KENTUCKY PUBLIC SERVICE COMMISSION

In the Matter of:	)	
ELECTRONIC INVESTIGATION OF THE PROPOSED POLE ATTACHMENT TARIFFS OF RURAL LOCAL EXCHANGE CARRIERS	)	**CASE NO. 2022-00107**

DIRECT TESTIMONY

OF

PATRICIA D. KRAVTIN

Submitted on

Behalf of

The Kentucky Broadband and Cable Association

June 9, 2022

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

A: My name is Patricia D. Kravtin. My business address is 2100 Park Avenue, Unit 682316, Park City, Utah 84068. I am principal and owner of Patricia D. Kravtin Economic Consulting, a private practice specializing in the analysis of communications and energy regulation and markets.

Q: ON WHOSE BEHALF IS THIS TESTIMONY BEING PRESENTED?

A: My testimony is offered on behalf of The Kentucky Broadband and Cable Association ("KBCA").

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."), completing all course requirements for the Ph.D. degree and passing oral and written examinations in my chosen fields of study: government regulation of industry, industrial organization, and urban and regional economics. My professional background includes a wide range of consulting experiences in regulated industries. Between 1982 and 2000, 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.

Upon leaving ETI in September 2000, I began my own consulting practice specializing in telecommunications, cable, and energy regulation and markets.

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 **Exhibit 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 and co-authored a number of reports dealing with this subject, including most recently one entitled "Advancing Pole Attachment Policies to Accelerate National Broadband Buildout," which includes a chapter on Kentucky. Earlier, I 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 on pole attachment rates, terms, and conditions in proceedings before federal and state regulatory bodies. I have submitted reports on pole access issues in proceedings before the FCC, including the September 2020 proceeding, *In the Matter of Accelerating Wireline Broadband Deployment By Removing Barriers To Infrastructure Investment,* WC Dkt. No. 17-84 (Report submitted Sept. 2, 2020), and the Commission's seminal 2010 pole rulemaking proceedings, *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 also served as an expert on pole attachment matters in proceedings before state regulatory authorities involving investor-owned electric utilities ("IOUs"), non-profit consumer-owned utilities (cooperatives or "Coops"), municipally owned utilities, as well as ILECs. I have testified before various state (and provincial) regulatory commissions

including this Commission, the Connecticut Department of Public Utility Control, the New Hampshire Public Utilities Commission, the Kentucky Public Service Commission, the Arkansas Public Service Commission, the Public Utilities Commission of Texas, the New Jersey Board of Public Utilities, the Virginia Corporation Commission, the Ohio Public Utilities Commission, the Massachusetts Department of Telecommunications and Cable, the Wisconsin Public Service Commission, the Georgia Public Service Commission, the North Carolina Public Service Commission, the South Carolina Public Service Commission, the Public Service Commission of the District of Columbia, the New York Public Service Commission, the Public Utilities Commission of the State of California, the Louisiana Public Service Commission, and the Ontario Energy Board. I have also testified on these and related matters before state and federal courts in Maryland, Florida, New York, California, Tennessee, Washington, and North Carolina.

Q: HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A: Yes, I submitted written testimony in October 2017 before the Commission on pole attachment matters in the 2017 Kentucky Power rate case, Case No. 2017-00179. I submitted testimony in March 2015 before the Commission in the 2014 Kentucky Utilities and Louisville Gas & Electric rate cases, Case No. 2014-00371 and Case No. 2014-00372, respectively. Additionally, I submitted written testimony in April 2010 before the Commission in the 2009 Kentucky Utilities and Louisville Gas & Electric rate cases, Case Nos. 2009-00548 and 2009-00549, respectively. I also 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.

I also submitted a white paper to this Commission in July 2021 addressing pole cost issues related to the Regulations Regarding Access and Attachments to Utility Poles and Facilities (807 KAR 5:015), and participated in a workshop with parties and Commission staff on December 14, 2020.

