COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

		CASE NO.
APPLICATION OF KENTUCKY UTILITIES COMPANY FOR AN ADJUSTMENT OF ITS ELECTRIC AND GAS BASE RATES	**)**	**2014-00371**

DIRECT TESTIMONY

OF

PATRICIA D. KRAVTIN

Submitted on

Behalf of

The Kentucky Cable Telecommunications Association

March 6, 2015

Q: PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A: My name is Patricia D. Kravtin. My business address is 57 Phillips Avenue, Swampscott, Massachusetts. I am an economist in private practice specializing in the analysis of telecommunications regulation and markets.

Q: PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A: I received a B.A. with Distinction in Economics from the George Washington University. I studied in the Ph.D. program in Economics under a National Science Foundation Fellowship at the Massachusetts Institute of Technology ("M.I.T."). My fields of concentration at M.I.T. were government regulation of industry, industrial organization, and urban and regional economics. My professional background includes a wide range of consulting experiences in regulated industries. Prior to starting my own consulting practice, I was a consultant at the national economic research and consulting firm of Economics and Technology, Inc. ("ETI") in that firm's regulatory consulting group, where I held positions of increasing responsibility, including Senior Vice President/Senior Economist.

Q: WHAT IS YOUR EXPERIENCE SERVING AS AN EXPERT IN PROCEEDINGS RELATED TO TELECOMMUNICATIONS MATTERS?

A: I have testified or served as an expert on telecommunications matters in proceedings before over thirty state regulatory commissions. I have also provided expert testimony and reports in proceedings before the Federal Communications Commission ("FCC") and before international agencies including the Canadian Radio-television and Telecommunications Commission, the Ontario Energy Board, and the Guam Public

Utilities Commission. In addition, I have testified as an expert witness in antitrust litigation in federal district court, and also before a number of state legislative committees. A detailed resume summarizing my educational background and previous experience is provided in Attachment 1 to my testimony.

Over the course of my career, I have been actively involved in a number of state and federal regulatory commission proceedings involving cost methodologies and the allocation of costs of incumbent local exchange carriers ("ILECs") and electric utilities. One local network component, essential for the provision of competitive communications services, with which I am also very familiar, is access to poles, ducts, conduits, and rights-of-way. I have testified extensively on matters pertaining to these essential facilities before state and federal regulatory agencies and district courts. I have also been actively involved in related issues pertaining to broadband deployment. I have authored a number of reports dealing with this subject and participated as a grant reviewer for the Broadband Technology Opportunities Program ("BTOP") administered by National Telecommunications and Information Administration ("NTIA").

Q: CAN YOU DESCRIBE YOUR EXPERIENCE IN POLE ATTACHMENTS PROCEEDINGS?

A: Yes. I have submitted reports in pole proceedings before the FCC, including its most recent rulemaking proceeding, *In the Matter of Implementation of Section 224 of the Act; Amendment of the Commission's Rules and Policies Governing Pole Attachments,* WC Docket No. 07-245, GN Docket No. 09-51 (Report submitted August 16, 2010), as well as in the earlier phase, WC Docket No. 07-245, RM 11293, RM 11303 (FCC 2008 NPRM Proceeding). I have served as an expert or advisor on pole attachment matters in

proceedings involving investor-owned utilities, non-profit consumer-owned utilities, and municipally-owned utilities, and before the following state regulatory commissions: the Arkansas Public Service Commission, the Public Utilities Commission of Ohio, the Public Utilities Commission of Texas, the Georgia Public Service Commission, the South Carolina Public Service Commission, the Public Service Commission of the District of Columbia, the New Jersey Board of Public Utilities, the New York Public Service Commission, the New Hampshire Public Utilities Commission, the Virginia State Corporation Commission, and the Massachusetts Department of Telecommunications and Cable.

Q: HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A: Yes, I submitted written testimony in April 2010 before the Kentucky Public Service Commission (KPSC or Commission) on pole attachment matters in the 2009 Kentucky Utilities and Louisville Gas & Electric rate cases, Case Nos. 2009-00548 and 2009-00549, respectively. In addition, I submitted written testimony and testified at a hearing in connection with two South Central Bell Telephone Company rate cases, Case No. 8847 (1984) and Case No. 8467 (1982), on behalf of the KPSC staff and the Commonwealth of Kentucky, respectively.

Q: WHY HAS THE KENTUCKY CABLE TELECOMMUNICATIONS ASSOCIATION ASKED YOU TO PRESENT TESTIMONY IN THIS PROCEEDING?

A: I was asked by the Kentucky Cable Telecommunications Association (KCTA) to address matters raised in this proceeding relating to the pole attachment rental rates that Kentucky Utilities Company (KU or Company) charges cable operators. In particular, my

testimony provides calculations of fair, just and reasonable pole attachment rental rates applicable to KU. I have based my testimony on the uniform formula methodology for calculating cable attachment charges established by the KPSC in Administrative Case No. 251,[1] and in subsequent KPSC rulings addressing the application of its pole rate formula.

I was asked to provide two sets of pole rate calculations – one set using data for the test year of the prior rate case, i.e., the twelve months ending March 31, 2012, on which KU's current rates are based, and the other set using updated data conforming to the test year of the current rate case, i.e., the twelve months ending October 31, 2014. In doing so, my pole rate calculations necessarily rely on input data provided by the Company in response to discovery that conform to the respective test year periods, as other publically reported data such as in the annual FERC Form 1 reporting system provide only calendar year-end data. As described in my testimony, in a few instances my calculations use temporary placeholders for actual values and should be updated to reflect actual values once they become available.

Both the Company and I apply the KPSC pole rate formula in a manner similar to how we each applied it in the 2009 proceeding. Accordingly, my testimony in this proceeding will raise many of the same issues that were raised in my 2010 testimony and in testimony filed by the Company in that same proceeding.

Q: PLEASE SUMMARIZE YOUR TESTIMONY.

[1] *In the Matter of the Adoption of a Standard Methodology for Establishing Rates for CATV Pole Attachments*, Administrative Case No. 251, Amended Order (Admin. Case No. 251), Kentucky Public Service Commission, Sept. 17, 1982.

A: The need for effective pole regulation arose because cable operators and other third-parties had no practical alternative but to attach to existing pole lines. This condition is as relevant today as it was decades ago, if not more so given the increasing importance of broadband service availability and accessibility. In the absence of effective pole regulation, pole-owning utilities, because of their historical incumbency, would be in a position to limit access to these essential bottleneck facilities and/or to extract excessive monopoly rents. Moreover, without effective regulation, a utility's monopoly control over poles makes it a gatekeeper controlling the availability of new advanced broadband services and applications in its service area. This scenario is precisely the type of behavior that pole regulation, nationally, and here in Kentucky following the state's certification to self-regulate pursuant to Administrative Case No. 251, was designed to address.

In Administrative Case No. 251, the KPSC established a uniform pole rate formula designed to "produce a fair, just and reasonable rate, based on the fully allocated costs of the utility in furnishing pole attachment services."[2] The KPSC formula consists of three basic components: "(1) embedded cost of an average bare pole of the utility of the type and size which is or may be used for the provision of a CATV attachment (2) multiplied by an annual carrying charge, and (3) this product multiplied by the percentage of usable space used for CATV pole attachments."[3]

Applying the KPSC formula methodology to KU's data, I have calculated the maximum pole attachment rates that KU should be permitted to charge third-party cable operators to

[2] *Id.* at 8.

[3] *Id.*

attach to its poles. My calculations are consistent with the fair, just and reasonable standard set forth in Administrative Case No. 251 and in subsequent KPSC rulings. The rate results are summarized below, with supporting calculations provided in Attachment 2 to this testimony.

Table 1
Maximum KU
Just and Reasonable Pole Attachment Rates
For Test Year Ending March 31, 2012 and October 31, 2014

	Two-User	Three-User	Wt. Average
TY Ending 3/31/2012	**$5.01**	**$4.74**	**$4.87**
TY Ending 3/31/2014	**$5.35**	**$5.12**	**$5.23**

The rates I have calculated using the KPSC formula methodology are cost-based, subsidy-free, and fully compensatory to the utility. I am aware that in the case of KU, the pole attachment rates produced by a proper application of the formula as shown in Table 1 above are significantly below the $9.96 rate the utility is currently charging cable operators. However, that KU has been able to extract a higher rate from existing captive customers based on its calculation of the rate formula, which as discussed below, contain a number of inappropriate inputs, does not mean those rates are just and reasonable. Rather, it is demonstration of the Company's market power for the essential pole attachment input, and its ability to apply the rate formula using incorrect inputs and in an manner inconsistent with fundamental principles underlying a rate formula methodology so as to produce a rate in excess of a just and reasonable rate.

In this case, the calculations KU used to support its current pole attachment rate contain a number of errors involving key data inputs to the formula, including the failure to apply

the appropriate 15% reduction factor to bare pole costs to account for minor appurtenances unrelated to pole attachments in accordance with past Commission rulings (which my calculations correctly apply), as well as errors in the Company's inputs for the rate of return, income tax, depreciation sinking fund, and operation and maintenance elements of the carrying charge factor. Based on these erroneous data inputs, KU calculated a pole attachment rate using data for the Test Year Ending March 31, 2012 for cable of $10.01. This rate exceeds the fair, just and reasonable rate pursuant to the KPSC formula methodology by over 100%.

