1: Size Comparison

APPENDIX 2: Calculation of Rate of Return Incumbent Local Exchange Carrier Size Characteristics

APPENDIX 3: Empirical Evidence Supporting Discounts for Lack of Marketability

Summary

The Rural Broadband Alliance, the Small Company Coalition and the Alexicon Companies (collectively, “Rural Company Group”) submit that while the *Staff Report* provides a useful framework to estimate a reasonable rate of return, the analysis requires significant adjustments in order to be applicable to Rate of Return Incumbent Local Exchange Carriers (“RoR ILECs”).

The cost of capital is a function of risk. In cases where differences in risk characteristics between guideline or proxy companies and the valuation subject exist, adjustments to the cost of equity are required. RoR ILECs have significantly more risk than the proxy group composed of Regional Bell Holding Companies, Mid-Size Price Cap Carriers, and Publicly Traded RLECs. The increased risk to RoR ILECs is caused by smaller scale and scope of operations, higher levels of regulation, greater risk to revenues, and the lack of liquidity and marketability of ownership interests. Therefore, the rate indicated by analysis of the proxy companies should be adjusted upward to recognize the higher level of investment risk in RoR ILECs.

The higher level of investment risk in RoR ILECs can be quantified as (1) a size premium and (2) a premium due to lack of liquidity and marketability of ownership interests. Professional valuation standards, a preponderance of academic findings, government agency guidance, established legal precedence and common analytical practices demand the inclusion of risk premiums for size and lack of marketability in the calculation of the cost of equity. An annually updated investment risk premium report by Duff & Phelps indicates a size premium ranging from 6.02% to 6.54% is warranted. In 1977 the Internal Revenue Service issued

Revenue Ruling 77-287, which recognized the restricted stock studies as empirical data useful for guidance in quantifying discounts for lack of marketability. Restricted stock and private placement studies indicate an average discount for lack of marketability of approximately 21.70%. These studies have been used extensively in U.S. Tax Courts to determine the value of closely-held businesses.

Since the cost of capital is a function of risk, a reasonableness test regarding the represcription of the rate of return must include a comparison of the current and past risks to investment. The RoR ILECs market space has changed significantly due to technological advancements as well as changes in regulation stemming from the 1996 Telecom Act. The following market and regulatory changes have resulted in significantly more risk to investments in Rate of Return Incumbent Local Exchange Carriers in 2013 than in 1990:

| Risk | 1990 | 2013 |
|---------------------|--|--|
| Wireless | Limited voice usage (5 million subscribers) | Ubiquitous voice, data and video (>300 million subs) |
| Text Messaging | Non-existent | Preferred communication method of ages 13-25 |
| Internet | World Wide Web non-existent | E-mail, social media messaging, and computer-based video calling have become significant replacements to telephone calls |
| CLEC & VoIP | Non-existent | 36% of wireline connections provided by interconnected CLEC & VoIP; millions more use “over-the-top” VoIP services |
| Competitive Entry | Monopoly local service areas enjoyed by RoR ILECs; local and long distance providers split | No barriers to competition; RoR ILEC areas open to wireless, CLEC, VoIP and others |
| Revenue Instability | Majority of revenues derived from network users via local and access rates. Functioning rate-of-return economic model. | Majority of revenues from limited and unpredictable universal service funds; access rates transitioning to zero. Rate-of-return mechanism effectively abandoned. |

Due to the obvious and significant increased risk to RoR ILECs, the required return on equity in 2013 must be higher than the 13.19% cost of equity used in 1990 in order to allow carriers to maintain their credit-worthiness and attract capital. When the Federal Reserve's monetary policies, which have artificially deflated the market cost of debt, are taken into consideration, it is reasonable to conclude that the rate of return in 2013 should be higher than that prescribed in 1990.

The Capital Asset Pricing Model and Discounted Cash Flow analyses of the proxy group (with necessary and appropriate adjustments for size and lack of liquidity/marketability), the *Staff Report* recommended cost of debt, and a 60% equity-40% debt capital structure result in a required rate of return for RoR ILECs in the range of 13.75% to 16.36%.

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
Connect America Fund) WC Docket No. 10-90
)

**COMMENTS OF ALEXICON CONSULTING ON BEHALF OF
THE RURAL BROADBAND ALLIANCE,
THE SMALL COMPANY COALITION AND
THE ALEXICON COMPANIES**

Alexicon Consulting respectfully submits the following Comments on behalf of the Rural Broadband Alliance, the Small Company Coalition and the Alexicon Companies (collectively, “Rural Company Group”) in response to the Public Notice released May 16, 2013 in the above-referenced proceeding. These Comments specifically focus on the issues set forth in the *USF/ICC Transformation Order*¹ and the subsequent *Staff Report*² regarding the represcription of the authorized rate of return used to determine certain rates and support of rate-of-return incumbent Local Exchange Carriers.

The Rural Broadband Alliance is a telecommunications policy think-tank and grassroots educational organization whose members include over 120 rural local exchange carriers subject

¹ *Connect America Fund et al.*, WC Docket No. 10-90 et al., Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161, (rel. Nov. 18, 2011) (“*USF/ICC Transformation Order*”), *pets. for review pending sub nom. In re: FCC 11-161*, No. 11-9900 (10th Cir. Filed Dec.8, 2011).

² *Prescribing the Authorized Rate of Return: Analysis of Methods for Establishing Just and Reasonable Rates for Local Exchange Carriers*, WC Docket No. 10-90, Staff Report, DA 13-1111 (wireline Comp. Bur. Rel. May 16, 2013) (“*Staff Report*”).

to rate-of-return regulation. The Small Company Coalition is an initiative led by small company executives that strives to ensure that the voice of small companies is heard by those who have a genuine interest in protecting and enhancing the communication service needs of rural Americans. The Alexicon Companies consist of private, municipal, co-operative, and Tribal small, rural telecommunications carriers in eleven states. Collectively, the Rural Broadband Alliance, the Small Company Coalition and the Alexicon Companies represent over 150 rate-of-return incumbent local exchange carriers.

The Rural Broadband Alliance and the Small Company Coalition asked Alexicon Consulting for assistance in preparing comments because their members realize that regardless of the debt/equity ratio employed, it is not possible in the real world to obtain investment financing to deploy broadband infrastructure when the overall earning opportunity is limited to between 8.02% and 8.76% as recommended in the *Staff Report*. Fearing that the business sense and experience of its members would not be, by itself, sufficient to attract the attention of the Federal Communications Commission (“Commission”) to reject the *Staff Report* proposal, the Rural Broadband Alliance and the Small Company Coalition sought Alexicon Consulting’s economic expertise to provide the analysis and assessment that provides the basis for rejecting the *Staff Report* proposal.

I. Introduction: A Fair Analysis of Required Rate of Return for Incumbent Local Exchange Carriers Requires A Complete Risk Assessment And The Application of Necessary Risk Premiums.

The Rural Company Group has the same goal as expressed in the *Staff Report*, which is “to inform the Commission as it moves to resolve this proceeding and set a rate of return that better reflects market realities.”³ The *Staff Report* provides a useful framework for analysis of an appropriate rate of return for Rate-of-Return Incumbent Local Exchange Carriers (“RoR ILECs”). The Rural Company Group generally agrees with the use of the Capital Asset Pricing Model and Discounted Cash Flow method for valuation purposes, the selection of the proxy group, and the use of the market value of debt for capital structure purposes.

The Commission must set a rate of return high enough to allow carriers to maintain their credit-worthiness and attract capital in order to meet its statutory obligation.⁴ The *International Glossary of Business Valuation Terms*⁵ defines required rate of return as “the minimum rate of return acceptable by investors before they will commit money to an investment at a given level of risk.” By definition then, a required rate of return must account for the risks of a given investment in order to attract capital. The *Staff Report* recommendation fails in this regard because the analysis does not include the necessary risk premiums to account for the differences between the proxy group and the subject group of RoR ILECs.

³ *Staff Report*, Executive Summary, p. i.

⁴ *U.S. v. FCC*, 707 F.2d 610, 612 (D.C. Cir. 1983) (quoting *Federal Power Comm’n v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944)).

⁵ Adopted by the American Institute of Certified Public Accountants, the American Society of Appraisers, The Canadian Institute of Chartered Business Valuators, the National Association of Certified Valuation Analysts, and the Institute of Business Appraisers.

Indeed, the *Staff Report* notes “the cost of capital is a function of risk”⁶ and also “the reliability of the Commission’s analysis depends in large part on the representativeness of the proxy group it uses.”⁷ The importance of proxy group selection cannot be overstated when using a guideline portfolio in valuation. In cases where differences in risk characteristics between guideline or proxy companies and the valuation subject exist, adjustments to the cost of equity are required.⁸

The proxy group companies and the RoR ILECs differ significantly in scale and scope of operations, level of regulation, source of and risk to revenues, liquidity and marketability of ownership interests, and other observable risk characteristics. Despite mentioning a few of these differences,⁹ the *Staff Report* analysis fails to recognize necessary risk premiums for the observable additional risk characteristic in its calculation of a required rate of return.

The Rural Company Group recommends the recognition of a size premium and a premium due to lack of liquidity and marketability in the calculation of the cost of equity of RoR ILECs. Cost of equity adjustments for size and lack of marketability are supported by business valuation standards, the preponderance of academic texts, numerous empirical studies, and authoritative guidance of the Internal Revenue Service and U.S. Tax Courts. Failure to incorporate necessary risk premiums in the cost of equity would result in a rate of return insufficient to attract capital and maintain the credit-worthiness of RoR ILECs.

⁶ *Staff Report* at p.6, para 12.

⁷ *Id* at p. 6, para 11.

⁸ *American Society of Appraisers Business Valuation Standard VII-Valuation Discounts and Premiums*: “A discount or premium is warranted when characteristics affecting the value of the subject interest differ sufficiently from those inherent in the base value to which the discount or premium is applied.”

⁹ *Staff Report* at p.8, para 16 (re: differences with Regional Bell Holding Companies); at p. 9, para 22 (re: differences between price cap and rate-of-return regulation); at p. 21, paras 55-56 (re: the differences between publicly traded and privately owned equity).