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

A: I was asked by the Kentucky Broadband and Cable Association ("KBCA") to address matters raised in this proceeding relating to the appropriate allocation of costs for the replacement of non-red tagged poles. In particular, my testimony presents an economic analysis and methodology to support the adoption of tariff terms that guide pole owners and attachers towards an equitable, efficient, and cost-effective pole replacement process that best promotes full, high quality broadband access with the least delay and foregone economic and social welfare gains to Kentuckians.

Q: WHAT ARE RED TAGGED POLES?

A: Under the Commission's newly-minted pole regulations, a red tagged pole is a pole that a utility owns or controls that falls into one of the following categories: "(a) Designated for replacement based on the pole's non-compliance with an applicable safety standard; (B) Designated for replacement within two (2) years of the date of its actual replacement for any reason unrelated to a new attacher's request for attachment; or (c) [The utility]

[w]ould have needed to replace at the time of replacement even if the new attachment were not made."[1]

Q: DOES THE COMMISSION ADDRESS THE COST ALLOCATION OF REPLACING A RED TAGGED POLE?

A: Yes. The Commission regulations provide that a utility "shall not charge a new attacher, as part of any invoice for make ready, the cost to replace any red tagged pole with a replacement pole of the same type and height." And "if a red tagged pole is replaced with a pole of a different type or height," then the new attacher is responsible "only for the difference, if any, between the cost for the replacement pole and the cost for a new utility pole of the type and height that the utility would have installed in the same location in the absence of the new attachment."[2]

Q: DOES THE COMMISSION ADDRESS THE COST ALLOCATION OF REPLACING A NON-RED TAGGED POLE?

No, the Commission's regulations do not address the cost allocation treatment of non-red-tagged poles. Instead, the Commission stated "[t]he make ready cost, if any, for a pole that is not a red-tagged pole . . . shall be charged in accordance with the utility's tariff or a special contract regarding pole attachments between the utility and the new attacher."[3]

[1] 807 KAR 5:015 § 1(10).
[2] 807 KAR 5:015 § 4(6)(b)(2)-(3).
[3] 807 KAR 5:015 § 4(6)(b)(4).

Q: HAVE KENTUCKY UTILITIES FILED TARIFFS THAT ADDRESS THE COST ALLOCATION OF REPLACING A NON-RED TAGGED POLE?

A: Yes. Predictably, in the absence of any regulation, nearly all the Kentucky utilities filed tariffs proposing to charge new attachers the entire cost of replacing a non-red tagged pole as a make ready cost of the new attacher's attachment(s).[4]

Q: PLEASE SUMMARIZE YOUR TESTIMONY.

A: Utilities have taken advantage of the gap in the Commission's regulations related to the replacement of non-red tagged poles during a make-ready process to impose unjust and unreasonable charges on new attachers. Requiring new attachers to pay the entire cost of replacing a non-red tagged pole is unfair, economically inefficient, and will impede broadband development in Kentucky contrary to clear public policy imperatives. While the Commission did not address the treatment of non-reg-tagged poles, the utilities' approach is also fundamentally inconsistent with the rationale underlying the Commission's cost allocation regulation for red-tagged poles, which applies equally to non-red-tagged poles.