With regard to the capital recovery elements of the carrying charge (i.e. return, depreciation and income taxes), KU errs by using a rate of return or cost of money input that is based on and meant to apply to *net* plant investment. However, the pole rate formula, as applied by the Company, develops annual pole costs by multiplying the carrying charge factor (the sum of operating and capital recovery related costs applicable to poles) by a *gross* pole investment figure. Since on average, the gross investment in poles is roughly double the corresponding net investment for poles, the result of the mismatch (i.e., applying a net-based rate of return to a gross investment base) is an overstatement of the capital recovery-related carrying charges by roughly a factor of two vis-à-vis just and reasonable charges. My rate calculations correct for this error by applying a simple net-to-gross ratio adjustment to the authorized net-based rate of return, consistent with prior rulings of the Commission and widely accepted by other regulatory agencies.

The error in the Company's calculation of the Operations & Maintenance (O&M) element of the formula's carrying charge also involves an improper mismatch. In this

instance, the mismatch is between the plant accounts for which the O&M expenses are booked (i.e., the numerator of the expense-to-investment ratio used to calculate the carrying charge for this element), and the investment base to which those booked expenses are applied (i.e., the denominator of the ratio). Specifically, the Company's expense input used in the numerator of the expense-to-investment ratio includes costs associated with all three overhead distribution plant accounts, Account 364 "Poles," 365 "Conductors and Devices," and 369 "Services," while the investment input used in the denominator includes only Account 364 plant investment.

As with the mismatch of the rate of return in connection with the capital recovery elements of the carrying charge, the effect of the mismatch between the numerator and the denominator of the O&M charge is to overstate the pole rate (since the smaller the denominator of the cost ratio, the larger the resulting cost). My rate calculations correct for this error by using the correct base of investment (the combination of the three relevant distribution accounts) in the calculation of the O&M charge.

For comparison purposes only, I have also calculated pole rates for KU applying the Company's method for calculating O&M charges (see Table 2 below). I am not endorsing the Company's mismatch method of calculating O&M charges. Rather, I have calculated and am presenting these alternative rate results to illustrate how the formula could be applied (and has been applied by KU) to produce pole rates higher than the just and reasonable ones I am recommending.

Table 2 Maximum KU Just and Reasonable Pole Attachment Rates For Test Year Ending March 31, 2012 and October 31, 2014 Calculated With KU O&M Carrying Charge			
	Two-User	**Three-User**	**Wt. Average**
TY Ending 3/31/2012	**$6.72**	**$6.36**	**$6.54**
TY Ending 10/31/2014	**$7.00**	**$6.71**	**$6.86**

Permitting rates to remain at unjust and unreasonable levels such as those the Company currently charges[4] would run counter to the ultimate purposes of effective pole rate regulation. Moreover, as explained below, pole rate revenues are a miniscule percentage of core electric service revenue such that even a significant reduction in pole rates such as that needed to align poles rates to the just and reasonable level, would have a negligible, if any, impact on the average residential electric bill, while benefitting those same customers by promoting a more competitive broadband services market.

Q: WHAT IS THE PURPOSE OF POLE RATE REGULATION?

A: The primary purpose of pole rate regulation historically has been, and continues to be, about protecting cable operators and other third-party attachers against monopoly abuses of pole-owning utilities. In this important context, the purpose of pole rate regulation has *not* been about maximizing third-party contribution to the revenue requirement for the utility's core electric services – this revenue requirement is properly recoverable from the utility's ratepayers for whom the pole network was built and maintained. Moreover, pole rate revenues are such a miniscule percentage of core electric service revenues that even a

[4] The Company's current application for a general adjustment in its electric rates does not propose changing the existing pole attachment rate.

significant reduction in pole rates, such as that needed to align poles rates to the just and reasonable level I have calculated, would have a negligible, if any, impact on the average residential electric bill.[5] Rather, the purpose of pole rate regulation is to *limit* the rents that utilities are permitted to charge third-party attachers to levels more in line with what a competitive market (if one existed, which it does not) would produce.

Fundamental to pole rate regulation is recognition of the fact that pole-owning utilities, by virtue of historical incumbency, own and control existing pole plant to which cable operators and other third-parties have no practical alternative but to attach. Where a utility has absolute control over essential bottleneck facilities, in the absence of effective pole regulation, pole-owning utilities are in a position to limit access to these essential bottleneck facilities and/or to extract excessive monopoly rents.[6] This control of the essential bottleneck pole facility effectively affords the utility a key gatekeeper role with respect to the roll-out and availability of new advanced broadband services and applications in its service area. Preventing a pole-owning utility from charging excessive rates to the detriment of competition and the consuming public (which include the utility's own customer base), is precisely what pole regulation nationally, and here in Kentucky following the state's certification to self-regulate pursuant to Administrative Case No. 251, was designed to address.

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[5] *See* KU Response to KCTA 1-26 (included in Attachment 4) showing that for every $1.00 decrease in the pole attachment rate, assuming a 47% (percentage of plant-based) allocation of the revenue reduction to residential customers, the average *annual* electric residential customer bill would increase by a penny, so that even a $4.00 decrease would only increase a customer's bill by at most 5 cents annually. A revenue-based allocation would allocate only 35% of the pole revenue reductions to residential customers, meaning an even lower impact on the average electric residential customer bill.

[6] *See NCTA v. Gulf Power*, 534 U.S. 327, 330 (2002) ("Since the inception of cable television, cable companies have sought the means to run a wire into the home of each subscriber. They have found it convenient, and often

Q: ARE THERE PUBLIC POLICY REASONS FOR PREVENTING UTILITIES FROM CHARGING EXCESSIVE RATES?

A: Yes. Excessive rates serve no valid economic or public policy purpose. To the contrary, such excessive rates work at cross purposes to important public policy goals – namely, to promote effective competition and widespread broadband deployment. This is particularly the case in rural and less-populated areas, where the economic conditions for broadband deployment (e.g., lower population densities resulting in higher construction costs per capita) are the most unfavorable.[7]

Q: HOW IMPORTANT IS THE PROPER APPLICATION OF THE KPSC POLE RATE FORMULA TO KU?

A: Given the increased opportunities for utilities to compete with third-party attachers and the economic and social benefits of accelerated and enhanced broadband deployment, effective pole rate regulation is more important than ever. For that regulation to be effective, it is essential that the utility's implementation of the KPSC formula be carefully scrutinized.

As with any formulaic approach, the accuracy and integrity of the formula depends on the accuracy and integrity of the underlying data inputs. For this reason, it is very important that the data inputs to the formula are subjected to careful scrutiny and held to a high standard as to their reliability, accuracy, consistency, and ability to be verified. This is

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essential, to lease space for their cables on telephone and electric utility poles. Utilities, in turn, have found it convenient to charge monopoly rents.").

[7] These are all points emphasized in the FCC's seminal National Broadband Plan, which recommends rates for pole attachments be set as low and as close to uniform (in the vicinity of the current cable rate) as possible to support the goal of broadband deployment, particularly in rural areas where the "impact of these rates can be particularly acute."

also consistent with the KPSC's directive that the "various cost factors needed to apply the formula should be readily available public information, such as disclosed in the utility's required reports to the Commission or other public agencies."[8]

Q: PLEASE DESCRIBE THE KPSC FORMULA METHODOLOGY.

A: The KPSC formula methodology for calculating pole attachment rates applicable to third-party cable operators consists of three basic components as follows: "(1) embedded cost of an average bare pole of the utility of the type and size which is or may be used for the provision of a CATV attachment (2) multiplied by an annual carrying charge, and (3) this product multiplied by the percentage of usable space used for CATV pole attachments."[9] Expressed as an equation, the basic KPSC formula methodology is as follows:

Cable Pole Attachment Rate = [Average Bare Pole Cost x Investment Percentage] x Carrying Charge Factor x Usable Space Factor

In Administrative Case No. 251, and in subsequent rulings addressing the application of its pole rate formula, the KPSC identified with specificity the manner in which these basic components are to be calculated.

Q: PLEASE DESCRIBE HOW THE FIRST TWO COMPONENTS OF THE FORMULA, THE EMBEDDED COST OF AN AVERAGE BARE POLE AND

See *Connecting America: The National Broadband Plan*, March 16, 2010, at 110. http://www.broadband.gov/plan/#read-the-plan.

[8] Admin. Case No. 251, at 8.

[9] *Id.*

THE INVESTMENT PERCENTAGE, ARE CALCULATED FOR ELECTRIC UTILITIES UNDER THE KPSC FORMULA METHODOLOGY.

A: Under the KPSC methodology, the average bare pole cost is based on the "weighted average cost of two-user and three-user poles…For electric utilities, the average cost of a two-user pole will be assumed to be the weighted average cost of 35-foot and 40-foot poles, and for a three-user pole, the weighted average cost of 40-foot and 45-foot poles."[10] The KPSC's methodology specifically excludes from the calculation the costs for poles with heights lower or higher than this range because the KPSC found them to be used so infrequently for cable attachments.[11]

In addition, the KPSC's methodology specifically excludes costs associated with appurtenances not installed for CATV purposes.[12] The KPSC methodology distinguishes between two types of appurtenances – major and minor – as follows: Costs associated with major appurtenances, such as cross arms, and which "can be specifically identified in sub-accounts of the Federal Energy Regulatory Commission ("FERC") Form 1, Account 364" are to be directly excluded from the bare pole cost calculation.[13] Costs associated with minor appurtenances, consisting of miscellaneous hardware not segregated in the basic pole accounts (e.g., aerial cable clamps and pole top pins), and which are not specifically tracked by the Company in its books of accounts,[14] are to be

[10] *Id.* at 10-11.

[11] *Id.* at 9.

[12] *Id.*

[13] *Id.* at 9, Appendix A at 5.