II. The Staff Report Provides A Useful Framework To Estimate A Required Rate Of Return.

The *Staff Report* properly recognizes the importance of using the weighted average cost of capital (“WACC”) formula in determining the interstate authorized Rate of Return (“RoR”), and proceeds from there to estimate the capital structure, cost of debt, and cost of equity of a selected proxy group. The methodologies used in the *Staff Report*, including the constant growth Discounted Cash Flow model (“DCF”) and the Capital Asset Pricing Model (“CAPM”), have been used in numerous jurisdictions for many regulated utilities and, if used correctly, are able to estimate a reasonable RoR.

A. The Capital Asset Pricing Model and Discounted Cash Flow methods are appropriate valuation methodologies.

One of the key pieces of information necessary to determine the WACC is an estimate of the cost of equity (return on equity or “ROE”). The determination of a reasonable ROE is the most complicated portion of the WACC and by extension carries with it no small amount of controversy. The *Staff Report* utilizes two valuation models in estimating a reasonable ROE - the CAPM and the DCF. Both of these methods in various forms, as stated in the *Staff Report*, are widely used by financial professionals in estimating ROEs - both within and outside the regulated telecommunications industry segment.¹⁰

The CAPM focuses on the positive and largely linear relationship between risk and rates of return required by prudent investors. While there are different versions of the CAPM equation, in general it provides a reasonable basis upon which to estimate the ROE input to the WACC calculation. The key is using the industry standard modern version of the CAPM,

¹⁰ *Id.*, at p.22, para 57.

accounting for differences in risks characteristics between the proxy and subject interest, and using a rational and data-driven process. The Rural Company Group will provide further comment on the use of the CAPM below.

The DCF, as stated in the *Staff Report*, “assumes that the price of a share of stock is equal to the discounted present value of all its expected future dividend payments extending to infinity.”¹¹ It is known as the most widely-used methodology for regulatory bodies in setting allowed returns, and it recognizes that an investor’s required return is risk sensitive. In simple terms, the DCF equation, isolating the required return variable, can be stated as [required rate of return = dividend yield + dividend growth rate]. Similar to the CAPM, the challenge with using the DCF is in using the proper variables to account for the investment risk.

Overall, the use of the CAPM and DCF provides a useful framework to estimate ROE. However, and as will be discussed further below, these models must properly account for the differences in risks between the proxy group and RoR ILECs to comply with common analytical practice, professional valuation standards, academic theory, legal precedence and other authoritative guidance.

B. The proxy group should be selected from within the domestic wireline telecommunications industry.

The *Staff Report* is correct in stating that the “reliability of the Commission’s analysis depends on large part on the representativeness of the proxy group it uses.”¹² The most important use of the group of proxy companies is to obtain data to populate the DCF and CAPM models in order to estimate a reasonable ROE, which is then used in the WACC equation. The ROE to be used in the determination of the authorized RoR cannot, paradoxically, be based on

¹¹ *Id.*, at p.33, para 93

¹² *Id.*, at p.6, para 11

(for the most part) the companies who will be impacted by the new RoR - small, rural LECs. Only companies with publicly traded equity (shares of stock) generate the data necessary to determine company-specific ROEs using CAPM and DCF. For small, privately-held companies such as RoR ILECs, a group of representative proxy companies is used to accomplish this task.

It is then vital that the group of proxy companies is chosen with the utmost of care, and, to the greatest extent possible, resembles the target group of companies (those to which the resultant RoR will be applied). Staff applied a three-part test in determining the best representative proxy group, the features of which are (1) threshold of incumbent LEC operations, (2) similarity to rate-of-return operations, and (3) reliability of financial data.¹³ Obviously, there can be differences of opinion as to the test to undertake, such as described by the Rural Associations' comments.¹⁴ However, the Rural Company Group strongly believes that the selected proxy group must at least consist of companies in the same industry, or hazard that any results using a different type of group will need to be so heavily adjusted so as to be meaningless. Therefore, and while the Rural Company Group may have criticisms of the application of the three-part test as described in the *Staff Report*, we agree with the overall outcome - that the proxy group consists only of members of the domestic wireline telecommunications industry.

C. Market debt data is a better guide for capital structure purposes.

The Rural Company Group agrees with the approach described in the *Staff Report* to determine the proxy group capital structure based on market values. This method is superior to

¹³ *Id.*, at p.6, para 12

¹⁴ See Comments of NECA, NTCA, OPASTCO, and WTA (filed January 18, 2012) in WC Docket No. 10-90, , et al., at Appendix C. Professor Randal Billingsley uses a comparable risk basis for selecting a proxy group, and arrives at a group that contains no wireline telecommunications firms. The Rural Company Group does not believe such a group, with very little apparent similarities to RLECs, is a reasonable basis for estimating a reasonable ROE.

the alternative - book debt amounts - because using long term debt recorded on company books reflects decisions made in the past, where the goal in setting the WACC in this proceeding is to arrive at a forward-looking RoR.¹⁵

The Rural Company Group agrees that the cost of debt equation currently codified in the Commission's rules¹⁶ is in need of correction. The *Staff Report* details the problem with the current equation and recommends a solution.¹⁷ Obviously, to arrive at a cost of debt by dividing two years' worth of interest expense by a two-year average long term debt balance will result in an inaccurate answer. Thus, the Rural Company Group agrees with the revised formula proposed in the *Staff Report*.

The *Staff Report* arrives at an average cost of debt based on (1) data from the sixteen proxy companies, and (2) the corrected cost of debt equation discussed herein.¹⁸ The cost, 6.19%, is derived from the average of the proxy group's interest expense for 2012 and the balance of long term debt at 12/31/2012.¹⁹ The Rural Company Group, with the caveat discussed below, agrees with the *Staff Report's* approach in using the embedded cost of debt in arriving at the 6.19% used in the WACC equation.

One issue with calculating the cost of debt using embedded, or historical, data is that it carries into the calculation decisions made in the past by the companies incurring the debt. One of the many factors surrounding these decisions is the state of the economy at the time the debt is

¹⁵ The RoR adopted as a result of this proceeding is necessarily "forward-looking", as it will be applied from the adoption date going forward, and due to the historical reality of how often the Commission has revised the RoR (the last time being 23 years ago).

¹⁶ 47 CFR § 65.302

¹⁷ *Staff Report* at p. 18, para 46

¹⁸ *Id.* at pp.17-20, para 45-50, Appendix E

¹⁹ *Id.*, Appendix E

incurred, and the federal monetary policy in place. In response to the 2008 recession, the Federal Reserve adopted a monetary policy designed, in part, to keep longer term interest rates down.²⁰ This monetary policy, in turn, has had the general effect of keeping the cost of long term debt, such as that incurred by the proxy companies, artificially low.²¹ Given this fact, the cost of debt determined in the *Staff Report* may be understated. The Commission should take this into consideration when arriving at the overall WACC to be applied to RoR ILECs.

III. Adjustments To The Staff Report Analysis Are Necessary to Ensure a Rate of Return High Enough to Allow Carriers to Maintain Their Credit-Worthiness and Attract Capital.

While the Rural Company Group agrees in principle with the approach to determining the WACC as detailed in the *Staff Report*, there are a number of adjustments needed before the Commission can arrive at a reasonable RoR for small, rural ILECs. While the Rural Company Group does not believe there are any systemic problems with Staff's approach, there are nevertheless crucial deficiencies in the execution of the analysis that must be addressed, including (1) the proper capital structure, and (2) risk premium adjustments to recognize materially different risk characteristics in the average RoR ILEC and the proxy group.

A. The Capital Structure should be 40% debt and 60% equity.

According to the *Staff Report*, the Commission should utilize a market-based capital structure that based on Staff's proxy group, results in a capital structure that is 46% equity and

²⁰ See *e.g.*, Federal Reserve Board press release June 19, 2013 available at <http://www.federalreserve.gov/newsevents/press/monetary/20130619a.htm>

²¹ See *e.g.*, Moody's Yield on Seasoned Corporate Bonds - All Industries, AAA, accessed at www.federalreserve.gov/releases/h15/data.htm. This data shows the trend in Corporate AAA bond yields from 1976 through 2012. The average from 1990 through 2012 is approximately 6.53%, while the yield reported for 2012 was 3.67%.

54% debt, utilizing all companies in Staff's proxy group.²² However, in a footnote in the *Staff Report*, the debt ratio resulting from excluding FairPoint, Hawaiian Telcom, and Lumos is presented as 51% for 2012, and decreases to 46% using an average over the past five years.²³ The exclusion of FairPoint, Hawaiian Telcom, and Lumos was presumably done due to the outlying nature of some of these companies' statistics.²⁴ The Rural Company Group believes the Commission should utilize a capital structure that better reflects the operating and financial characteristics of small, rural ILECs.

One of the key characteristics of small, rural ILECs is their inherent lack of easy access to capital markets. While many rural ILECs may have access to additional debt through sources such as the Rural Utilities Service ("RUS") and CoBank, the fact remains that small rural ILECs must have a ready source of capital from which to finance current and long term operations. For a non-publicly traded company, allowable debt burdens are limited as a matter of practicality, and thus most capital needs come from equity. Furthermore, when uncertainties facing small rural ILECs are increasing in the post-*USF/ICC Transformation Order* environment, reliance on debt will naturally, and rationally, decrease.

Lower reliance on debt by RoR ILECs is already in evidence. The two major lenders to rural carriers, CoBank and the Rural Utilities Service, report sharply lower lending for network infrastructure over the last year. CoBank reports that it is making no new infrastructure loans in

²² *Staff Report.*, at p. 17, para 44 ("We therefore recommend...market value capital structures should be used to calculate the WACC"); footnote 78 ("We will use 2012 market values..."); Appendix I1

²³ *Id.*, footnote 78

²⁴ See e.g., *Staff Report* at p. 15, para 41 ("...FairPoint ha[s] non-investment bond ratings"); and footnote 75 ("...excluding FairPoint, and also Hawaiian Telcom and Lumos, as capital structure data was not available for either of the latter two carriers for every year of the five-year period...").

light of the challenging and uncertain investment environment in the wake of the FCC's recent reforms. In a letter to the Commission, Robert F. West, CoBank Senior Vice President, stated:

*“CoBank is concerned about the negative impact the USF/ICC Transformation Order (the Order) is having on investment in rural broadband. The various caps and limitations on universal service funding and inter-carrier compensation, especially for rate-of-return carriers, are making it increasingly difficult for us to extend credit for the purpose of deploying ubiquitous rural broadband networks.”*²⁵

The U.S. Department of Agriculture's Rural Utilities Service (“RUS”) has annually loaned its entire capacity of available funds until 2012, when it was able to lend only 11.6% of the \$690 million that was available to rural RoR ILECs. Further, of another \$736 million available for RUS broadband loans, only 9.4% (\$68.9 million) was borrowed in 2012.²⁶

As a result of the realities of operating a small, non-publicly traded rural ILEC in today's environment, the Commission must reflect a higher equity ratio in its calculation of the WACC. The Rural Company Group therefore recommends the Commission utilize a capital structure that

²⁵ Letter of Robert F. West to FCC, Marlene H. Dortch, May 18, 2012, available at <https://prodnet.www.neca.org/publicationsdocs/wwpdf/0511cobank.pdf>.