[4] Ballard Rural Telephone Cooperative Corp., Inc., Brandenburg Telephone Co., Logan Telephone Cooperative, Inc., South Central Rural Telecommunications Cooperative, Inc., Thacker-Grigsby Telephone Co., Inc. (All incorporating Duo County Access Tariff), Original Page 18-18, Section 18.19; Big Rivers Electric Corp., Original Sheets 38.29-38.30, Section 6; Blue Grass Energy Cooperative Corp., Original Sheets 205-06, Art. VIII(A); Clark Energy Cooperative, Original Page Nos. 118.12-118.13, Art. VIII(A); Cumberland Valley Electric, Inc., Original Sheet Nos. 123-24, Art. VIII(A); Farmers R.E.C.C., Original Sheet No. 130, Art. VIII(A); Fleming-Mason Energy Cooperative, Inc., Original Sheet No. 31.17, Art. VIII(A); Grayson R.E.C.C., Original Page 23, Art. VIII(A); Inter-County Energy, Original Sheet Nos. 123.15-123.16, Art. VIII(A); Jackson Purchase Energy Corp., Sheet No. 180, Art. VIII(A); Jackson Energy Cooperative Corp., Original Sheet Nos. 315-16, Art. VIII(A); Kenergy, Fifth Revised Sheet No. 76, Pages 23-24, Art. VIII(A); Kentucky Power Company, Original Sheet No. 16-5, Paragraph 10; Kentucky Utilities & Louisville Gas and Electric Company ("KU and LG&E"), Original Sheet No. 40.8, Paragraph 7(f); Meade County R.E.C.C., Original Page Nos. 22-23, Art. VIII(A); Nolin R.E.C.C., Original Sheet Nos. 22-23, Art. VIII(A); Owen Electric Cooperative, Inc., Original Sheet No. 84.23, Art. VIII(A); Salt River Electric, Original Sheet No. 150, Art. VIII(A); Shelby Energy Cooperative, Inc., Original Sheet No. 302.21, Art. VIII(A); South

As the utilities made clear in their responses to the KBCA's and Commission's Requests for Information, the utilities' imposition of the entire cost allocation of replacing non-red tagged poles on new attachers is based on the false assumption that a utility receives no benefit from the replacement of a non-red tagged pole.[5] The reality is, however, that when a new attacher replaces a pole, the *primary direct benefit* is to the utility – it gains an improved, hardened pole facility with joint economic value to both the utility *and* the attacher. The lion's share of that betterment value inherent in the replacement pole accrues to the utility, not the attacher.

In addition, pole attachers, through both the recurring pole attachment rental rates paid to the utility (in addition to the non-recurring) and more generally as a utility customer, already share efficiently and equitably in the costs of replacing all utility poles (including those precipitated in connection with the new attachment) through the depreciation allowances the pole owner charges customers as a non-cash expense. Pursuant to utility group depreciation accounting practices applied to poles, rates paid by the utility's electric customers and attachers already provide the utility capital recovery through

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Kentucky R.E.C.C., Original Page Nos. 19.19-19.20, Art. VIII(A); Taylor County R.E.C.C., Original Page Nos. 69-70, Art. VIII(A); *see also* AT&T Response to Commission's Initial Request For Information No. 6; Cincinnati Bell Telephone Company, LLC's, Response to Commission's Initial Request for Information No. 5.

[5] *See, e.g.*, Kentucky Power, Response to KBCA's Initial Request For Information 1.06 ("Kentucky Power does not derive any benefit, financial or otherwise, from the early replacement of a pole with remaining useful life to accommodate an additional communications attachment, unless the replacement happens to coincide with Kentucky Power's own plans for infrastructure upgrades."); Brandenburg Telephone Co., Response to KBCA's Initial Request For Information 1-4 ("Brandenburg states that it receives no direct benefits, financial or otherwise, at the time a pole is replaced to accommodate an attacher…While Brandenburg acknowledges that KBCA has previously advanced theoretical, alleged long-term benefits to a utility, there is no method by which to determine whether any of the required conditions presumed by KBCA in such theoretical, long-term analysis will actually be realized."); Kenergy, Response to KBCA's Initial Request For Information 1-9 ("Kenergy is not aware of any financial or other benefit of replacing a pole that is still in good condition with a taller or larger class pole."); *see also* KU and LG&E, Response to KBCA's Initial Request For Information, A-4(b); Shelby Energy Coop., Inc., Response to KBCA's Initial Request For Information, 1-9(b); Taylor County, R.E.C.C., Response to KBCA's Initial Request For Information, 1-9(b); Logan Telephone Coop. Inc., Response to KBCA's Initial Request For Information, 1-4(b); South Central Rural Telecommunications Coop., Inc., Response to KBCA's Initial Request For Information, 1-4(b); Thacker-Grigsby Telephone Co. Inc., Response to KBCA's Initial Request For Information, 1-4(b).