[14] *See* KU Responses to KCTA 2-5 (included in Attachment 4) ("Minor items such as aerial cable clamps, pole top pins and other such items are not retirement units of property, and therefore KU does not maintain accounting for these items."). *See also* KU Response to KCTA 2-8 (included in Attachment 4).

excluded by application of a 15% investment percentage factor to the bare pole cost (net of major appurtenances).[15]

Q: PLEASE DESCRIBE THE SECOND COMPONENT OF THE KPSC FORMULA, THE ANNUAL CARRYING CHARGE FACTOR, AND HOW IT IS APPLIED.

A: The annual carrying charge factor (CCF) is used to convert the bare pole cost figure into an annual rental amount. The CCF was "designed to recover the utility's cost in providing service," including items "represent[ing] an equitable share of all operating and maintenance expenses, taxes, and depreciation, and a cost of money component," and a "contribution by CATV toward the common costs of the utility."[16] The Commission specified that the cost of money factor "should be equal to the return on investment (or margin) allowed in the utility's last rate case."[17] The Commission further specified that "[t]he costs included in the annual carrying charge calculation should be identifiable by specific account number as established in the Uniform System of Accounts prescribed by this Commission and utilized by each utility."[18]

Q: PLEASE DESCRIBE HOW THE THIRD COMPONENT, THE USABLE SPACE FACTOR, IS APPLIED TO ELECTRIC UTILITIES UNDER THE KPSC METHODOLOGY.

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[15] *See* Admin. Case No. 251, at 9-10, Appendix A at 4-5. *See also In the Matter of Application of Jackson Purchase Energy Corporation for Adjustments in Existing Cable Television Attachment Tariff*, Case No. 2004-00319, September 14, 2005, at 2-3 ("ULS&P should reconstruct separate cost records for major appurtenances, such as anchors, cross-arms and braces, and estimate bare pole costs by deducting the cost of the major appurtenances plus 15 percent for minor appurtenances, such as aerial cable clamps and pole top pins…").

[16] Admin. Case No. 251, at 11-12.

[17] *Id.* at 12.

[18] *Id.* at 11.

A: The usable space factor is the percentage of pole capacity attributable to the attacher, as determined by the ratio of space occupied by attacher (agreed to be one foot) to total usable space on the pole. The KPSC methodology applies a different usage space factor to two-user and three-user poles, consistent with its differing height presumptions for the two categories of poles. Specifically, the KPSC methodology establishes a usage space factor of .1224 (1/8.17) for the typical two-user pole and .0759 (1/13.17) for the typical three-user pole.[19]

Q: HAVE YOU CALCULATED FAIR, JUST AND REASONABLE POLE ATTACHMENT RENTAL RATES APPLICABLE TO KU BASED ON THE KPSC RATE FORMULA METHODOLOGY AS DESCRIBED ABOVE?

A: Yes. Once the various pieces of input data are properly identified, the calculation of the maximum fair, just and reasonable rate pursuant to the KPSC formula methodology is a straightforward multiplication of the three major components: *weighted average bare pole cost (net of major and minor appurtenances)* multiplied by the *carrying charge factor* multiplied by the *usable space factor*. As allowed by the Commission, I have calculated a single "composite billing rate based on relative pole populations" of two-user and three-user poles, in addition to the required two and three-user pole rates.[20] My calculations (provided in Attachment 2 to this testimony) fully adhere to the KPSC rate formula methodology as prescribed in Administrative Case No. 251, and as clarified in subsequent orders addressing the pole rate formula.

[19] *Id.* at 13-14.

[20] *Id.* at 16. ("Although we require that a two-user and three-user rate be developed and filed by each affected utility, the Commission will allow a composite billing rate based on relative pole populations when a complete inventory of CATV pole attachments is not presently available.")

For purposes of this proceeding, I have developed two sets of pole rate calculations – one set using data for the test year of the prior rate case, i.e., the twelve months ending March 31, 2012, the basis of KU's existing and proposed pole rates in this case, and the other set using updated data for the test year conforming to the current rate case, i.e., the twelve months ending October 31, 2014.

Q: WHAT DATA HAVE YOU USED TO CALCULATE POLE ATTACHMENT RATES FOR KU?

A: In applying the rate formula on a test year, versus calendar year basis, my pole rate calculations necessarily rely on input data provided by the Company in response to discovery and in prior filings that conform to the respective test year periods. Other available publically-reported data such as in the annual FERC Form 1 reporting system provide only calendar year-end data. In a few instances, as described in my testimony below, my calculations use temporary placeholders for actual values that should be updated when actual data becomes available. These inputs are the actual authorized rate of return to be decided by the Commission in this case, and 2014 test year amounts for specific Account 593 "Maintenance" sub-account labor charges (5930001 "Maintenance Poles, Towers, & Fixtures" and 5930004 "Tree Trimming") and Total Labor charges used in the calculation of the O&M charge.

Q: BASED ON YOUR CALCULATIONS, WHAT RATES WOULD BE FAIR, JUST AND REASONABLE FOR CABLE ATTACHMENTS TO KU'S POLES?

A: The results of my rate calculations for the test years ending March 31, 2012, and October 31, 2014, respectively, are presented in Table 3 below.

Table 3 Maximum KU Pole Rental Rates For Test Year Ending March 31, 2012 and October 31, 2014				
Data for Year Ending	**March 31, 2012**		**October 21, 2014**	
	2-User Pole	**3-User Pole**	**2-User Pole**	**3-User Pole**
Avg Bare Pole Cost	$400.30	$610.48	$447.41	$690.97
x Carrying Charges	10.22%	10.22%	9.76%	9.76%
x Space Factor	12.24%	7.59%	12.24%	7.59%
=Maximum Rate	$5.01	$4.74	$5.35	$5.12
Weight	50%	50%	50%	50%
=Max Wtd Rate	$4.87		$5.23	

In the case of KU, the pole attachment rate of $9.96 that the utility currently charges cable operators is well in excess of the just and reasonable rate produced by a proper application of the KPSC formula as shown in the Table 3 above (i.e., by over double based on the corresponding 2012 test year data, and still close to double based on 2014 test year data). In light of this fact, permitting rates to stay at such high levels would run counter to the ultimate purposes of effective pole rate regulation.

Q: DO YOUR CALCULATIONS AND RESULTING RATE RESULTS DIFFER FROM THOSE CURRENTLY CHARGED BY KU?

A: Yes, they differ as to a number of data inputs to the formula. The calculations underlying KU's current and proposed pole attachment rates contain a number of errors involving some key inputs to the formula, including a failure to include the appropriate 15% reduction to bare pole costs for minor appurtenances not used for pole attachment, and errors in the rate of return, income tax, depreciation sinking fund, and operation and maintenance elements of the carrying charge factor. My calculations correct for these

errors in a manner fully consistent with the Commission's decision in Administrative Case. No. 251 and in subsequent rulings of the Commission that address the pole rate formula. The corrections I have made are in full accordance with key fundamental principles underlying a rate formula approach, including full transparency and the use of data inputs that are readily verifiable, internally consistent, just and reasonable, and in adherence with principles of cost causation.[21] Relying on a number of erroneous data inputs, KU calculated a pole attachment rate for cable based on 2012 test year data of $10.01. This rate exceeds a fair, just and reasonable rate by over 100%.

Q: PLEASE DESCRIBE THE ERROR IN KU'S CALCULATIONS RELATING TO BARE POLE COSTS, AND HOW IT IS CORRECTED IN YOUR RATE CALCULATIONS.

A: As discussed earlier in this testimony, the KPSC methodology specifically excludes costs associated with *both* major and minor appurtenances from the calculation of the bare pole cost. Under the KPSC methodology, the utility is expected to separately track the costs of major appurtenances in various sub-accounts of Account 364 such that those costs can be excluded on a direct basis using the accounting records of the utility.[22] By contrast, the costs associated with minor appurtenances, consisting of miscellaneous hardware, are neither required nor expected by the Commission to be separately tracked in the pole accounting records of the utility. Under the KPSC methodology, these costs are to be

[21]The well-known economic principle of cost causation holds that costs are to be borne by the entity or activity responsible for the incurrence of the cost.

[22] *See In the Matter of: The CATV Pole Attachment Tariffs of the Union Light, Heat and Power Company*, Administrative Case No. 251-27, July 14, 1983, at 2-3. ("Therefore, to conform to the Commission's Amended Order of September 17, 1982, ULH&P should reconstruct separate cost records for major appurtenances, such as anchors, cross-arms, and braces, and estimate bare pole costs by deducting the cost of the major appurtenances plus 15 percent for minor appurtenances, such as aerial cable clamps and pole top pins….").

excluded by application of a 15% investment percentage factor to the bare pole cost amount (net of major appurtenances).

KU's rate calculations do not apply the required 15% reduction to remove the costs of minor appurtenances. Accordingly, KU's bare pole cost formula inputs are overstated by 15%. My calculations correct for this error by applying the Commission's mandated 15% reduction to KU's recorded investment in the relevant Account 364 pole plant categories.[23]

KU has acknowledged in response to a KCTA discovery request in this case that the costs of minor appurtenances are not separately tracked and recorded in its continuing property records.[24] Absent accounting records that specifically confirm the separate identification and removal of minor appurtenances from the pole plant investment recorded in Account 364, a proper application of the KPSC methodology dictates that the 15% percentage reduction be applied consistent with the Commission's ruling in Administrative Case No. 251 and in subsequent rulings.[25] The Company has confirmed that it is not able to separately identify and remove minor appurtenances from the pole plant investment recorded in Account 364 that is used to calculate pole attachment rates, thus there is no

[23]This correction reduces the average bare pole cost based on 2012 test year data from $470.94 to $400.30 for two-user poles, and from $718.21 to $610.48 for three-user poles, and using 2014 test year data, from $526.37 to $447.41 for two-user poles, and from $812.90 to $690.97 for three-user poles. *See* Kravtin Recommended Rate Calculations (Attachment 2) and KU Rate Calculations, provided in response to KCTA 1-1 (included in Attachment 4).