²⁶ The United States Department of Agriculture / Rural Development, “The Telecommunications Program,” presentation by RUS Deputy Administrator Jessica Zufolo to the National Association of Regulatory Utility Commissioners, Washington, DC, February 2, 2013, slide 5. See, also, “Vilsack, RUS Meet With Genachowski To Discuss The Need For More Changes In Implementation Of USF-ICC Transformation Order: Warn Of Unintended Consequences And Need For USF-ICC Support To Be Sufficient and Predictable,” Independent Telecom Report, Volume 12, Issue 3 (February 18, 2013), pp. 3-5); “In the meeting [with FCC Chairman Julius Genachowski and his staff], [Secretary Vilsack and] USDA officials noted that demands for RUS loans dropped dramatically in 2012. RUS reported “demand” for only 37 percent of the funds that were actually appropriated by Congress. USDA cited the reductions in USF and ICC that will result from the implementation of the FCC's Transformation Order as the reason for the decline in loan applications. Rural carrier advocates have noted that the reduced loan activity reflects the adverse impact of the FCC Order on infrastructure investment and rural community economic development.” The figures were also reported in an ex parte filed at the FCC on February 15, 2013. The reconciliation is that the “demand” for loans was reported as 37% according to Secretary Vilsack, but the RUS actually “obligated” the amounts reported by Ms. Zufolo.

is 60% equity and 40% debt, based on the average capital structures for Staff's proxy group, excluding the midsize carriers.²⁷

B. The Staff Report has misrepresented the availability and cost of debt for rate-of-return Local Exchange Carriers.

The *Staff Report* mischaracterizes the availability and cost of debt for RoR ILECs when it claims that loans made by CoBank do not carry market-based interest rates, and when it claims that low-interest rate loans are widely available from the Rural Utility Service.²⁸ Loans made available by RUS are limited as to who can borrow and to what use borrowed funds can be put. As to the CoBank fallacy, CoBank itself filed early comments requesting the Bureau correct its report.

RUS offers debt financing under a number of programs of which the Telecommunications Infrastructure Program is the most relevant to this proceeding.²⁹ According to RUS, proceeds from Telecommunications Infrastructure Program loans can be used for new construction, improvements, expansions, and for acquisitions and refinancing (with certain restrictions). The *Staff Report* claims that "it may be necessary to reduce, or cap, the embedded cost of debt due to the availability of government subsidized loans to most, if not all, rate-of-return carriers."³⁰ However, the facts support a different conclusion. A plain reading of the allowed use of the RUS funds demonstrates that (1) not all uses of funds are allowed, and are thus restricted by regulation, and (2) not all carriers would be reasonably able to avail themselves

²⁷ This average equals 40.08%. Midsize carriers can reasonably be excluded for several factors, including (1) the relatively high level of debt resulting from acquisition activity (FairPoint, Windstream), and (2) non-investment grade bond ratings, which reflect higher risk and higher interest costs, and are noted for some of the carriers (FairPoint, Cincinnati Bell)

²⁸ *Staff Report* at p.19, para 49

²⁹ See in general 7 CFR § 1735

³⁰ *Staff Report* at p.19, para 49

of these funds. For example, a company needing operating capital cannot simply expect to receive an RUS Telecommunications Infrastructure Program loan; as “operating capital” is not one of the allowed uses of the funds. In addition, some companies may have current loan covenants that, for example, restrict the company’s ability to provide the RUS with a first lien on all of the borrower’s property – a requirement for RUS loans.³¹ Thus, the Commission cannot reduce or otherwise adjust the cost of debt for inclusion in the WACC based on this fallacious reasoning.

Staff’s implication that CoBank offers loans with government-subsidized interest rates is clearly incorrect. Fortunately, CoBank filed early comments pointing out this error:

“We ask that the Staff Report be corrected to reflect accurately CoBank’s requirement to charge a market interest rate to all telecommunications company borrowers and to remove any comments that suggest in any way that CoBank provides subsidized interest rate loans to telecommunications companies.”³²

CoBank goes further, however, and attacks the entire statement made in the *Staff Report* suggesting that the cost of debt be capped or reduced due to the existence of loans containing government subsidized interest rates:

“We further ask the [sic] paragraph 49 of the Staff Report be removed in its entirety given it is misleading with respect to the availability of funding to RLECs.”³³

The Rural Company Group agrees with CoBank’s comments, and recommends the Commission utilize a cost of debt no less than that documented herein.

³¹ 7 CFR § 1735.22(b)

³² CoBank, ACB Comments, filed June 21, 2013 in WC Docket No. 10-90 at 5

³³ *Id.*

C. Professional standards and authoritative guidance demand inclusion of necessary cost of equity adjustments for the differences in risk characteristics between the proxy group and rate-of-return Incumbent Local Exchange Carriers.

The *Staff Report* cost of equity analysis does not comply with professional valuation standards or common analytical practices because it does not make necessary adjustments to account for the differences in risks between the proxy group and RoR ILECs.

For purposes of this discussion, the terms “discount” and “premium” are interchangeable; they both refer to adjustments made to the rate of return. Shannon Pratt, one of the world’s leading authorities on business valuation, states:

*“The purpose of a discount or premium is to make an adjustment from some base value. The adjustment should reflect the differences between the characteristics of the subject interest (the interest being valued) and those of the base group on which indications of value exist.”*³⁴

In fact, the application of necessary value discounts/premiums is required by professional valuation standards. The American Society of Appraisers Standards state:

*“A discount or premium is warranted when characteristics affecting the value of the subject interest differ sufficiently from those inherent in the base value to which the discount or premium is applied.”*³⁵

The National Association of Certified Valuation Analysts Professional Standards also requires the application of risk premiums for marketability, liquidity, control and other similar factors.³⁶

³⁴ Shannon Pratt, “Overview of Business Valuation Discounts and Premiums and the Bases to Which They are Applied”, p. 2. (http://www.shannonpratt.com/article/overview_business_valuation_discounts_premiums.pdf).

³⁵ American Society of Appraisers *Business Valuation Standard VII - Valuation Discounts and Premiums* (<http://www.appraisers.org/Files/Professional%20Standards/bvstandards.pdf>).

³⁶ *NACVA Professional Standards*, Development Standards 3.11 and 3.12. (http://www.nacva.com/PDF/NACVA_Standards.pdf)

The American Institute of Certified Public Accountants has a similar standard which states:

*“During the course of a valuation engagement, the valuation analyst should consider whether valuation adjustments (discounts or premiums) should be made to a **pre-adjustment** value. Examples of valuation adjustments for valuation of a business, business ownership interest, or security include a **discount for lack of marketability or liquidity** and a **discount for lack of control**.”*³⁷ [emphasis in the original]

Furthermore, the application of risk premiums to the value of small and closely-held businesses is supported by governmental authority and legal precedent. Internal Revenue Rulings 59-60 and 77-287 recognize the valuation differences and considerations for small and closely-held companies. Numerous United States Tax Court and Court of Federal Claims cases have found significant discounts/premiums due to lack of marketability, lack of control and industry risk. While the sheer volume of case data makes a complete list of cases and discussion of findings unwieldy, the vast majority of cases focus on the level of risk adjustment since the necessity of such additional risk adjustments is a well-established precedent.³⁸

Based on the weight of professional standards, preponderance of academic findings, government agency guidance, and established legal precedence, one can only conclude that risk premiums must be applied to the base value in cases with significant differences in risk

³⁷ AICPA *Statement on Standards for Valuation Services*, para 40.
(http://www.aicpa.org/InterestAreas/ForensicAndValuation/DownloadableDocuments/SSVS_Full_Version.pdf)

³⁸ See: *Mandelbaum v. Commissioner*, T.C. Memo 1995-255 (June 12, 1955).
Huber v. Commissioner, T.C. Memo 2006-96; 2006 Tax Ct. Memo LEXIS 97 (May 9, 2006).
Estate of Frazier Jelke III v. Commissioner, T.C. Memo 2005-131 (May 31, 2005).
Clarissa W. Lappo v. Commissioner, T.C. Memo 2003-258 (Sep. 3, 2003).
Estate of Webster E. Kelly v. Commissioner, T.C. Memo 2005-235 (Oct. 11, 2005).
Estate of Helen A. Deputy v. Commissioner, T.C. Memo 2003-176 (June 13, 2003).
Estate of Mildred Green v. Commissioner, T.C. Memo 2003-348 (Dec. 29, 2003).
Okerlund v. United States, 53 Fed. Cl 341 (Fed. Ct. 2002), *motion for new trial denied*, 2003 U.S. Claims LEXIS 42 (Fed Cl. 2003), *aff'd*, 365 F.3D 1004 (Fed. Cir. 2004).

characteristics between the subject group (RoR ILECs) and the proxy group upon which the value is based.

1. Significant characteristics affecting value differ between the proxy group and Rate of Return Incumbent Local Exchange Carriers.