depreciation accruals and/or adjustments to the utility's accumulated depreciation reserve for poles sufficient to replace the utility's entire inventory of poles over a period matching the designated useful life of poles applied by the utility for depreciation purposes – including prematurely retired poles. As a result, there is no real, economic justification for treating the replacement of red tagged and non-red tagged poles differently. Forcing an attacher to pay the entire cost to replace a non-red tagged pole without acknowledging the betterment value to the utility and the capital recovery built into the utility's depreciation allowances is contrary to the economic principles of cost causation and economic efficiency and leads to inefficient outcomes at the expense of social welfare. It is also inconsistent with the Commission's regulation and policy for red-tagged poles

To prevent such outcomes that undermine clear and sound public policies, the Commission should reject any tariff requirements that foist all pole replacement costs onto attachers. Instead, utilities should be permitted only to recover costs based on the remaining net book value of the replaced pole. The remaining net book value of a pole is easily calculated on an average historic booked basis (*i.e.*, total gross booked investment in Account 364 pole plant less total accumulated depreciation divided by total corresponding number of poles). This approach provides a simple, consistent, and just calculation of the true value of the appropriate costs to be borne by the attacher where a non-red tagged pole must be replaced as part of the make ready process. This approach also mitigates a utility's ability to exercise its hold-up power to raise attachers' costs by strategically under-identifying, misreporting, or withholding strategic private information pertaining to its classification of red-tagged and non-red tagged poles. The utilities

clearly possess leverage over the attacher in this regard, both as a matter of theory and in practice as the data provided in response to information requests demonstrate, and the incentive to use this leverage to shift a disproportionate share of the cost burden of upgrading its pole network onto attachers.

The utilities' objections to bearing any portion of the cost to replace a non-red tagged pole when they receive significant value from the replacement are without merit. Employing a tried and true cost allocation methodology like the net book value approach will not result in unnecessary disputes or delays – in fact, it will streamline the calculation of the replacement value of a non-red tagged pole. And while a utility would be required to bear some of the cost of replacing a non-red tagged pole, from an economic perspective the deviation from the otherwise planned replacement of the utility pole creates no net impact on the utility's depreciation accrual due to pole attachments and therefore would not negatively impact a utility's budget. Instead, requiring utilities to share in the cost of replacing a non-red tagged pole is consistent with cost-causation principles and acknowledges the operational, revenue, and strategic benefits to the utility of installing a new pole, even if the former pole was not at the end of its useful life.

Q: IS IT REASONABLE FOR UTILITIES TO REQUIRE ATTACHERS TO PAY THE ENTIRE COST TO REPLACE A NON-RED TAGGED POLE?

A: No.

Q: WHY NOT?

A: Allocating all costs to replace non-red tagged poles to an attacher serves no valid economic or public policy purpose. To the contrary, such cost allocations undermine important public policy goals – namely, effective competition and widespread broadband deployment – and result in substantial welfare loss in the form of delayed and more expensive broadband availability. Efficient and equitable cost sharing arrangements between new attachers and pole owners ensure attachment costs are efficient and competitive and promote critical social welfare gains. That approach also compensates pole owners based on the reality that even for early replacement pole owners derive significant value.

Q: DOES UTILITIES' NON-RED TAGGED POLE REPLACEMENT COST ALLOCATION NEGATIVELY IMPACT CONSUMERS OF BROADBAND?

A: Yes.

Q: How so?