[24] *See* KU Response to KCTA 2-5, 2-8 (both included in Attachment 4).

[25] *See In the Matter of The CATV Pole Attachment Tariff of Kentucky Power Co.*, Administrative Case No. 251-24, July 6, 1983, at 3 (Holding that the utility "should either show" data supporting its actual bare pole costs "or deduct 15 percent for minor appurtenances according to the Commission's uniform method of estimating bare pole costs.").

question that the 15% reduction for minor appurtenances is appropriately applied under the Kentucky formula.

KU asserts in a related discovery response that the "costs that are included in the pole categories are immaterial to the overall amount included in the pole-cost figures used in the Company's 2012 rate proceeding calculations."[26] However, as with the Company's position concerning minor appurtenances in the 2009 case, absent accounting or other valid records to support or independently verify the Company's assertion, adherence to the fundamental principles of the rate formula approach dictates the proper presumptive formula adjustment be made.

Q: PLEASE DESCRIBE THE ERROR IN KU'S CALCULATIONS RELATING TO THE RATE OF RETURN ELEMENT OF THE CARRYING CHARGE FACTOR, AND HOW IT IS CORRECTED IN YOUR RATE CALCULATIONS.

A: For the rate of return component of the carrying charge factor in the 2012 proceeding, KU used its requested rate of return of 7.62%. As noted earlier, any rate of return input at this time is only a placeholder for the authorized rate of return ultimately allowed by the Commission in its decision regarding this case.[27] Accordingly, the pole attachment rates I have calculated should be adjusted to reflect the final rate of return authorized by the Commission.

[26] *See* KU Response to KCTA 2-6 (included in Attachment 4).

[27] *See* Admin. Case No. 251, at 12 ("For convenience and certainty of computation, the Commission finds that this return should be equal to the return on investment (or margin) allowed in the utility's last rate case.").

More importantly, KU's rate of return element contains a fundamental error by applying to gross pole costs a rate of return that is based on and intended to apply to a net plant investment figure.[28] The purpose of the rate of return element of the carrying charge factor is to allow the utility to recover a normal or fair (economic) return on capital from third-party attachers over and above actual cost recovery. The rate of return reflects the opportunity cost of money to the utility, generally thought of in terms of what it would cost the utility to attract investors to finance its own capital program and/or reflect the next best opportunity for the utility's own invested capital.

The effect of KU's use of a rate of return number set by the Commission – which was intended to be based on the utility's net investment in the calculation of carrying charges – being applied to a *gross* pole investment number is to significantly overstate the utility's true opportunity cost of money reflected in the return element of the formula's carrying charge and the pole rates calculated using those carrying costs.[29]

The need to apply a net-to-gross adjustment to the authorized rate of return used to calculate carrying charges in the pole formula calculation can be illustrated in simple mathematical terms. If a utility is authorized to earn 8% per $1000 of net investment (i.e., gross investment less accumulated depreciation), the utility is thereby permitted to set rates for its regulated services at levels that provide it with $80 total return charges on

[28]S*ee In the Matter of Application of Blue Grass Energy Coop. Corp. to Adjust Its Rates*, Case No. 2000-414, May 30, 2001, at 4. ("It is today, and has for decades been, a basic rate-making principle in Kentucky that a utility's rate of return is determined based on net rather than gross investment.").

[29]Since, as noted above, the pole rate is determined by the straightforward multiplication of the three basic components of the formula: bare pole cost x carrying charge factor x usable space, the pole rate will increase proportionately with increases in the carrying charge factor.

capital. Now, assuming, as is generally the case, that the utility's plant is 50% depreciated, it means that for every $1000 of net investment, there is $2000 of original gross investment carried on the utility's books of account and $1000 of accumulated depreciation corresponding to that investment. If the net-based rate of return of 8% is applied instead to the $2000 of gross investment on the utility's books, the utility will effectively be permitted to set rates at levels that are *double* (i.e., 8% per $2000 of gross investment for a total of $160) the authorized or just and reasonable return charges and its true opportunity cost of money for any given $1000 of plant investment.

My calculations correct for this error by adjusting KU's proposed rate of return so that the calculation is performed on an "apples-to-apples" basis. I do this in a simple, straightforward and commonly-accepted manner (including by this Commission as cited below) by applying a net-to-gross percentage based on the ratio of net pole plant (i.e. gross plant less accumulated depreciation) in Account 364 to gross pole plant in Account 364.

Doing so does not change the effective rate of return, it merely restates the rate of return element of the carrying charge factor as a number that can be properly applied - i.e., on an equivalent basis to a gross pole investment figure roughly double the size of net pole investment. For KU, this net-to-gross ratio for poles is .538 for the 2012 test year, and .552 for the 2014 test year. Thus multiplying this net-to-gross ratio by KU's "net" rate of return of 7.62%, yields an adjusted, equivalent rate of return applicable to gross

investment of 4.10% for the 2012 test year and 3.99% for the 2014 test year based on KU's proposed "net" rate of return of 7.23% .

Q: CAN YOU PROVIDE FURTHER DEMONSTRATION OF THE MATHEMATICAL EQUIVALENCY BETWEEN A RATE OF RETURN APPLIED TO NET INVESTMENT AND A RATE OF RETURN ADJUSTED BY THE NET-TO-GROSS RATIO APPLIED TO GROSS INVESTMENT?

A: Yes, I can. The mathematical equivalency between a rate of return applied to net investment and a rate of return adjusted by the net-to-gross ratio is further demonstrated in Tables I and II presented in Attachment 3 to my Testimony. These tables contain a series of present value analyses comparing the so-called "levelized" and "non-levelized" approaches for the capital recovery-related carrying charges (i.e., return and depreciation)[30] of the formula to be discussed in more detail below concerning the depreciation element, based on analyses presented by KU in its 2009 case.[31]

Table I in Attachment 3 demonstrates the equivalency in terms of the total return charges to the utility over the average service life of the plant calculated by applying a given fixed rate of return to *net* plant investment and comparing it to the total return charges

[30] For purposes of this analysis, for sake of simplicity and clarity, my present value analyses conform to those presented by KU witness Mr. William Seelye in his 2010 Rebuttal Testimony in the 2009 rate case, by ignoring the effects of taxes.

[31] In a nutshell, the non-levelized carrying charge approach (illustrated in the first set of columns in Table I) utilizes a straight line depreciation method and a rate of return applied to a declining stream of net investment to produce a stream of total return charges that decline over the service life of the plant; whereas the levelized approach which the Company uses (illustrated in the second set of columns in Table I) utilizes a sinking fund depreciation method and a rate of return applied to the original book cost of the plant to produce a stream of total return charges that remains fixed over the service life of the plant.

calculated by applying a rate of return of roughly half the net-based return to the corresponding *gross* plant investment figure over the book life of the plant.

As shown in Table I, under the non-levelized approach (see first set of columns), an effective return on gross investment can be calculated by dividing the annual return charges (derived on the basis of net investment) by $1000. While the effective return on gross investment calculated in this manner will vary each year in direct proportion to the declining stream of net investment, the average return on gross investment over the life of the plant is shown to be a little over 4%, The effective return on gross investment is thus approximately half the given 8.32% net-based rate of return (KU's requested return in the 2009 case), consistent with KU's approximate 2:1 ratio between gross and net book investment.

The equivalency in total return charges to the utility is demonstrated both on a nominal and present value basis - i.e., the stream of annual charges adjusted to reflect the time value or opportunity cost of money as appropriate for a long-lived asset such as poles. As shown in Table 1 (first set of columns), applying an average 4% return on gross investment over the life of the asset produces roughly equivalent total annual return charges and the same full 100% plant recovery on a present value basis as applying the Company's requested rate of return of 8.32% to the declining stream of net investment.

Q: DOES THE EQUIVALENCY RELATIONSHIP BETWEEN A RETURN BASED ON NET INVESTMENT AND A RETURN BASED ON GROSS, AND THE

CORRESPONDING NEED TO DIFFERENTIATE BETWEEN THE TWO, ALSO APPLY IN THE CONTEXT OF THE LEVELIZED APPROACH?

A: Yes it does. Just as with the non-levelized approach, the levelized approach (see second set of columns in Table I) involves a cost of money factor input. In the case of the levelized (sinking fund) approach, the cost of money factor is an input to the annuity-type formula used under this method to calculate depreciation charges over the life of the asset. The equivalency relationship demonstrated above in the context of the non-levelized approach can also be demonstrated mathematically for the levelized carrying charge approach.

As shown in Table II in Attachment 3 to my testimony, using a net-to-gross adjusted 4% rate of return as the appropriate cost of money factor in the annuity formula applied to gross investment (see second set of columns), closely approximates total annual return charges over the life of the plant (as produced under the non-levelized approach using the net based return of 8.32% (see first set of columns). However, more importantly, the net-to-gross adjusted levelized streams reflected in my rate calculations provide the same full 100% plant recovery on a present value basis as the non-levelized approach.

By contrast, using the unadjusted net-investment based rate as the return in the sinking fund annuity formula, as KU has done in its rate calculations (see third set of columns in Table III), the present value of the stream of annual capital recovery-related carrying charges increases by over 60% (to over $1600) vis-à-vis the full 100% ($1000) of just and reasonable capital recovery.

Q: IS YOUR APPLICATION OF A NET-TO-GROSS RATIO ADJUSTMENT TO THE RATE OF RETURN ELEMENT OF THE CARRYING CHARGE CONSISTENT WITH PRIOR RULINGS OF THE KPSC?