The *Staff Report* selected domestic telecommunications carriers with some wireline service as surrogates for RoR ILECs. The proxy group consists of Regional Bell Holding Companies (“RHCs”): AT&T, CenturyLink, Verizon; Mid-Size Price Cap Companies (“Mid-Size”): Alaska Communications Systems, Cincinnati Bell, FairPoint Communications, Frontier Communications Corporation, Hawaiian Telcom, Lumos, Windstream; and Publicly Traded RLECs (“RLECs”): Alteva, Consolidated Communications Holdings³⁹, HickoryTech Corp, New Ulm Telephone, Shenandoah Telecommunications, Telephone and Data Systems.⁴⁰

In the *USF/ICC Transformation Order*, the Commission lists factors that should be considered in determining a reasonable required rate of return for RoR ILECs including (1) their unique competitive and market conditions; (2) differences in diversification of offerings; and (3) infrastructure deployment; among other possible considerations.⁴¹ Additionally, the professional guidance of the National Association of Certified Valuation Analysts, American Society of Appraisers, and Internal Revenue Service Rulings dictate that financial strength, competitive position, government regulation, market conditions, control and marketability factors must be considered in the valuation of closely-held businesses.

³⁹ We would note that Consolidated is miscategorized as a rate-of-return company in the *Staff Report*. Consolidated consists of five local exchange carriers only one of which (Surewest) is rate-of-return. The other four companies operate under price cap regulation.

⁴⁰ *Staff Report*, page 7.

⁴¹ *USF/ICC Transformation Order*, para 1056.

The Rural Company Group agrees with the *Staff Report* that “the cost of capital is a function of risk”⁴² and also “the reliability of the Commission’s analysis depends in large part on the representativeness of the proxy group it uses.”⁴³ The *Staff Report* notes that (1) RHCs differ significantly from other ILECs in size and diversity of operations as well as regulation;⁴⁴ and (2) Mid-Size proxies are subject to price cap regulation rather than rate-of-return, are much larger, and have a capital structure with more debt than RoR ILECs.⁴⁵ In addition, the Publicly-traded RLECs are also significantly larger and have scales and scopes of operations that are not comparable to the average RoR ILEC. In sum, the proxy group companies and the RoR ILECs differ significantly in scale and scope of operations, level of regulation, source of and risk to revenues, liquidity and marketability of ownership interests, and other observable risk characteristics. Each of these differences results in greater risk to the RoR ILECs than to the proxy group companies.

While the Rural Company Group recognizes that an imperfect proxy group is unavoidable, that limitation can be overcome by the application of necessary adjustments to quantify the differences in investment specific risk. However, the *Staff Report* fails to provide a comparative risk assessment between RoR ILECs and the proxy group despite the fact that such a failure is contrary to professional valuation standards, common industry practice, and the Commission’s instructions in the *USF/ICC Transformation Order*.⁴⁶ Consequently, the required

⁴² *Staff Report* at p.6, para 12.

⁴³ *Id* at p. 6, para 11.

⁴⁴ *Id* at p. 8, para 16.

⁴⁵ *Id* at p. 9, para 22.

⁴⁶ *USF/ICC Transformation Order*, para 1056.

rate-of-return calculated in the *Staff Report* is insufficient and will not allow RoR ILECs to attract capital from investors considering similar risk investments.

2. A size premium must be applied to properly recognize the differences between the subject companies and the proxy group.

Regardless of how size is measured – revenues, assets, number of customers, number of employees, etc. – the difference between the proxy group companies and the average RoR ILEC is vast. The Rural Company Group used the NECA 2012-1 High Cost Loop data submission and 2011 tariff filing to calculate the average regulated revenues, telephone plant in service, and number of access lines for 675 cost RoR ILEC study areas.⁴⁷ We obtained equivalent data for the proxy group companies from the individual company 2012 SEC Form 10-Ks.

| Proxy Group and Company | Annual Regulated Revenues - 2012* | Telephone Plant in Service @12/31/2012 | Access Lines @12/31/2012 |
|--|-----------------------------------|--|--------------------------|
| Averages of Proxy Groups: | | | |
| Regional Bell Holding Companies (RHCs) | \$ 38,889,000,000 | \$ 170,856,000,000 | 22,712,667 |
| Mid-Size Companies | \$ 1,960,464,857 | \$ 5,263,123,000 | 1,105,698 |
| Publicly Traded RLECs | \$ 251,072,498 | \$ 1,191,158,821 | 248,033 |
| Average of All Proxy Companies | \$ 8,243,543,062 | \$ 34,784,800,871 | 4,835,380 |
| Average Cost RoR ILEC (675 study areas) | \$ 7,455,236 | \$ 34,292,002 | 4,391 |
| Difference as an Order of Magnitude | | | |
| Regional Bell Holding Companies (RHCs) | 5216 X | 4982 X | 5172 X |
| Mid-Size Companies | 263 X | 153 X | 252 X |
| Publicly Traded RLECs | 34 X | 35 X | 56 X |
| Average of All Proxy Companies | 1106 X | 1014 X | 1101 X |

The differences are so large that we chose to express them as an order of magnitude. The average proxy company is over **one thousand times larger** than the average RoR ILEC in terms

⁴⁷ The NECA HCL data submission is available at <https://www.neca.org/PublicInterior.aspx?id=1190>. We removed the 91 study areas belonging to the Publicly Traded RLEC proxy group from the calculation leaving 675 cost RoR ILEC study areas. Access Lines and Telephone Plant in Service are the average of the DL 060-Total Loops and DL 160-Total TPIS, respectively.

of revenues, telecommunications plant assets and customers. Even the smallest proxy group, the Publicly Traded RLECs, is over thirty times larger than the average RoR ILEC. A full size comparison and details of the calculation of averages is provided in Appendices 1 and 2.

Since the Rural Company Group represents a significant number of the RoR ILECs we also compiled the actual 2012 data of the represented companies for comparison. The survey represents 157 RoR ILEC study areas which include both cost-based and average schedule recovery companies. The results are similar:

| | Annual Regulated Revenues - 2012* | Telephone Plant in Service @12/31/2012 | Access Lines @12/31/2012 |
|--|-----------------------------------|--|--------------------------|
| Average of All Proxy Companies | \$ 8,243,543,062 | \$ 34,784,800,871 | 4,835,380 |
| Rural Company Group (157 study areas) | \$ 8,251,467 | \$ 40,433,362 | 4,887 |
| Difference as an Order of Magnitude | 999 X | 860 X | 989 X |

The differences in size between the proxy group and RoR ILECs should be obvious to even the most casual observer.

a) Smaller size results in greater risk, and the “Size Effect” is greatest in the smallest companies.

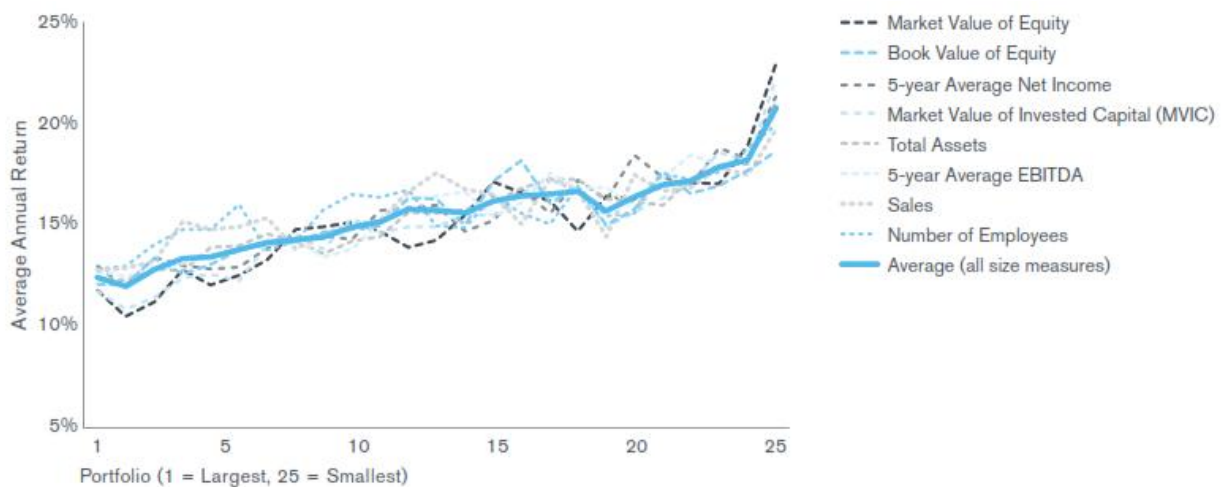
The *Staff Report* dismisses the idea of a size premium in three brief sentences based on a single inconclusive study.⁴⁸ However, it is a well-established, empirical fact that smaller sized firms experience higher risks and therefore require greater returns. An extensive amount of research has shown that a great deal of a company’s risk can be attributed to its size.⁴⁹ The total

⁴⁸ *Staff Report*, p. 28, para. 75.

⁴⁹ Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweihs, *Valuing Small Businesses and Professional Practices*, Third Edition, (McGraw-Hill 1998) at p. 210.

risk also increases with decreasing company size.⁵⁰ The Duff & Phelps Risk Premium Report shows a clear inverse relationship between size and historical rates of return, regardless of how size is measured. In Graph 1, as size decreases (from left to right), the average annual return over the time study horizon tends to increase for each of the eight size measures.

Graph 1: Average Annual Return, 8 Alternative Measures of Company Size (1963-2012)



Source: Duff & Phelps Risk Premium Report 2013

Staff suggests that the size premium varies or even disappears (although this assertion appears to be contradicted by their own footnote on the subject) and therefore, should not be considered in the cost of equity estimate.⁵¹ Staff’s statement is misleading and contrary to the empirical evidence and market realities. In their study of small company stock performance, Annin and Falaschetti found that regardless of any rolling 20-year time frame from 1926, there is no single period in which small company stocks did not outperform large company stocks.⁵² In all but a few periods examined, the stocks of small public companies have realized returns substantially in excess of those of larger companies. Furthermore, Staff’s statement that smaller

⁵⁰ Ibbotson Associates, *Stocks, Bonds, Bills and Inflation (SBBI) Valuation Edition 2005 Yearbook*, p. 129.

⁵¹ *Staff Report*, p. 28, para. 75.