A: The costs to consumers associated with requiring a new attacher to replace non-red tagged poles as part of a make-ready process are substantial and measurable. There is a growing body of economic literature addressing the foregone value to consumers per month associated with the lack of broadband access. These include a number of papers I recently co-authored.[6] This analysis compares the willingness of currently unserved

[6] *See e.g.*, Edward J. Lopez & Patricia D. Kravtin, Advancing Pole Attachment Policies to Accelerate National Broadband Buildout, Connect the Future, https://connectthefuture.com/wp-content/uploads/2021/11/Advancing-Pole-Attachment-Policies-To-Accelerate-National-Broadband-Buildout-National-Report.pdf (last visited Apr. 7, 2022) ("Kravtin and Lopez 2021").

households and businesses to pay to improve from a low-quality broadband connection at slow speeds to a high-quality connection at high speeds with their willingness to pay for other goods and services.

Building on this body of economic research, a dollar amount of potential economic gains to households and businesses associated with the achievement of full broadband access throughout unserved areas of the Commonwealth can be quantified using program award data from the federal RDOF grant program for locations awarded in Kentucky. Specifically, new consumer willingness to pay for broadband connectivity, defined as a household upgrading from Mobile 5/1 Mbps to representative fixed wireline speeds, is conservatively[7] estimated for the Commonwealth of Kentucky at roughly $112 million per year of economic gains. The derived annual figures translate into roughly upwards of a total $2 billion in present value terms based on the average service lives of utility poles.[8] These very substantial new economic gains estimated to accrue to households and businesses in unserved areas of the Commonwealth *would be foregone or delayed* absent policies to check the status quo behaviors of utility pole owners that impede full broadband expansion by imposing unjust and unreasonable costs, including imposing the full cost of replacing a non-red tagged pole, on a new attacher.

[7] These estimates of economic gain associated with the full expansion of broadband are conservative in that they are based on the RDOF data only and do not take into account other federal and state expansion plans. Nor do they fully reflect the total economic and social welfare value of the higher network speeds and lower latency prioritized in the grant programs or the increased broadband demand since the pandemic, especially in the state's expansive rural areas, and are demand driven. Moreover, the methodology models only the direct consumer value effects. Multiplier positive externalities that broadband is known to generate throughout the local and regional economy, *e.g.*, increased job growth, employment opportunities, GDP, etc., are not directly modelled, nor are the deadweight losses associated with the flow through of higher input prices.

[8] *See* Kravtin and Lopez 2021, at pg. 8, "Pole Attachment Policies and Broadband Expansion in the State of Kentucky," KY Tables #1 and #2.

This is particularly critical 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 and there is generally a higher number of poles required per-customer. Broadband providers thus face the compounding challenges of higher costs of entry from excess make-ready charges *and* fewer subscribers over which to spread those excessive costs, making an already difficult and costly undertaking even more challenging financially. These are the very areas, of course, where broadband expansion and the opportunities that it presents are most urgently needed.

Q: DOES THE CURRENT REGULATION CREATE ANY INCENTIVES FOR UTILITIES REGARDING THE REPLACEMENT OF NON-RED TAGGED POLES?

A: Because utilities have the opportunity unilaterally to set the replacement costs for non-red tagged poles, they have the incentive and opportunity to force attachers to bear more than their economically efficient, fair share of the costs of pole replacements. They can require attachers to shoulder the entire cost of pole replacements without regard to the substantial, primary direct benefits the pole owner receives from the replacement. This is especially true in recent years as utilities face additional pressures to upgrade and harden their existing pole networks to provide more reliable power for their electric customers. In effect, this results in inefficient cost recovery unrelated to cost causation principles.

Utilities also have the incentive and opportunity to under-identify, misreport, or withhold private information on red-tagged poles, further compounding the inefficient cost

recovery imposed on attachers. As part of utility hardening objectives, utility best practices increasingly call for the replacement of potentially undersized poles showing signs of deterioration or decay that previously would have been reinforced or chemically restored in order to better protect against future outages. Attachers have no independent or reliable way to verify whether the utility's classification of a pole to which they wish to attach as "red-tagged" or non-red tagged actually matches to current utility replacement best practices consistent with the utility's own hardening objectives.[9] The data shows that utilities have differing and ad hoc approaches for designating red-tagged poles and there is no mechanism for attachers to question or verify whether any given pole is or should be red tagged. As such, there is ample opportunity and motive for utilities to understate the number of poles that fit the regulatory definition of reg tagged.