A: Yes, it is. The net-to-gross adjustment I have applied to the Company's rate of return is fully consistent with prior rulings of the KPSC. In 2001, the Commission issued two rulings to "definitively resolve this issue" concerning "the appropriate cost of money, or rate of return, to be included in the carrying charge component of the formula for calculating CATV charges."[32] As stated by the Commission in one of those decisions:

> The Admin. 251 Order includes no specific discussion on the issue of "gross vs. net" plant and Cumberland Valley has interpreted the Order to mean that gross plant should be used in the calculation of CATV charges. However, the Order's silence on this issue simply indicates that there was no controversy on the appropriate methodology to be used. It is today, and has for decades been a basic rate-making principle in Kentucky that a utility's rate of return is determined based on net rather than gross investment….Regardless of any uncertainty as to the intent in Admin. 251, basic rate-making involves establishing, directly or indirectly, an overall rate of return based on net investment rate base. That is how the overall rate of return of 7.58 percent used by Cumberland Valley in its calculation was developed in its last rate case. *We can find no authoritative support for applying a utility's investment in gross plant to a return derived from net plant*.[33]

Q: IN THE CASE YOU CITE, DID THE COMMISSION SPECIFICALLY REQUIRE THE USE OF EITHER GROSS OR NET PLANT INVESTMENT IN THE CALCULATION OF POLE RATES FOR CATV?

A: Consistent with Admin. Case No. 251, the Commission did not specifically require the use of either gross or net plant investment in the calculation of pole rates. Rather, the

[32] *See In the Matter of Application of Cumberland Valley Electric, Inc. to Adjust Its Rates*, Case No. 2000-359, February 26, 2001, at 4.

[33] *See id.* at 3-4.

Commission endorsed "either of the two methods suggested by KCTA," i.e., either "to use net pole costs and the actual return from [the utility's] most recent rate case," or to "adjust the rate of return to reflect the ratio of [the utility's] net plant investment to its gross plant investment and then apply the resulting return to the 'gross' average pole cost amounts."[34] This second of the two methods is the very same methodology applied in my rate calculations, and one that is widely accepted by the Federal Communications Commission and other state regulatory agencies with jurisdictions over pole rates.

Q: IS THERE A NEED TO APPLY A NET-TO-GROSS RATIO ADJUSTMENT IN CONNECTION WITH OTHER ELEMENTS OF THE CARRYING CHARGE COMPONENT OF THE FORMULA?

A: Yes, there is. Because the rate of return input is also used in the calculation of the income tax and depreciation (sinking fund) elements of the carrying charge factor, KU's error in applying a net rate of return figure to gross pole investment also affects these two components of the carrying charge factor, as explained below.

Q: PLEASE EXPLAIN YOUR CORRECTION TO THE INCOME TAX ELEMENT OF THE CARRYING CHARGE FACTOR AS IT PERTAINS TO THE RATE OF RETURN DATA INPUT.

A: The income tax element of the carrying charge factor is intended to recover the income tax liability theoretically imposed on the equity component of the utility's allowed

[34] *See id.* at 4; *see also In the Matter of Application of Blue Grass Energy Coop. Corp. to Adjust Its Rates,* Case No. 2000-414, April 4, 2001, at 4-5. ("That methodology requires the utility to "adjust the rate of return to reflect the ratio of [the utility's] net plant investment recorded in Account 364, Poles, Towers, and Fixtures, to its gross plant investment in Account 364 and then apply the resulting 'net-to-gross ratio' to the 'gross' average pole cost amounts.")

return.[35] In other words, this factor ensures that the utility has the opportunity to earn the allowed rate of return after accounting for taxes. For the same reason the Commission found it improper to apply a "net" overall rate of return figure to gross pole investment, it is similarly improper to apply a "net" return on equity figure (as KU has done) in the calculation of the income tax factor.[36] And similarly, the effect of KU's application of a "net" return on equity to gross pole investment is to significantly overstate the carrying costs associated with the income tax element.

To correct for this problem, I similarly apply to the income tax element the same net-to-gross ratio I used to correct the rate of return element of the carrying charge. This generates a return on equity for the income tax element that can be properly applied to gross pole investment. For example, using KU's 2012 test year data, I multiply a net-to-gross ratio of .538 times KU's "net" return on equity of 5.91% to yield an adjusted return on equity of 3.18%. Making this correction reduces the income tax element of the carrying charge factor from 3.43% to 1.85%. While I have used KU's proposed return on equity (adjusted to apply to gross pole investment) in my calculations, as with the overall rate of return, this figure, like the overall rate of return, is only a placeholder for the allowed return on equity ultimately authorized by the Commission in this case.

Q: PLEASE EXPLAIN YOUR CORRECTION TO THE DEPRECIATION SINKING FUND ELEMENT OF THE CARRYING CHARGE FACTOR AS IT PERTAINS TO THE RATE OF RETURN DATA INPUT.

[35]The debt component of the return does not generate a tax liability.

[36] The income tax factor is calculated using the following formula: Income Tax = [Composite Federal and State Income Tax Rate / (1-Composite Federal and State Income Tax Rate)] x Return on Equity. *See* Conroy Exhibit M4, page 2, provided in response to KCTA 1-1 (included in Attachment 4).

A: The depreciation sinking fund is a method of calculating depreciation that determines the payment required annually to generate a future dollar amount (e.g., the amount needed to replace the plant being depreciated), when accumulated at a given cost of money factor for a period corresponding to the service life of the plant.[37] In its calculation of the depreciation element of the formula, as in the case of the rate of return and income tax elements, KU uses its proposed "net" based rate of return figure of (7.62% in 2012) in the sinking fund formula as the cost of money factor with which annual payments accumulate over the life of the plant. Unlike the other two capital cost carrying charge elements, however, in the case of the depreciation element, the effect of KU's error is to understate the carrying costs associated with this element.

Q: PLEASE DESCRIBE THE ADJUSTMENT YOU HAVE MADE TO THE COMPANY'S DEPRECIATION ELEMENT TO CORRECT FOR KU'S USE OF A NET-BASED RATE OF RETURN IN THE SINKING FUND FORMULA.

A: Consistent with my corrections to the other capital recovery elements of the pole formula involving a rate of return or cost of money input (i.e., return and income tax elements), I have corrected the sinking fund element of the carrying charge by substituting an adjusted rate of return input (4.10% for the 2012 test year and 3.99% for the 2014 test year). This adjusted rate of return was calculated in the very same manner, i.e., by multiplying the net-based rate of return by KU's net-to-gross ratio (i.e., 7.62% times .538 for the 2012 test year and 7.23% times .552 for the 2014 test year). This adjusted rate of return produces a sinking fund factor that reflects KU's true opportunity cost of money

[37] The sinking fund factor is calculated using the following formula: Sinking Fund Factor = Proposed Rate of Return / [(1+ Proposed Rate of Return) $^{\text{Number of Years in Service}}$ - 1]. *See* Conroy Exhibit M4 Workpapers, page 2,

applicable to gross investment. As noted above, my substitution of a lower adjusted "gross" rate of return in the calculation of the sinking fund factor actually *increases* this carrying charge element vis-à-vis KU's figure, e.g., for the 2012 test year, from the 0.63% figure used by KU to 1.33%. Again, as mentioned previously, the adjusted rate of return figure is based on the requested rate of return and should be updated based on the rate of return ultimately authorized by the Commission in this case.

Q: CAN YOU EXPLAIN WHY IN THE CASE OF THE SINKING FACTOR, YOUR SUBSTITUTION OF A *LOWER* ADJUSTED COST OF MONEY FIGURE APPLICABLE TO GROSS INVESTMENT RESULTS IN A *HIGHER* DEPRECIATION CARRYING CHARGE FACTOR?

A: Yes. As noted above, the sinking fund is an annuity type method of calculating depreciation based on the payment required annually to generate a future dollar amount (e.g., the amount needed to replace the plant being depreciated), when accumulated over the average service life of the plant at a given rate of return or cost of money factor. All else being equal, the higher the rate of return applicable to the utility's invested capital, the faster the capital recovery dollars available to finance future plant replacement dollars will accumulate and grow, and the smaller the annual depreciation payments into the sinking fund required over the life of the plant to accumulate funds to finance future plant replacement. Conversely, the lower the cost of money factor, the slower the accumulation of capital recovery dollars, and the larger the annual payments into the reserve fund required to accumulate dollars toward any given future plant replacement.

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provided in response to KCTA 1-1 (native file); *see also* KU Response to KCTA 2-34 (included in Attachment 4).

Q: INSTEAD OF APPLYING A NET-TO-GROSS ADJUSTMENT TO THE NET RATE OF RETURN TO CONFORM TO THE COMPANY'S CALCULATION OF THE POLE FORMULA USING GROSS POLE PLANT, WHY NOT USE THE UNADJUSTED NET RATE OF RETURN WITH A STRAIGHT-LINE (I.E., NON-LEVELIZED) DEPRECIATION METHOD INSTEAD OF A LEVELIZED SINKING FUND METHOD?

A: There are several reasons why I have chosen to use the same depreciation method as used by the Company in its pole rate calculations. First, I have no inherent disagreement with the use of a sinking fund depreciation methodology. As described above, my disagreement with the Company's depreciation element is a generic one relating to the use of an inappropriate cost of money factor that does not match with the Company's application of the pole formula to gross investment. In fact, in the case of depreciation, my adjustment to the cost of money input actually increases the depreciation element of the carrying charge vis-à-vis the Company's.