⁵² Michael Annin and Dominic Falaschetti, “Is There Still a Size Premium?” *CPA Expert* (Winter 1998).

firms in the United States have not performed significantly better than large ones from 1980 onward is demonstrably untrue. Morningstar/Ibbotson produces a *Risk Premia Over Time Report* which shows the size premium for micro-capitalization stocks for time periods beginning in every year from 1926 to 2008 and ending in 2012. In other words, the report shows the annual size premium returned for every length of investment holding time from 86 years to 4 years. Examination of the results shows a positive size premium for micro-capitalization stocks for **every investment holding time period** ending in 2012.⁵³ In fact, since the last rate of return prescription in 1990 micro-capitalization stocks have outperformed larger stocks by 4.1%.⁵⁴

It is not surprising that there will be short periods of higher volatility in the returns of smaller firms; that is, after all, the logical outcome of increased risk. Short periods of underperformance by micro-capitalization firms are expected due to the long-term trends (serial correlation) observed in the historic size premium.⁵⁵ However, these fluctuations do not indicate a fundamental shift in the markets that would eliminate the size premium.

Academic studies and theory aside, it is important to consider the common sense aspect of the issue and ask “is it reasonable to expect small companies to be more risky than large ones?” Most small companies have very real aspects of risk that are not present (at least not to the same degree) in larger companies. Smaller firms such as RoR ILECs have greater risks due to greater reliance on key persons, reduced market reach, customer and supplier concentrations, fewer financial resources, non-diversified product/service offerings, differences in regulation, limited information systems, and a host of other issues. Does the small three-store retail chain in

⁵³ 2013 Ibbotson SBBI Risk Premia Over Time Report, Appendix A, Table A-6.

⁵⁴ *Id.*

⁵⁵ Michael Annin and Dominic Falaschetti, “Is There Still a Size Premium?” *CPA Expert* (Winter 1998).

one community have more risk than Wal-Mart? The answer is a resounding a “yes”. Yet the *Staff Report* recommendation makes no such distinction. This failure results in a cost of equity estimate for RoR ILECs that is insufficient and unreasonable.

b) The size premium has been reliably quantified.

In fact, size premiums are quantified annually by leading investment resources such as the Morningstar/Ibbotson SBI Valuation Yearbook and The Duff & Phelps Risk Premium Report. Both the Morningstar/Ibbotson and Duff & Phelps reports provide size premiums that are intended for use as additives in either buildup or CAPM models using guideline portfolios. Duff & Phelps uses eight alternative size measures to rank companies into 25 size portfolios: market value of equity; book value of equity; 5-year average net income; market value of invested capital; total assets; 5-year average EBITDA; sales; and number of employees.

RoR ILEC data for three of the eight size measures is available and yields the following results from *The Duff & Phelps Risk Premium Report 2013*:

| Size Measure | Table | Average RoR ILEC | Portfolio Rank | Size Premium |
|------------------------------------|-------|------------------|----------------|--------------|
| Book Value of Equity ⁵⁶ | B-2 | \$ 12,532,382 | 25 | 6.02% |
| Sales (Revenues) ⁵⁷ | B-7 | \$ 7,455,236 | 25 | 6.17% |
| Number of Employees ⁵⁸ | B-8 | 52.2 | 25 | 6.54% |

⁵⁶ Book Value of Equity is estimated as equal to net assets from the 2012-1 NECA High Cost Loop data submission as discussed in Appendices 1 and 2. This estimate is obviously high since it assumes a capital structure of 100% equity / 0% debt, however it still places the average RoR ILEC well within the smallest size category.

⁵⁷ See Appendix 2 for calculation of average revenues.

⁵⁸ *NTCA 2013 Survey of Compensation and Benefits in the Independent Telecommunications Industry*. The survey represents 312 RoR ILEC members of NTCA.

Based on the empirical evidence, one can only conclude that a cost of equity size premium in excess of 6% is warranted for RoR ILECs.

3. An additional adjustment to the cost of equity for lack of liquidity and marketability is warranted.

Barron's Dictionary of Business Terms defines marketability and liquidity as follows:

Marketability: Speed and ease with which a particular product or investment may be bought or sold. In common use, *marketability* is interchangeable with *liquidity*, but *liquidity* implies the preservation of value when a security is bought or sold.⁵⁹ [emphasis in the original]

All investors prefer marketable, liquid investments to unmarketable, illiquid ones. The market for securities in the United States is considered the most liquid market for any kind of property anywhere in the world.⁶⁰ Empirical evidence indicates that investors extract a heavy price discount relative to actively traded securities for ownership interests that lack this high degree of liquidity and marketability. The vast majority of RoR ILECs are not publicly traded; therefore, an adjustment for illiquidity is warranted.

a) The Internal Revenue Service, U.S. Tax Courts, and international appraiser organizations recognize the need for valuation adjustments due to lack of marketability.

As discussed previously, numerous United States Tax Court and Court of Federal Claims cases have found significant discounts/premiums due to lack of marketability. Internal Revenue Ruling 77-287 specifically mentions the use of restricted stock studies to recognize the valuation differences and considerations for small and closely-held companies. The Internal Revenue Service published a 116-page *Discount for Lack of Marketability Job Aid for IRS Valuation*

⁵⁹ Jack P. Friedman, ed., *Barron's Dictionary of Business Terms*, 2nd ed. (Barron's, 1994), p.363.

⁶⁰ Shannon P. Pratt with Alina V. Niculita, *Valuing A Business – The Analysis and Appraisal of Closely Held Companies*, Fifth Edition, (McGraw-Hill 2008) at p. 418.

Professionals in 2009 which reviews the empirical studies and court findings regarding the subject ⁶¹. Additionally and as previously discussed, the professional guidance of the National Association of Certified Valuation Analysts, American Society of Appraisers, and Internal Revenue Service Rulings dictate that marketability factors must be considered and accounted for in the valuation of business ownership interests.

b) The size effect is not a proxy for lack of marketability.

Some parties may contend that lack of liquidity and marketability is already accounted for in the size premium. However, the previously discussed size effect is not a proxy for illiquidity or unmarketability. The Duff & Phelps and Morningstar/Ibbotson size premium calculations each use stocks (both small and large) that are offered for daily trading on major stock exchanges. The size premium only represents liquid investments. Therefore, it is impossible for the size premium to include the valuation differences between readily-sold, marketable public stocks with known prices and low transaction costs and the ownership interests of much smaller, closely-held businesses such as RoR ILECs. An additional premium must be used to capture the investment risk difference for liquidity/marketability.

c) Many empirical studies quantify the lack of marketability discount.

There is an abundance of empirical data that quantify the discount for lack of marketability (“DLOM”). The studies may be grouped in three categories for discussion purposes: securities-based approaches, restricted stock studies, and private placement studies. The securities-based approaches use theoretical option pricing models and observations of illiquidity demonstrated by traded stock prices and option prices. Due to the nature of these

⁶¹ Available at <http://www.irs.gov/pub/irs-utl/dlom.pdf>.

studies, securities-based approaches are not considered appropriate for use with privately-held companies.

The restricted stock studies compare the price of publicly traded shares to the sale of restricted shares of the same company that are identical in rights and powers except for the ability to be freely marketed. Private placement studies compare the sale price for blocks of publicly-traded stock sold through private placements, generally to various institutional entity buyers, to the sale price of the same stock as traded on their primary listed market.

The restricted stock studies indicate an average DLOM of approximately 33%; while examination of over two dozen restricted stock and private placement studies combined yields an average DLOM of 21.70% (see Appendix 3 for more details). Several of the restricted stock and private placement studies have been used in many cases before United States Tax Courts and the Court of Federal Claims to determine appropriate DLOM for privately-held business ownership interests.

IV. Reasonableness Test: Rate of return ILECs have greater risks in 2013 than in 1990 so the required cost of equity should be higher.

Since the cost of capital is a function of risk, any reasonableness test regarding the represcription of the rate of return must include a comparison of the current and past risks to investment. The RoR ILECs market space has changed significantly due to technological advancements as well as changes in regulation stemming from the 1996 Telecom Act. The following market and regulatory changes have resulted in significantly more risk to investments in Rate of Return Incumbent Local Exchange Carriers in 2013 than in 1990:

- **Wireless Telephony:** In 1990 wireless telephony was a limited, complimentary voice-only service. According to CTIA, there were less than 5.3 million wireless

subscribers in 1990 with no wireless-only households. In 2012, there were over 326.4 million wireless subscriber connections featuring voice, data and video services and almost 36% of U.S. households are wireless-only.⁶²

- **Internet:** Although the Internet existed in 1990, there was no World Wide Web (which would be launched in August 1991).⁶³ Today the Internet is used by 85% of adults and 95% of teenagers⁶⁴, and 94% of the U.S. population has access to broadband⁶⁵. E-mail, social media messaging, and computer-based video calling have become significant replacements to telephone calls.
- **Text Messaging:** Text messaging did not exist in 1990. By 2010 text messaging had become the most popular form of communication, surpassing email and voice calls.⁶⁶
- **CLEC and VoIP:** Competitive Local Exchange Carriers (“CLECs”) and Voice-over-Internet Protocol (“VoIP”) carriers did not exist in 1990. According to the Wireline Competition Bureau as of June 2011, 36% of wireline connections are now provided by interconnected CLEC and VoIP providers.⁶⁷
- **Competitive Entry:** In 1990, RoR ILECs operated in monopoly local service areas. By 2013, virtually all barriers to competitive entry had been eliminated and

⁶² Data from CTIA – The Wireless Association available at <http://www.ctia.org/advocacy/research/>

⁶³ “The World Wide Web, Not the Internet, Turns 20 Today”, *PCMag.com*, August 6, 2011.

⁶⁴ Data from May 2013 and September 2012 surveys by the Pew Research Center (www.pewinternet.org)

⁶⁵ *FCC’s Eighth Broadband Progress Report*

⁶⁶ <http://www.redoxygen.com/desktop-texting/?tag=text-message-statistics-2012>

⁶⁷ *Local Telephone Competition: Status as of June 30, 2011*, Industry Analysis and Technology Division, Wireline Competition Bureau (June 2012).

RoR ILECs compete for voice and data services with wireless, CLEC, VoIP, social media, cable TV companies, satellite and other service providers.

Competitors have fewer regulatory requirements creating an uneven playing field.

- **Revenue Instability:** In 1990, RoR ILECs received most of their revenues directly from the users of their networks via local rates and access rates set by a functioning rate-of-return mechanism. High Cost Loop Support and Long Term Support were available to carriers. By 2013, the rate-of-return economic model had been effectively abandoned. Interstate common line costs are recovered via a limited universal service fund. High Cost Loop funds have been reduced and rendered unpredictable due to a flawed benchmarking process. Intrastate and interstate switched access revenues have been frozen and are subject to annual 5% reductions as access rates are transitioned to zero.