Moreover, in addition to the replacement of poles failing inspection, the replacement of the older, typically undersized poles should be occurring as part of the utility's normal capital planning process at a level commensurate with the useful life assumptions relied on by the utility for purposes of supporting substantial depreciation allowances built into

[9] *See, e.g.*, KU and LG&E, Response to KBCA's Initial Request For Information 1-3 (stating Attachment customers can "observe 'red-tagged" poles, or "if the proposed pole attachment route is in a location where the Companies' regulatory inspections have not yet identified a 'red-tagged' pole, the Companies' design teams will identify any 'red-tagged' poles during their review of the Attachment Customer's application"); Inter-County Energy, Response to KBCA's Initial Request For Information 1-8 ("An attacher should contact [Inter-County] . . . to confirm whether . . . a pole is red-tagged."); Jackson Energy, Response to KBCA's Initial Request For Information 1-8 ("If there is any question . . . [the attacher] can contact Jackson Energy Cooperative and have a Jackson Energy employee check it."); Jackson Purchase Energy, Response to KBCA's Initial Request For Information 1-8 (Red-tagged poles that have been visited by technicians will have red ribbons. Otherwise, the attacher will have to obtain verification from Jackson Purchase.); Taylor County R.E.C.C., Response to KBCA's Initial Request For Information 1-8 ("There is no way to pre-determine poles that will fail inspection. The attacher can contact the Cooperative if there are questions about whether a pole is red-tagged."); Brandenburg Telephone Co., Response to KBCA's Initial Request For Information 1-3 ("An attacher can assess whether a pole has been 'red-tagged' and scheduled for removal by observing the pole, which clearly marks the pole as being 'red-tagged' through use of orange ribbons."); Cincinnati Bell Response to KBCA's Initial Request For Information 1-3 (Dangerous poles will have a literal red tag attached to them. If it has been designated for replacement but not tagged as dangerous, that "will be reported in the results of the pre-license survey.").

existing electricity rates and recurring pole attachment rental rates that attachers pay in addition to non-recurring makeready costs. As discussed more fully below, data provided in discovery show in many cases, an inexplicably low rate of poles identified as red-tagged poles relative to the replacement rates implicit in the useful life assumptions used by utilities in their depreciation analyses. In other words, the utilities' reported, more rapid depreciation schedules suggest the utilities should have far more red-tagged poles than they are reporting.

Moreover, a third-party attacher has no practical, feasible alternative to paying the make-ready charges. The alternative of going underground is often prohibitively expensive or infeasible, as is building a duplicative network of poles. In theory and in practice, the utility as owner of the pole network has extraordinary leverage over the attacher, regardless of the latter's size. High make-ready costs meet the classic industrial organization textbook definition of a barrier to entry, and attachers' real-life experiences bear that out.

Q DO NEW ATTACHERS CAUSE A UTILITY TO NEED TO REPLACE A POLE?

A: No. Pole replacements are a long-term fact of life for utilities, and the inevitable need for the replacement of any given pole is a 'but for' consequence of the *pole owner's core utility service* and *not* of a new attacher's request to attach to any given pole. Those requests merely change the *timing* of the pole's eventual replacement. In other words, the replacement of poles is an inevitable or unavoidable cost to the utility that would occur in the normal course of utility operations independent of the existence of the third-party attacher, and for which the utility is provided depreciation allowances recoverable in both

electric distribution rates and recurring rental rates charged attachers in accordance with identified finite useful life assumptions. Every year utilities must replace poles on account of failure or destruction, storm hardening, or due to routine retirements and capital replacement activities. While long-lived, no pole lasts forever, and even without the presence of a new attacher, utilities would need to replace their poles.