Second, regardless of which capital recovery method is used to calculate pole attachment rates, it is necessary to ensure that the inputs to the formula are correctly stated to match the investment base to which it is applied. If the formula is applied to gross pole investment and a sinking fund (levelized approach) is used, then a net-to-gross adjustment is required to the net cost of money used to calculate the sinking fund factor – both the rate of return and discount factor – to restate them at levels reflective of the true cost of money applicable to gross investment. A similar adjustment is required if the formula is applied to net pole investment (non-levelized approach). However, in that instance, the required adjustment is made to the deprecation rate which is set based on gross investment. Specifically, an

analogous (but reciprocal) gross-to-net adjustment is applied to the gross depreciation rate to restate it at a level applicable to net investment. Moreover, as demonstrated earlier (see Table I in Attachment 3 to my Testimony), my application of the levelized approach using cost of money factors adjusted by the appropriate net-to-gross ratio provides KU with an equivalent100% capital recovery on a present value basis as under the non-levelized approach.

Third, while the sinking fund method is not commonly used in the calculation of pole rates, it is my understanding that the Company has been using this method for many years. As a general proposition, it is best to maintain consistency and to avoid switching depreciation methodologies midstream as it introduces a number of complexities, especially in a regulatory setting where rates charged by the utility are required to meet a just and reasonable standard.

Q: WHY IS IT GENERALLY BEST PRACTICE TO MAINTAIN CONSISTENCY AND AVOID SWITCHING BETWEEN DEPRECIATION METHODOLOGIES?

A: Different depreciation methods are characterized by different patterns of capital recovery over time, so switching between methods introduces complexities in terms of reconciling past and future depreciation accruals. Of particular concern for a regulated utility, depending on such factors as the life of the plant, the average age of plant remaining in service, the retirement experience of the plant, and the opportunity cost of money, a switch in depreciation methodologies could result in an over-recovery of capital costs in rates charged by the utility, if past depreciation accruals are not taken into account. However, doing so is practically and administratively very difficult to do. The need for a true-up to account for

past depreciation accruals is especially important in the case of a long-lived asset such as poles where, on average, at any point in time there is a substantial amount of past depreciation (i.e., on average 17.5 years' worth) that will have been recovered in rates for existing customers. This point was explicitly recognized in a FERC case where KU had sought permission to switch from the non-levelized (straight-line) approach to the levelized (sinking fund) approach and was denied.[38]

Moreover, in the case of KU's pole rates, switching from the levelized approach to a non-levelized one would introduce even more complexities given the Company already effectively switched once from the non-levelized approach to the levelized approach for purposes of setting regulated pole attachment rates pursuant to the Commission's Administrative Case No. 251. As a result, KU has likely been able to take advantage of higher capital recovery streams embodied in pole attachment rates for existing customers than it otherwise would have been able had it not switched to a levelized approach.

Q: WHAT IS THE BASIS OF YOUR STATEMENT THAT THE COMPANY HAS LIKELY BEEN ABLE TO TAKE ADVANTAGE OF HIGHER CAPITAL RECOVERY STREAMS EMBODIED IN POLE ATTACHMENT RATES THAN IT OTHERWISE WOULD HAVE BEEN, HAD IT NOT SWITCHED TO A LEVELIZED APPROACH FOR SETTING POLE ATTACHMENT RATES?

[38] *See* FERC Ky. Utils. Co, Opinion No. 432, 85 FERC ¶ 61,274 at 62,105 at 5 (1988) ("In fact, KU itself has identified the reason why a switch in methods can result in an over-recovery. (KU Brief on Exceptions at 11.) KU stated that, '[I]n the years before the cross-over point, the net plant method recovers a greater proportion of the utility's capital investment, and in later years the levelized method recovers more capital costs.' (Id.) In other words, initially using a net plant method for a set of facilities and later switching to a levelized gross plant method produces higher rates than the rates produced by a consistent use of either method. Based on the large amount of depreciation that has already been accrued on KU's assets, its proposal to switch methods results in unjust and unreasonable rates for its existing customers that later take service under the transmission tariff.").

A: The pre-regulation approach KU used to determine capital recovery charges reflected in pole rates cannot be known with certainty, given KU's inability to provide past workpapers.[39] However, it is reasonable to assume that unregulated pole rates would have been set to provide KU capital recovery at least as great, if not greater, than that generally embodied in the rates set for KU's other regulated services that have historically been based on the non-levelized approach.[40] As explained earlier, the non-levelized approach produces higher streams of capital recovery in the early years, and the levelized approach produces higher streams of capital recovery in the later years. This is another reason why KU, like most companies, would not generally find the levelized approach as appealing as other approaches that allow the benefit of higher earlier streams of capital recovery.

However, there are reasons why KU would have found it advantageous to switch to the levelized approach in setting regulated pole rates, if it could do so without a true-up for the substantial past depreciation accrued under the non-levelized approach. Given the long-lived nature of the pole asset, by switching methods, the Company could lock into higher streams of capital recovery in the later years for plant already substantially depreciated.

This phenomenon is illustrated graphically in Figure 1 below. The analysis portrayed in Figure 1 assumes that half of the existing pole asset base is depreciated, as is reasonable given KU's test year ratio of net to gross plant of around .50, such that the switchover point, on an aggregate account basis, can be approximated as occurring at year 17.5. As illustrated

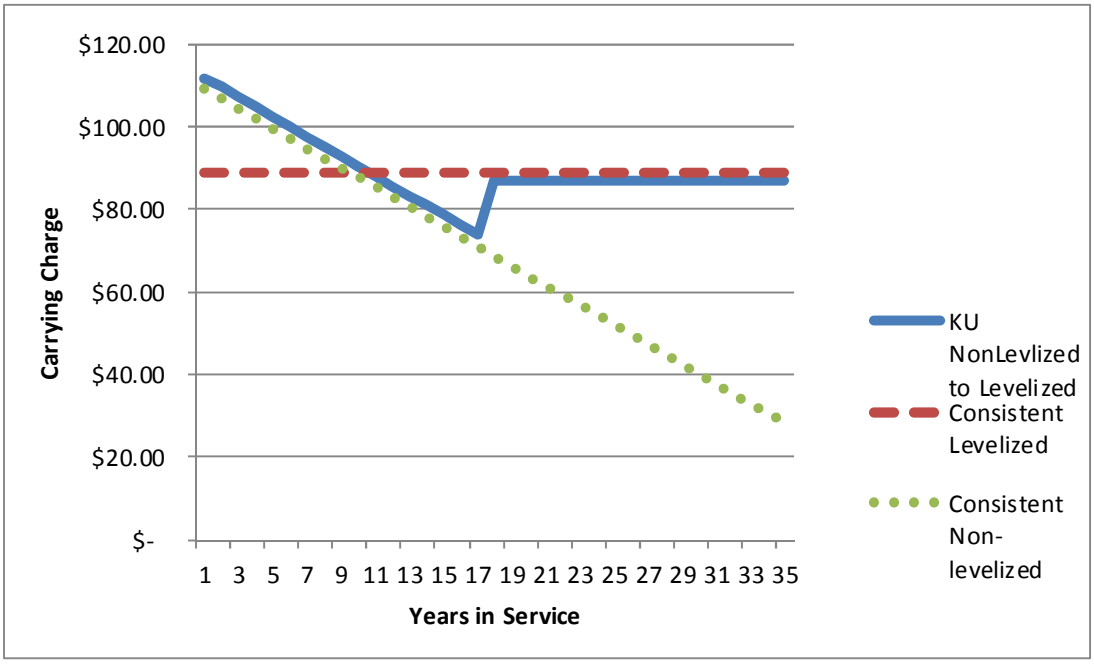
[39] *See* KU Response to KCTA 2-31 and 2-32 (both included in Attachment 4).

[40] *See* Seelye 2010 Rebuttal Testimony, at 64 ("The net plant approach is equivalent to the standard methodology use in any given year, such as the current rate case, to calculate revenue requirements. For example, the revenue requirements calculated in Mr. Rives' exhibits do not use sinking fund depreciation to determine the depreciation element included in revenue requirements.") .

in Figure 1 below, for a long lived asset such as poles, there is the potential for significant excess recovery in the years following the switchover.

Moreover, KU's gross pole asset base has been growing substantially over time, both in the aggregate and on a per unit basis, as older, less expensive vintages are being retired and replaced with newer much more expensive ones.[41] Over the years, KU's sinking fund factor has been applied to an ever increasing gross pole investment, rather than a fixed amount of construction costs for example as in the case of power plant. Given this economic reality of poles, switching depreciation methods back to the non-levelized approach, without a true-up for past excess recovery and a diligent scrutiny of KU's significantly increasing bare pole costs over time, would likely further and unreasonably penalize existing pole attachment customers.

Figure 1
KU Switch From Non- Levelized to Levelized Carrying Charges (Nominal $)



Q: PLEASE EXPLAIN YOUR CORRECTION TO THE OPERATIONS AND MAINTENANCE ELEMENT OF THE CARRYING CHARGE FACTOR.

A: KU calculates the Operations and Maintenance (O&M) element of the carrying charge factor by taking the sum of the following three types of expenses: (1) Maintenance of Poles, Towers, and Fixtures as recorded in subaccount 593001; (2) Tree Trimming of Electric Distribution Routes as recorded in subaccount 593004; and (3) an assignment of total utility Administrative and General expenses to poles (based on the ratio of labor charged to subaccounts 593001 and 593004 to total utility labor expenses), and then dividing that sum by the gross plant in service in Account 364.[42]

As with the rate of return element, the Company's calculation of the O&M element of the carrying charge factor contains a fundamental mismatch that has the effect of overstating the costs of pole attachment calculated in the formula. The mismatch is between the plant accounts for which the O&M expenses are booked (i.e., the numerator of the expense-to-investment ratio used to calculate the carrying charge for this element), and the investment base to which those booked expenses are applied (i.e., the denominator of the ratio).