While the Commission has inarguably increased the risk on small RoR ILECs by its regulatory actions since 1990, it has not led to fewer obligations. When local service areas were opened to competition by virtue of the 1996 Act, small RoR ILECs were still expected to serve all customers who requested service, even though competitors typically operate under significantly reduced regulation. This obligation, known as carrier of last resort, was part of a regulatory compact between incumbent LECs and the regulators. One of the purposes of this compact was to recognize the continuing need for a carrier of last resort, even in the post-1996 Act environment, through the universal service support programs. The *USF/ICC Transformation Order* increased obligations on small RoR ILECs at the same time it reduced universal service support and, perhaps more importantly, cast a shadow on the future of the program in total. All of this happened without the small RoR ILECs side of the regulatory compact changing. The

situation of more obligations with fewer resources leads to increased risk for small RoR ILECs as compared to the larger carriers.

The Commission has further exacerbated the risk situation for RoR ILECs by instituting reforms that are retroactive in effect. Retroactive changes to investment recovery rules are a profound concern to rational debt and equity investors. Indeed, the Commission appears to be sending mixed messages to investors. On one hand, the Commission states a goal of incenting investment in broadband infrastructure and IP-switching, yet on the other hand, they seek to reduce the rate-of-return and recovery mechanisms upon which these investors rely.

The argument that the cost of equity in 2013 should be lower than in 1990 can only be based on differences in the risk-free rate of equity (the cost of capital is generally defined as the sum of a risk-free rate and a risk premium). The current risk-free rate is significantly lower than in the past, but this is due to Federal Reserve monetary policy enacted to buoy the U.S. economy in the wake of the Great Recession. As a part of their quantitative easing program, the Federal Reserve has purchased over \$3 trillion dollars of government bonds in the last four years producing a benchmark interest rate of 0.00% to 0.25%. As previously discussed, the Federal Reserve recently announced a tapering plan to increase interest rates that may begin as soon as next year. For ratemaking purposes, the temporary and artificial depression of long-term interest rates should be adjusted when setting a prospective required rate of return.

Any objective observer can plainly see that RoR ILECs have significantly more risk in 2013 than in 1990. The Commission itself has introduced significant equity risk to RoR ILECs over the last fifteen years via decisions on competition, universal service funding, and intercarrier compensation. Failure to account for the noted increases in risk to RoR ILECs

amounts to a failure of the Commission's statutory obligation to provide a reasonable rate of return. Consequently, in order to attract and maintain investment capital the required return on equity in 2013 should be greater than the 13.19% cost of equity on which the Commission's current 11.25% authorized rate of return is based.

V. Calculation of the Weighted Average Cost of Capital

The *Staff Report* utilized the basic form of the Capital Asset Pricing Model ("CAPM"). However, the generally accepted industry valuation method is the "modified CAPM" which includes adjustments for size and company specific risks.⁶⁸

Similarly, the *Staff Report* uses the constant growth model in its Discounted Cash Flow ("DCF") analysis which is used to estimate the return on equity of the proxy group. Once again, no adjustment is made to differentiate the required returns of the proxy group with the required rate of return for RoR ILECs, an investment group with significantly higher risk characteristics. The *Staff Report* should have used the DCF as the basis for a build-up model. The cost of capital is generally defined as the sum of a risk-free rate and a risk premium. The build-up model divides the risk premium into its three main subcomponents and estimates the cost of capital as the sum of (1) a risk-free rate, (2) an equity risk premium, (3) a size premium, and (4) a company-specific risk premium (e.g., illiquidity/unmarketability).⁶⁹

⁶⁸ Shannon P. Pratt with Alina V. Niculita, *Valuing A Business – The Analysis and Appraisal of Closely Held Companies*, Fifth Edition, (McGraw-Hill 2008) at p. 193.

⁶⁹ Shannon Pratt and Roger Grabowski, *Cost of Capital: Application and Examples*, 3rd Edition (John Wiley & Sons, 2008). See Chapter 7.

Consequently, the Cost of Equity should be calculated in the following manner to properly account for the documented differences in risk between the proxy group and RoR ILECs:

| COST OF EQUITY ESTIMATE | DCF Build-up | | Modified CAPM | |
|-----------------------------------|--------------------|--------------------|--------------------|--------------------|
| | <u>Lower Range</u> | <u>Upper Range</u> | <u>Lower Range</u> | <u>Upper Range</u> |
| Proxy Group Cost of Equity | 10.54% | 11.58% | 8.69% | 11.35% |
| Size Premium | 6.02% | 6.54% | 6.02% | 6.54% |
| | 16.56% | 18.12% | 14.71% | 17.89% |
| Premium for Lack of Marketability | 1.277139 | 1.277139 | 1.277139 | 1.277139 |
| RoR ILEC Cost of Equity | 21.15% | 23.14% | 18.79% | 22.85% |

The Proxy Group Cost of Equity ranges are those recommended in the *Staff Report*. As previously documented, the size premium range is based on three measures of size from *The Duff & Phelps Risk Premium Report 2013*. The premium for lack of marketability is based on the 21.70% average DLOM from the two dozen restricted stock and private placement studies listed in Appendix 3. Impounding the discount rate into a rate of return is a matter of simple arithmetic: the rate before the discount is multiplied by one divided by one minus the DLOM [$1 / (1 - .2170) = 1.277139$].⁷⁰ The resulting cost of equity ranges for RoR ILECS are 21.15% to 23.14% from the DCF Build-up model and 18.79% to 22.85% from the Modified CAPM, respectively.

The WACC is calculated in the following manner based on the estimated cost of equity, the cost of debt from the *Staff Report*, and the Rural Company Group recommended capital structure as previously discussed:

⁷⁰ Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweihs, *Valuing Small Businesses and Professional Practices*, Third Edition, (McGraw-Hill 1998) at p. 223.

WEIGHTED AVERAGE COST OF CAPITAL

| | DCF Build-up | | Modified CAPM | |
|---------------------------------|----------------------|-------------------------|----------------------|-------------------------|
| | Lower Range | Upper Range | Lower Range | Upper Range |
| <u>EQUITY:</u> | | | | |
| Cost of Equity | 21.15% | to 23.14% | 18.79% | to 22.85% |
| Percentage of Capital Structure | <u>60.00%</u> | <u>60.00%</u> | <u>60.00%</u> | <u>60.00%</u> |
| Weighted Cost of Equity | <u>12.69%</u> | to <u>13.89%</u> | <u>11.27%</u> | to <u>13.71%</u> |
| <u>DEBT:</u> | | | | |
| Cost of Debt | 6.19% | 6.19% | 6.19% | 6.19% |
| Percentage of Capital Structure | <u>40.00%</u> | <u>40.00%</u> | <u>40.00%</u> | <u>40.00%</u> |
| Weighted Cost of Debt | <u>2.48%</u> | <u>2.48%</u> | <u>2.48%</u> | <u>2.48%</u> |
| Weighted Cost of Capital | <u>15.17%</u> | to <u>16.36%</u> | <u>13.75%</u> | to <u>16.18%</u> |

The resulting required rate of return ranges for RoR ILECS are 15.17% to 16.36% from the DCF Build-up model and 13.75% to 16.18% from the Modified CAPM, respectively.

VI. Conclusion – A Reasonable Range for the Rate-of-Return of Local Exchange Carriers is 13.75% to 16.36%.

The *Staff Report* provides a useful framework to begin the estimation of a required rate of return for RoR ILECs. The Rural Company Group generally agrees with the use of a Capital Asset Pricing Model and Discounted Cash Flow analysis to estimate the cost of equity; the selection of domestic wireline carriers as a proxy group; and market-based debt data. However, the *Staff Report* analysis requires significant adjustments in order to be applicable to RoR ILECs.

The cost of capital is a function of risk. In cases where differences in risk characteristics between guideline or proxy companies and the valuation subject exist, adjustments to the cost of equity are required. RoR ILECs have significantly more risk than the proxy group composed of Regional Bell Holding Companies, Mid-Size Price Cap Carriers, and Publicly Traded RLECs

due to greater reliance on key persons, reduced market reach, customer and supplier concentrations, fewer financial resources, non-diversified product/service offerings, limited information systems, and a host of other issues.

A reasonableness test regarding the reprscription of the rate of return must include a comparison of the current and past risks to investment. Significant technological and regulatory changes have resulted in significantly more risk to the RoR ILEC market. The rise of wireless telephony and text messaging; web-based communications such as e-mail, social media messaging, and computer-based video calling; as well as regulatory changes that have introduced unpredictability and uncertainty of revenue streams have created a risk profile for RoR ILECs that is much higher than the risks in 1990. Consequently, in order to attract and maintain investment capital the required return on equity in 2013 should be greater than the 13.19% cost of equity on which the Commission's current 11.25% authorized rate of return is based.

The Rural Company Group submits that the preponderance of academic theory, professional valuation standards, empirical data, legal precedence and common industry practice require the application of premiums for size and lack of marketability in estimating the cost of equity for RoR ILECs due to the differences in risk compared to the proxy group. Application of such premiums to the DCF and CAPM framework provided by the *Staff Report* analysis results in a cost of equity range of 18.79% to 23.14%.

The Weighted Average Cost of Capital calculated with (1) this cost of equity, (2) the *Staff Report* recommended 6.19% cost of debt, and (3) a 60% equity - 40% debt capital structure yields a required rate of return range of 13.75% to 16.36% for RoR ILECs.

For all the reasons set forth herein, The Rural Company Group respectfully urges the Commission to fulfill its statutory obligation to set a rate of return sufficient to allow carriers to maintain their credit-worthiness and attract capital by authorizing a rate of return in the range of 13.75% to 16.36%.