Q: PLEASE DESCRIBE THE SPECIFIC NATURE OF THE MISMATCH IN EXPENSE AND INVESTMENT ACCOUNTS IN KU'S CALCULATION OF THE O&M FACTOR.

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[41] *See* KU Response to KCTA 2-13 (included in Attachment 4).

[42] *See* Conroy Exhibit M4, page 3, provided in response to KCTA 1-1 (included in Attachment 4).

A: The Company's expense input used in the numerator of the expense-to-investment ratio (Accounts 5930001 and 5930004, respectively) includes maintenance and tree trimming costs associated with all three overhead distribution plant accounts, Account 364 "Poles," Account 365 "Conductors and Devices," and Account 369 "Services," while the investment input used in the denominator includes only Account 364 plant investment. By doing so, the Company reduces the pool of investment over which the associated maintenance expenses are spread, resulting in the calculation of a higher maintenance element. This in turn produces a higher overall carrying charge factor and correspondingly higher pole attachment rate.

The methodology I have applied is necessary to ensure an "apples to apples" expense to investment ratio to prevent and to better align the pole attachment rate with the fundamental principle of cost causation underlying the pole rate regulation dictating costs be borne the entity or service responsible for the incurrence of the cost.

Q: HAS THE MISMATCH BETWEEN EXPENSES AND INVESTMENT YOU IDENTIFY AND CORRECT FOR IN YOUR POLE RATE CALCULATIONS BEEN RECOGNIZED IN A PREVIOUS KU CASE?

A: Yes. The mismatch in the calculation of the O&M element of KU's pole rate calculation, and its effect on the pole rate, was highlighted by the Commission Staff in a discovery request to the Company in the 2009 rate case. In that discovery request, the Company was asked by Staff:

> "Starting with the rates as calculated in the application, recalculate the CATV rates if tree trimming expenses related to services and overhead conductors is excluded from the calculation of the adder for operation and maintenance

> expenses. If the expense related to services and overhead conductors cannot be excluded from Account 593004, Tree Trimming of Electric Distribution, recalculate the CATV rates if the adder for operation and maintenance expenses is calculated by dividing the Expenses Assigned to Poles of $6,817,950 by the net book value of Accounts 364, 365, and 369."[43]

In its response to Staff, the Company noted definitively that "expenses related to services and overhead conductors cannot be excluded from account 5930004," and accordingly, provided a recalculation of its rate calculation (as provided in its application) with the O&M expense adder calculated by dividing the Expenses Assigned to Poles by the *gross* book value of Accounts 364, 365, and 369." The Company added that it provided the requested recalculation using gross book values in response to the Staff request in addition to net "because the operation and maintenance expense adder is applied to *gross* plant costs in Seelye Exhibit 11."[44]

Under the Company's recalculation of the O&M element of the carrying charge factor by correctly dividing the maintenance expenses booked to the 593 subaccounts (as reflected in the numerator of the expense to investment ratio) by *the sum of* Accounts 364, 365, and 369 for which those expenses relate, the O&M carrying charge element decreases from 6.61% (per KU's 2012 rate calculation) to 2.73% (per my 2012 rate calculation). The recalculation provided by the Company in its response to the Commission Staff in the 2009 case cited in the passage above, is exactly the same adjustment I have incorporated into my rate calculations. [*Compare* KU rate calculation showing an adjusted O&M factor of 2.47% for the 2009 test year (per Response to Staff 3(c)(1)(i)

[43] *See* KU Response to Third Data Request of Commission Staff, Dated March 26, 2010, Question 3(c)1, attached in Exhibit 11 to Seelye 2010 Rebuttal Testimony (Attachment 5).

[44] *See id.*

provided in Attachment 5 to my testimony) *with* my O&M calculation of 2.73% for the 2012 test year (provided in Attachment 2 to my testimony)].

Q: IS YOUR CALCULATION OF THE O&M ELEMENT OF THE POLE RATE FORMULA A COMMONLY ACCEPTED APPROACH?

A: Yes. The calculation of the O&M element of the pole rate formula for electric utilities using a ratio of 593 account expense in the numerator and accounts 364, 365, and 369 in the denominator is a widely accepted approach for determining O&M costs attributable to pole attachments by both federal and state regulatory authorities.[45] The adjustment I have made to correct the internal inconsistency in the O&M element of the carrying charge factor contained in the Company's pole rate calculation is fully consistent with the widely accepted methodology for calculating the O&M element in formula based rates for utility pole attachments.

Q: IN ADDITON TO THE NEEDED CORRECTION TO THE O&M CHARGE DISCUSSED ABOVE, ARE THERE ANY OTHER INPUT RELATED ISSUES TO ADDRESS CONCERNING THE O&M CHARGE?

A: Yes. As noted at the outset of my testimony, there are a few instances where my calculations use placeholders for actual input values. One of those is for the sub-account

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[45] *See, e.g.*, *FCC In the Matter of Amendment of Rules and Policies Governing Pole Attachments, CS Docket No, 97-98, In the Matter of Implementation of Section 703(e) of the Telecommunications Act of 1996, CS Docket No, 97-151, Consolidated Partial Order on Reconsideration,* May 25, 2001,at ¶¶ 117-118: ("Account 593 (maintenance of overhead lines (Major only)) includes all the cost of labor, materials used and expenses incurred in the maintenance of overhead distribution line facilities, the book cost of which is includible in Account 364 (poles, towers and fixtures), Account 365 (overhead conductors and devices), and Account 369 (services). In our calculation we include the net investment for all three accounts to determine the portion of Account 593 attributable to Account 364.").

labor figures used in the O&M charge to apportion A&G expenses to poles for the 2014 test year. The relevant 593 subaccount labor figures identified in Conroy Exhibit M4 pertain to rate calculations for the 2012 test year only. In response to discovery (*see* KU Response to KCTA 2-15),[46] KU provided 593 Account detail for the 2014 test year. However, the sub-account labor inputs for 5930001 (Maintenance Poles, Towers, & Fixtures) and 5930004 (Tree Trimming) were not readily identifiable from the Company's Account 593 ledger. Accordingly, for these inputs, my rate calculations use an estimate for sub-accounts 593001 and 593004 labor based on their respective 2012 values which were provided in response to discovery, adjusted by the change in the total subaccount expense between the two test year periods. *See* Kravtin Attachment 2.

Similarly, my calculations use a placeholder value for the 2014 Total Labor input used as denominator of the ratio that apportions A&G Expenses to poles. In response to discovery (*see* KU Response to KCTA 2-4)[47], KU provides Total Labor figures for both the 2012 and 2014 test years. However, the Total Labor Expense data provided in response to KCTA 2-4 are different from the Total Labor Expense figures the Company uses to calculate the pole rate. According to a clarifying email from KU counsel, the Total Labor amounts provided in response to KCTA 2-4 reflect "total labor expense from the general ledger for all accounts," whereas the total labor expense used by the Company in its pole rate calculations are for "Kentucky jurisdiction direct and burden labor expense in the cost of service study for that time period."[48] It is not clear why the

[46] KU's Response to KCTA 2-15 is not included because of the size of the file.

[47] KU's Response to KCTA 2-4 is included in Attachment 4.

[48] *See* Email dated 3/4/2015 from Kendrick R. Riggs, Counsel to KU, to Amanda Lanham, Counsel for KCTA (Attachment 7).

Company has used the labor figures from the special cost of study rather than from the general ledger or how to reconcile the two. However, given the lack of clarity, my rate calculations also apply the cost of service labor figures in the denominator of the apportionment ratio. Because the Company has not developed a cost of service study for the 2014 time period, I estimated a 2014 cost of service study figure based on the 2012 value, adjusted by the change in the total labor expense per the general ledger data (as provided in the Company's response) between the two test year periods.

As with the rate of return input, both the sub-account labor and Total Labor Expense amounts used to apportion A&G expense to poles should be updated to reflect actual values once they become available.

There is one other data input involved in the calculation of the O&M charge that warrants additional clarification. As with the Total Labor Expense input data, the input figure for KU's Total Administrative and General Expense identified in the Company's 2012 rate calculations (per Conroy Exhibit M4 provided in response to KCTA 1-1)[49] does not reconcile to the Total A&G figure identified by the Company in response to a KCTA discovery request, KCTA 1-21.[50] (See A&G Detail, Kravtin Attachment 2). In the same email from KCTA counsel referenced above, it was suggested the reason for the difference had to do with a reclassification of A&G expenses between FERC accounts "to better align them with the Uniform System of Accounts" in June 2013.[51] However, it is not clear how the reclassification in June 2013 affected the number reported for the test

[49] KU's Response to KCTA 1-1 is included with Attachment 4.

[50] KU's Response to KCTA 1-21 is included with Attachment 4.

[51] *See* Attachment 7.

year ending March 31, 2012. For purposes of my rate calculations, given the lack of additional clarifying information, I relied on the A&G figure used by the Company in its 2012 rate calculations. As with the other O&M inputs noted above, this input figure should be updated to match the correct booked value For that period.

Q: NOTWITHSTANDING YOUR OPINION THAT THE COMPANY'S CALCULATION OF THE O&M ELEMENT OF THE CARRYING CHARGE IS INCORRECT, HAVE YOU CALCULATED POLE RATES USING THE COMPANY'S MISMATCH APPROACH FOR PURPOSES OF COMPARISON?