Respectfully submitted by,

ALEXICON CONSULTING ON BEHALF OF
THE RURAL BROADBAND ALLIANCE,
THE SMALL COMPANY COALITION, AND
THE ALEXICON COMPANIES

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July 25, 2013

APPENDIX 1: Size Comparison

| Proxy Group and Company | Ref | Annual Regulated Revenues - 2012* | Telephone Plant in Service @12/31/2012 | Net Telephone Plant in Service | Access Lines @12/31/2012 |
|--|-----|-----------------------------------|--|--------------------------------|--------------------------|
| Regional Bell Holding Companies (RHCs): | | | | | |
| AT&T | 1 | \$ 59,567,000,000 | \$ 270,907,000,000 | \$ 109,767,000,000 | 31,887,000 |
| CenturyLink | 1 | \$ 17,320,000,000 | \$ 32,086,000,000 | \$ 19,032,000,000 | 13,748,000 |
| Verizon | 1 | \$ 39,780,000,000 | \$ 209,575,000,000 | \$ 88,642,000,000 | 22,503,000 |
| Average of Proxy Group | | \$ 38,889,000,000 | \$ 170,856,000,000 | \$ 72,480,333,333 | 22,712,667 |
| Mid-Size Companies: | | | | | |
| Alaska Communications Systems | 1 | \$ 258,583,000 | \$ 1,463,320,000 | \$ 410,861,000 | 136,675 |
| Cincinnati Bell | 1 | \$ 730,500,000 | \$ 4,016,400,000 | \$ 1,587,400,000 | 573,900 |
| FairPoint Communications | 1 | \$ 973,649,000 | \$ 2,080,400,000 | \$ 1,438,309,000 | 952,067 |
| Frontier Communications Corporation | 1 | \$ 5,011,853,000 | \$ 14,353,763,000 | \$ 7,504,896,000 | 3,173,169 |
| Hawaiian Telcom | 1 | \$ 385,498,000 | \$ 639,343,000 | \$ 507,197,000 | 392,877 |
| Lumos | 1 | \$ 206,871,000 | \$ 460,735,000 | \$ 316,825,000 | 31,200 |
| Windstream | 1 | \$ 6,156,300,000 | \$ 13,827,900,000 | \$ 5,862,700,000 | 2,480,000 |
| Average of Proxy Group | | \$ 1,960,464,857 | \$ 5,263,123,000 | \$ 2,518,312,571 | 1,105,698 |
| Publicly Traded RLECs: | | | | | |
| Alteva | 2 | \$ 27,942,000 | \$ 79,799,000 | \$ 16,446,000 | 15,024 |
| Consolidated Communications Holdings | 1 | \$ 472,100,000 | \$ 1,670,432,000 | \$ 884,930,000 | 398,326 |
| HickoryTech Corp | 1 | \$ 64,746,000 | \$ 437,623,000 | \$ 182,959,000 | 42,396 |
| New Ulm Telephone | 1 | \$ 32,482,988 | \$ 125,290,928 | \$ 44,824,025 | 30,252 |
| Shenandoah Telecommunications | 1 | \$ 54,658,000 | \$ 611,685,000 | \$ 365,474,000 | 22,297 |
| Telephone and Data Systems | 1 | \$ 854,506,000 | \$ 4,222,123,000 | \$ 1,569,418,000 | 979,900 |
| Average of Proxy Group | | \$ 251,072,498 | \$ 1,191,158,821 | \$ 510,675,171 | 248,033 |
| Averages of Proxy Groups: | | | | | |
| Regional Bell Holding Companies (RHCs) | | \$ 38,889,000,000 | \$ 170,856,000,000 | \$ 72,480,333,333 | 22,712,667 |
| Mid-Size Companies | | \$ 1,960,464,857 | \$ 5,263,123,000 | \$ 2,518,312,571 | 1,105,698 |
| Publicly Traded RLECs | | \$ 251,072,498 | \$ 1,191,158,821 | \$ 510,675,171 | 248,033 |
| Average of All Proxy Companies | | \$ 8,243,543,062 | \$ 34,784,800,871 | \$ 14,883,327,439 | 4,835,380 |
| Rate of Return ILECs: | | | | | |
| Rural Company Group (157 study areas) | 3 | \$ 8,251,467 | \$ 40,433,362 | \$ 13,817,233 | 4,887 |
| Average Cost RoR ILEC (675 study areas) | 4 | \$ 7,455,236 | \$ 34,292,002 | \$ 12,532,382 | 4,391 |

Notes:

*Regulated Revenues are wireline or equivalent segment operations

1 - source 2012 SEC Form 10-K

2 - source: Revenues and Telephone Plant in Service from 2012 SEC Form 10-K; Access lines from USAC report

3 - Actual TPIS, net TPIS and access line amounts as of December 31, 2012. Annual 2012 regulated operating revenues.

4 - see Appendix 2 for source and calculation details

The actual 2012 size characteristics for the Rural Company Group Study area were compiled for 157 study areas which include both cost-based and average settlement RoR ILECs.

APPENDIX 2: Calculation of Rate of Return Incumbent Local Exchange Carrier Size Characteristics

The National Exchange Carrier Association High Cost Loop 2012 -1 data submission was used to estimate the size characteristics of the average Rate of Return Incumbent Local Exchange Carrier.⁷¹ The HCL data submission for cost settlement carriers contains a significant amount of operating and financial data for the carriers including access lines, telephone plant in service, accumulated depreciation and many operating expenses.

The HCL data submission for average schedule settlement carriers does not have asset or expense data so these carriers were not included. We also removed 91 study areas belonging to members of the Publicly Traded RLEC proxy group from the calculation (see list at end of Appendix). The amounts of Telephone Plant in Service and Access Lines are listed in Data Lines 160 and 060, respectively. A simple average of these amounts was calculated for the 675 RoR ILEC study areas.

The calculation of average revenues was not as straightforward because revenue figures are not reported in the HCL data submission or in any single publicly-available data base. However, due to the nature of rate-of-return regulation we can make a reasonable estimate of the average RoR ILECs revenues by following the basic revenue requirement formula:

$$\text{Telephone Plant in Service} - \text{Accumulated Depreciation} = \text{Rate Base} \times \text{Rate-of-Return} = \text{Return on Rate Base} + \text{Operating Expenses and Taxes} = \text{Revenue Requirement}$$

⁷¹ Available for download at <https://www.neca.org/PublicInterior.aspx?id=1190>

The HCL data submission contains the telephone plant and accumulated depreciation balances as well as most of the operating expense amounts.⁷² However, customer operations expense and total depreciation expense is not included.⁷³ Fortunately, there is another source of data for these expenses, namely the NECA interstate access tariff filings. We calculated (1) total customer operations expense as a percentage of total operating expenses and other taxes and (2) total depreciation expense as a percentage of telephone plant in service.⁷⁴

Estimate of Average RoR ILEC Regulated Revenue Requirement:

| | | | |
|-------------------------------|----|--------------|--------------------------------|
| Total Plant in Service | \$ | 34,292,002 | |
| Accumulated Depreciation | \$ | (21,759,620) | |
| Rate Base | \$ | 12,532,382 | |
| Rate of Return | | 11.25% | |
| Return on Rate Base | \$ | 1,409,893 | |
| Operating Expenses: | | | |
| Plant Specific Expenses | \$ | 1,565,238 | |
| Network Operations Expense | | 461,001 | |
| Depreciation Expense | | 1,871,238 | 5.46% of TPIS |
| Customer Operations Expense | | 622,912 | 11.49% of Total Other Expenses |
| Corporate Operations Expense | | 1,164,226 | |
| Operating Taxes | | 360,728 | |
| Estimated Revenue Requirement | \$ | 7,455,236 | |

| NECA Historical Data Period 2010 | Total Subject to Separations | |
|---|------------------------------|---------|
| 260 - Total Expenses & Other Taxes | 4,297,015 | |
| 200 - Customer Operations Expense | 442,764 | 11.49% |
| Total Expense less Customer Operations | 3,854,251 | 100.00% |
| 190 - Depreciation/Amortization Expense | 1,351,083 | 5.46% |
| 370 - Total Plant in Service | 24,759,729 | 100.00% |

⁷² See the following HCL Data Lines: 160-Telephone Plant in Service; 190-Accumulated Depreciation; 445-Total Plant Specific Expenses; 450-Network Operations Expense; 565-Corporate Operations Expense; and 650-Operating Taxes.

⁷³ Note that depreciation expense of central office equipment and cable and wire facilities is included (DL 525 and DL 530) but depreciation of expense of general support facilities is not.

⁷⁴ See *NECA Transmittal No. 1314*, Volume 2, Exhibit 2, page 5 of 8 (July 2011). Data is derived from lines 260, 200, 190 and 370.

Publicly Traded RLEC proxy group study areas removed from calculations:

| SA Number | Parent Company | Study Area Name | State | SA Number | Parent Company | Study Area Name | State |
|-----------|-----------------------------------|----------------------|-------|-----------|----------------------------------|----------------------|-------|
| 542334 | Consolidated Communications, Inc. | SUREWEST TEL | CA | 432010 | Telephone And Data Systems, Inc. | MID-AMERICA TEL INC | OK |
| 351096 | Hickory Tech | HEARTLND-HICKORYTECH | IA | 330909 | Telephone And Data Systems, Inc. | MIDWAY TEL CO | WI |
| 190217 | Telephone And Data Systems, Inc. | AMELIA TEL CORP | VA | 330917 | Telephone And Data Systems, Inc. | MT VERNON TEL CO | WI |
| 452171 | Telephone And Data Systems, Inc. | ARIZONA TELEPHONE CO | AZ | 220375 | Telephone And Data Systems, Inc. | NELSON-BALL GROUND | GA |
| 361350 | Telephone And Data Systems, Inc. | ARVIG TEL CO | MIN | 193029 | Telephone And Data Systems, Inc. | NEWCASTLE TEL CO. | VA |
| 532404 | Telephone And Data Systems, Inc. | ASOTIN TEL - OR | OR | 421928 | Telephone And Data Systems, Inc. | NEWLONDON TEL CO | MO |
| 522404 | Telephone And Data Systems, Inc. | ASOTIN TEL - WA | WA | 140061 | Telephone And Data Systems, Inc. | NORTHFIELD TEL CO | VT |
| 330844 | Telephone And Data Systems, Inc. | BADGER TELECOM, INC. | WI | 431984 | Telephone And Data Systems, Inc. | OKLAHOMA COMM SYSTEM | OK |
| 230469 | Telephone And Data Systems, Inc. | BARNARDSVILLE TEL CO | NC | 421934 | Telephone And Data Systems, Inc. | ORCHARD FARM TEL CO | MO |
| 330849 | Telephone And Data Systems, Inc. | BLACK EARTH TEL CO | WI | 150114 | Telephone And Data Systems, Inc. | ORISKANY FALLS TEL | NY |
| 220346 | Telephone And Data Systems, Inc. | BLUE RIDGE TEL CO | GA | 250314 | Telephone And Data Systems, Inc. | PEOPLES TEL CO | AL |
| 361362 | Telephone And Data Systems, Inc. | BRIDGEWATER TEL CO | MIN | 140062 | Telephone And Data Systems, Inc. | PERKINSVILLE TEL CO | VT |
| 250284 | Telephone And Data Systems, Inc. | BUTLER TEL CO | AL | 150118 | Telephone And Data Systems, Inc. | PORT BYRON TEL CO | NY |
| 280448 | Telephone And Data Systems, Inc. | CALHOUN CITY TEL CO | MS | 472230 | Telephone And Data Systems, Inc. | POTLATCH TEL CO INC | ID |
| 220351 | Telephone And Data Systems, Inc. | CAMDEN TEL & TEL CO | GA | 210338 | Telephone And Data Systems, Inc. | QUINCY TEL CO-FL DIV | FL |
| 330859 | Telephone And Data Systems, Inc. | CENTRAL STATE TEL CO | WI | 220338 | Telephone And Data Systems, Inc. | QUINCY TEL CO-GADIV | GA |
| 310685 | Telephone And Data Systems, Inc. | CHATHAM TEL CO - MI | MI | 230498 | Telephone And Data Systems, Inc. | SALUDAMOUNTAIN TEL | NC |
| 401698 | Telephone And Data Systems, Inc. | CLEVELAND COUNTY TEL | AR | 330952 | Telephone And Data Systems, Inc. | SE TEL OF WISCONSIN | WI |
| 320776 | Telephone And Data Systems, Inc. | COMM CORP OF INDIANA | IN | 310726 | Telephone And Data Systems, Inc. | SHIAWASSEE TEL CO | MI |
| 310672 | Telephone And Data Systems, Inc. | COMM CORP OF MI | MI | 100024 | Telephone And Data Systems, Inc. | SOMERSET TEL CO | ME |
| 290559 | Telephone And Data Systems, Inc. | CONCORD TEL EXCHANGE | TN | 283301 | Telephone And Data Systems, Inc. | SOUTHEAST MS TEL CO | MS |
| 300607 | Telephone And Data Systems, Inc. | CONTINENTAL OF OHIO | OH | 452174 | Telephone And Data Systems, Inc. | SOUTHWESTERN TEL CO | AZ |
| 401699 | Telephone And Data Systems, Inc. | DECATUR TEL CO INC | AR | 240544 | Telephone And Data Systems, Inc. | ST STEPHEN TEL CO | SC |
| 462184 | Telephone And Data Systems, Inc. | DELTA COUNTY TEL CO | CO | 330954 | Telephone And Data Systems, Inc. | STOCKBRIDGE & SHERVD | WI |
| 150089 | Telephone And Data Systems, Inc. | DEPOSIT TEL CO | NY | 421951 | Telephone And Data Systems, Inc. | STOUTLAND TEL CO | MO |
| 150092 | Telephone And Data Systems, Inc. | EDWARDS TEL CO | NY | 462207 | Telephone And Data Systems, Inc. | STRASBURG TEL CO | CO |
| 100010 | Telephone And Data Systems, Inc. | HAMPDEN TEL CO | ME | 170206 | Telephone And Data Systems, Inc. | SUGAR VALLEY TEL CO | PA |
| 542321 | Telephone And Data Systems, Inc. | HAPPY VALLEY TEL CO | CA | 290578 | Telephone And Data Systems, Inc. | TELLICO TEL CO | TN |
| 100011 | Telephone And Data Systems, Inc. | HARTLAND & ST ALBANS | ME | 290575 | Telephone And Data Systems, Inc. | TENNESSEE TEL CO | TN |
| 532377 | Telephone And Data Systems, Inc. | HOME TELEPHONE CO | OR | 330958 | Telephone And Data Systems, Inc. | TENNEY TEL CO | WI |
| 542322 | Telephone And Data Systems, Inc. | HORNITOS TEL CO | CA | 150129 | Telephone And Data Systems, Inc. | TOWNSHIP TEL CO | NY |
| 290566 | Telephone And Data Systems, Inc. | HUMPHREYS COUNTY | TN | 120049 | Telephone And Data Systems, Inc. | UNION TEL CO | NH |
| 100007 | Telephone And Data Systems, Inc. | ISLAND TEL CO | ME | 330963 | Telephone And Data Systems, Inc. | UTELCO, INC | WI |
| 310677 | Telephone And Data Systems, Inc. | ISLAND TEL CO | MI | 150133 | Telephone And Data Systems, Inc. | VERNON TEL CO | NY |
| 120045 | Telephone And Data Systems, Inc. | KEARSARGE TEL CO | NH | 100031 | Telephone And Data Systems, Inc. | WARREN TEL CO | ME |
| 260411 | Telephone And Data Systems, Inc. | LESLIE COUNTY TEL CO | KY | 330968 | Telephone And Data Systems, Inc. | WALUNAKEE TEL CO | WI |
| 522427 | Telephone And Data Systems, Inc. | LEWIS RIVER TEL CO | WA | 100034 | Telephone And Data Systems, Inc. | WEST PENOBSCOT TEL | ME |
| 300613 | Telephone And Data Systems, Inc. | LITTLE MIAMI COMM. | OH | 240551 | Telephone And Data Systems, Inc. | WILLISTON TEL CO | SC |
| 140058 | Telephone And Data Systems, Inc. | LUDLOW TEL CO | VT | 120050 | Telephone And Data Systems, Inc. | WILTON TEL CO - NH | NH |
| 170183 | Telephone And Data Systems, Inc. | MAHANOY & MAHANTANGO | PA | 542323 | Telephone And Data Systems, Inc. | WINTERHAVEN TEL CO. | CA |
| 240533 | Telephone And Data Systems, Inc. | MOCLELLANVILLE TEL | SC | 310738 | Telephone And Data Systems, Inc. | WOLVERINE TEL CO | MI |
| 123321 | Telephone And Data Systems, Inc. | MCTA, INC. | NH | 432034 | Telephone And Data Systems, Inc. | WYANDOTTE TEL CO | OK |
| 320788 | Telephone And Data Systems, Inc. | MERCHANTS & FARMERS | IN | 160135 | Ateva | WARWICK VALLEY-NJ | NJ |
| 120047 | Telephone And Data Systems, Inc. | MERRIMACK COUNTY TEL | NH | 150135 | Ateva | WARWICK VALLEY-NY | NY |
| 361433 | Telephone And Data Systems, Inc. | MID STATE TEL CO | MIN | 361442 | New Ulm | NEWULM TELECOM, INC | MN |
| | | | | 361483 | New Ulm | SLEEPY EYE TEL CO | MN |

APPENDIX 3: Empirical Evidence Supporting Discounts for Lack of Marketability

Summary of Restricted Stock and Private Placement Studies^{75 76}

| Study | Date | Period covered | # of companies | Discount | |
|---|------|----------------|----------------|---------------|---------------|
| | | | | Mean | Median |
| SEC Institutional Investor Study Report, 1971 | 1971 | 66-69 | 398 | 24.00% | |
| Gelman restricted stock, 1972 | 1972 | 68-70 | 89 | 33.00% | 33.00% |
| Moroney, 1973 | 1973 | 68-70 | 145 | 35.60% | 33.00% |
| Maher, 1976 | 1976 | 69-73 | 34 | 35.50% | 33.30% |
| Trout | 1977 | 68-70 | 60 | 33.50% | |
| Standard Research Consultants | 1981 | 78-82 | 28 | | 45.00% |
| Johnson & Racette | 1981 | 67-73 | 86 | 34.00% | |
| Willamette Management Associates | 1989 | 81-84 | 33 | | 31.20% |
| Wruck, Karen H. | 1989 | 79-84 | | | |
| Registered | | | 36 | -4.10% | 1.80% |
| Unregistered | | | 37 | 13.50% | 12.20% |
| Silber | 1991 | 81-88 | 69 | 33.80% | |
| Hertzel & Smith | 1993 | 80-87 | 106 | 20.10% | 13.30% |
| Management Planning, Inc. | 1997 | 80-95 | 49 | 27.70% | 28.80% |
| Johnson, 1999 | 1999 | 91-95 | 72 | 20.20% | |
| Columbia Financial Advisors | 2000 | 96-97 | 23 | 21.00% | 14.00% |
| Columbia Financial Advisors | 2000 | 97-98 | 15 | 13.00% | 9.00% |
| Bajaj, Denis, Ferris, Sarin 2001 | 2001 | 90-95 | | | |
| All | | | 88 | 22.20% | 20.70% |
| Registered | | | 37 | 14.00% | 9.90% |
| Unregistered | | | 51 | 28.10% | 26.50% |
| FMV Database, 1980 - 4/1997 | 2010 | 80-97 | 243 | 22.80% | 20.80% |
| FMV Database, 5/1997 -10/2007 | 2010 | 97-07 | 311 | 20.80% | 16.00% |
| FMV Database, 11/2007 - 10/2008 | 2010 | 07-08 | 43 | 8.60% | 6.00% |
| Finnerty | 2003 | 91-97 | 101 | 20.10% | 15.50% |
| | | | | 18.40% | 16.70% |
| Wu | 2004 | 86-97 | 301 | 8.70% | 19.80% |
| Barclay/Holderness/Sheehan | 2006 | 79-97 | 594 | 18.70% | 17.40% |
| Harris-Trugman Valuation Associates | 2009 | 07-08 | 80 | 18.10% | 14.40% |
| Average | | | | 21.70% | 19.20% |

⁷⁵ Discounts for Lack of Marketability – Theory, Evidence and Technique by John J. Stockdale, Sr. was used as a reference material for some of the statistics included here. This publication is available at www.bvresources.com.

⁷⁶ Information from Valuation Advisors, LLC was used a reference material for some of the statistics included here. Data is available at www.bvmarketdata.com.