A: Yes. For purposes of comparison only, I have calculated pole rates for KU applying the Company's method for calculating O&M charges (*see* Table 4 below). For the reasons explained above, I am not endorsing the Company's mismatch method of calculating O&M charges; rather, I have calculated these alternative rate results to illustrate how the formula could (and has been applied by KU) to produce a pole rate that is significantly higher than a just and reasonable rate.[52]

Table 4
Maximum KU
Just and Reasonable Pole Attachment Rates
For Test Year Ending March 31, 2012 and October 31, 2014
Calculated With KU O&M Carrying Charge

	Two-User	Three-User	Wt. Average
TY Ending 3/31/2012	**$6.72**	**$6.36**	**$6.54**
TY Ending 10/31/2014	**$7.00**	**$6.71**	**$6.86**

[52] *See* Attachment 2, Kravtin Rate Calculations Using KU O&M.

Q: IN CASE 2009-00549, KU SUBMITTED REBUTTAL TESTIMONY ADDRESSING YOUR CALCULATION OF THE CAPITAL RECOVERY ELEMENTS (I.E., RETURN AND DEPRECIATION) OF THE CARRYING CHARGE COMPONENT OF THE POLE RATE FORMULA. WOULD YOU LIKE TO RESPOND?

A: Yes I would. Given both KU and I apply the same approach for determining the capital recovery-related carrying charges of the pole rate formula in the current proceeding as in the 2009 case, the rebuttal testimony submitted by KU witness Mr. William Seelye in the 2009 case is pertinent to the testimony I am submitting in this case. Most of the issues raised in his rebuttal testimony I have already addressed in this testimony in support of my application of the KPSC pole rate formula including my choice of formula inputs where they varied from those used by the Company. However, there are a few additional points raised in Mr. Seelye's rebuttal testimony that I have not addressed.

Q: COULD YOU DESCRIBE THE NATURE OF MR. SEELYE'S DISAGREEMENT WITH THE APPROACH YOU USE TO CALCULATE THE CAPITAL RECOVERY-RELATED CARRYING CHARGES FOR KU?

A: Mr. Seelye's disagreement with my calculation of capital recovery-related carrying charges centers on his characterization of my approach as applying the non-levelized approach for calculating carrying charges instead of the levelized approach utilized by KU. As described earlier in my testimony, in a nutshell, non-levelized charges are calculated in terms of net investment (i.e., original gross book investment reduced by

depreciation and taxes) in each successive period, whereas levelized charges are based on the gross (undepreciated) investment amounts and a sinking fund depreciation method.

Q: IS THERE ANY VALIDITY TO MR. SEELYE'S CLAIM YOU HAVE USED A NON-LEVELIZED CAPITAL CARRYING CHARGE APPROACH?

A: No, there is not. As a threshold matter, my calculations do *not* involve a switch from the levelized carrying charge approach used by KU to a non-levelized one. As described earlier, my calculations, like those of KU, calculate carrying charges, including those related to capital recovery, on the basis of *gross* investment and using the same levelized carrying charge approach utilized by KU. Both in the 2009 case and in the current case, the carrying charges I develop for the return and depreciation elements are calculated in similar fashion to KU and similarly are all applied to gross bare pole per unit cost figures. The gross investment figures I have used in my rate calculations are based on the same Account 364 gross investment amounts used by KU, subject only to an adjustment for minor appurtenances in accordance with the KPSC formula. There is no netting out of any accumulated depreciation or deferred taxes from the amounts of gross pole investment identified by KU and recorded in its continuing property records to which the carrying charges in my pole rate calculations are applied.

Q: IF LIKE THE COMPANY, YOU USED A LEVELIZED APPROACH TO CALCULATE CAPITAL RECOVERY-RELATED CARRYING CHARGES,

HOW DO YOUR CALCULATIONS DIFFER FROM THOSE OF THE COMPANY?

A: As shown in Table II (Attachment 3 to my testimony), the only real difference between my calculation of the capital recovery elements of the carrying charges and KU's is the choice of the rate of return (ROR) input. As explained earlier, I used an input for the ROR (approximately 4%) that has been correctly adjusted so it can be appropriately applied in the pole rate formula to a bare pole cost figure calculated on the basis of gross investment versus the lower net investment figure - the former being roughly double the magnitude of the latter. As I previously explained, the restatement of the rate of return is necessary so as to provide KU with the opportunity to earn a comparable just and reasonable amount of return on investment in its pole rates as it is authorized to recover from other utility services.

Q: WHAT ABOUT MR. SEELYE'S CLAIM THAT YOU SWITCHED BETWEEN THE NON-LEVELIZED AND LEVELIZED CAPITAL RECOVERY CARRYING CHARGE APPROACHES?

A: As demonstrated earlier in my testimony, my rate calculations do not apply a non-levelized carrying charge approach. Notwithstanding that fact, it is interesting if not surprising that that Mr. Seelye raises the concern about switching carrying charge approaches. This is because, as mentioned earlier in my testimony, it was KU that effectively switched to the levelized approach for purposes of calculating regulated pole rates, instead of using the standard non-levelized approach that KU has used and continues to use more generally in the calculation of Company revenue requirements.

As explained earlier and illustrated in Figure 1 above, given these respective patterns of recovery of the non-levelized and levelized approaches, by effectively switching from a non-levelized approach to a levelized approach, in the absence of a formal true-up of past depreciation accruals, the Company has likely been able to over-recover its investment in pole plant from existing pole attachment customers.

Q: CAN YOU PROVIDE FURTHER DEMONSTRATION OF THE COMPANY'S LIKELY PAST EXCESS CAPITAL RECOVERY ASSOCIATED WITH A SWITCH FROM NON-LEVELIZED TO LEVELIZED CAPITAL RECOVERY CARRYING CHARGES?

A: Yes. The opportunity to over-recover invested capital by effectively switching from a non-levelized to levelized approach is further demonstrated in Table III in Attachment 3 to my testimony. Table III quantifies the increase in the present value of capital carrying charges KU could recover over the average service life of any given $1000 of gross pole investment by switching capital recovery approaches for purposes of setting pole rates.[53] Under this switching scenario, KU would enjoy excess capital recovery on a present value basis (approximated at $400 per $1000 or 40%), and correspondingly be able to set rates at levels that would produce a total nominal capital recovery of over three times gross investment (approximated at $3200 per $1000 of gross investment).

[53] As with the prior analyses presented in this testimony, this analysis is based on the assumption that at any given point in time approximately half of the Company's pole asset base is depreciated, so that on an aggregate plant account basis, the switchover point for KU can be reasonably approximated for any given $1000 of gross pole investment as occurring at year 17.5.

In addition as discussed earlier, KU's sinking fund factor has been applied to an ever increasing gross pole cost over time, making the likelihood of past excess capital recovery being carried forward for existing CATV customers even greater.[54] Only a formal true-up process to account for the significant prior accrual of depreciation on KU's Account 364 pole asset – of which I am not aware has ever occurred – could prevent the over-recovery from the relatively high levels of prior depreciation accruals under the non-levelized approach (for the period prior to the switchover) from carrying forward into pole attachment rates for existing customers.

Q: IS THERE ANY VALIDITY TO MR. SEELYE'S CLAIM YOUR CAPITAL RECOVERY CARRYING CHARGES DO NOT PROVIDE THE COMPANY WITH 100% CAPITAL RECOVERY ON A PRESENT VALUE BASIS?

A: No, there is not. As discussed earlier in my testimony, and as demonstrated in Table I in Attachment 3 to my testimony, the capital recovery charges embodied in my rate calculations under the levelized approach provide an equivalent 100% capital recovery on a present value basis as under a non-levelized approach. The present value calculations presented in Mr. Seelye's Rebuttal Testimony that purport to demonstrate that my capital recovery charges provide less than full recovery on a present value do not accurately portray the capital recovery approach and cost of money inputs actually utilized in my rate calculations. One analysis (*see* Table I of Seelye Rebuttal Exhibit 11) incorrectly models my approach as a non-levelized approach, and the other (*see* Table in Seelye

[54] *See* KU Response to KCTA 2-13.

Rebuttal Exhibit 12)[55] incorrectly models my approach as switching from a levelized to a non-levelized approach and applying an unadjusted cost of money factor of 8.32% under the levelized approach. Neither analysis is accurate as demonstrated in this testimony.

For the reasons explained earlier, it is appropriate that both the rate of return and the discount factor used in any present value analysis of capital recovery under a pole rate formula applied to gross investment be stated at levels applicable to gross investment – not net investment. Otherwise, the amount of required (just and reasonable) capital recovery determined by the formula and embodied in pole attachment rates will be overstated.

Q: DO YOU HAVE ANY FINAL CONCLUDING COMMENTS, IN PARTICULAR ON THE ISSUE OF CAPITAL RECOVERY EMBODIED IN THE POLE RATE FORMULA?

A: Yes, I do. Under a system of effective regulation, there is no economic or public policy justification for excess recovery for a rate regulated asset which embodies an unjust and unreasonable rate of return. This is true for all regulated services. However in the case of pole rate regulation, there are additional public policy concerns and corresponding benefits to Kentucky citizens for ensuring that KU is not able to set pole rates on the basis of an excessive, unjust and unreasonable return. Increasingly, broadband services have been recognized as key to enhanced economic opportunity and wellbeing. Because many KU subscribers are also customers of broadband services, they stand to benefit

[55] *See* Attachment 6.

from just and reasonable pole rates that better promote broadband competition and accessibility.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A: Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Direct Testimony of Patricia D. Kravtin on Submitted Behalf of the Kentucky Cable Telecommunications Association has been served on all parties of record via hand delivery, facsimile, or electronically this 6th day of March, 2015.

/s/ Laurence J. Zielke

Laurence J. Zielke
Janice M. Theriot