Q: HOW SHOULD THE UTILITIES' TARIFFS ALLOCATE POLE REPLACEMENT COSTS?

A: From an economic cost causative perspective, only those costs relating to the intrinsic nature of the avoidable costs causally linked to the attacher, *i.e.*, the temporal costs of shifting forward the inevitable retirement/replacement of the existing pole that otherwise would have ensued in the normal course of utility operations, are appropriately allocated to the attacher. This is because only the costs associated with the temporal shift of the replacement or upgrade to the pole align with the marginal or incremental costs that "but for" the attacher would not be incurred by the pole owner in its normal course of operations. These are mainly in the form of the remaining (yet to be depreciated) *net book value* of the retired pole, plus any proven additional unique, incremental costs that are well documented and directly traceable to the attacher rather than the utility's normal course of operations.[10] Because pole assets are classified and depreciated in accordance

[10] This economic cost causative net-book value approach to the cost sharing of the replacement pole in cases where the utility deems it necessary for new pole attachments is consistent with the approach I advanced in a recent paper. *See* Patricia D. Kravtin, *The Economic Case For A More Cost Causative Approach To Make-Ready Charges Associated With Pole Replacement In Unserved/Rural Areas* (Sept. 2, 2020) (filed *In the Matter of Accelerating Wireline Broadband Deployment By Removing Barriers To Infrastructure Investment,* Comments of Charter Communications, Inc., Ex. 1, WC Dkt. No. 17-84 (Sept. 2, 2020)) (attached as Exhibit 1 to KBCA Comments dated September 2, 2020). The paper accompanied a NCTA petition asking the FCC to preclude utilities under its jurisdiction from imposing the entire cost of a pole replacement on a requesting attacher when the attacher is not the sole cost causer of the pole replacement. While the FCC "decline[d] to act on NCTA's Petition at this time" given

with mass asset group accounting practices,[11] with depreciation allowances that take into account *both* the earlier-than-average and later-than-average retirement of poles relative to their average useful life, requiring attachers to pay the utility the average net book value of a pole as recorded on the utility's books of account for any given pole that the utility deems must be replaced before a new attachment can be made, assures the utility a sufficient, if not generous, amount of cost recovery toward the replacement of a non-red tagged pole. This is particularly true in light of the depreciation allowances that utilities are recovering from customers through distribution rates as well as the recurring rental rates paid by attachers. Absent a cost allocation approach tied to cost-causation principles, it is clear that utilities would be allowed to over-recover pole replacement costs at the expense of their customers and third party attachers. In economic parlance, the utilities would be permitted to exert their power and leverage as owners of the essential pole facility to which broadband providers need to attach to provide service by imposing economically excessive charges causing serious economic and social welfare losses.

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that the issues presented were more appropriate for a broader rulemaking proceeding, the agency unambiguously agreed that imposing the entire cost of a pole replacement on a new attacher, where it was not the sole cost causer, was unreasonable and inconsistent with Section 224 pole rate regulation. *See* FCC Declaratory Ruling, op cit., re: January 19, 2021, DA 21-78 at ¶¶ 2-3.

[11] *See, e.g.*, Kentucky Power Company, FERC Form 1, Year Ending 2019, p. 123.9, *available at* https://www.aep.com/assets/docs/investors/fercfilings/docs/2020/Kentucky%20Power%20Company.pdf ("Property, Plant and Equipment: Electric utility property, plant and equipment are stated at original cost. Additions, major replacements and betterments are added to the plant accounts. Under the group composite method of depreciation, continuous interim routine replacements of items such as boiler tubes, pumps, motors, etc. result in original cost retirements, less salvage, being charged to accumulated depreciation. *The group composite method of depreciation assumes that on average, asset components are retired at the end of their useful lives and thus there is no gain or loss.* The equipment in each primary electric plant account is identified as a separate group. The depreciation rates that are established take into account the past history of interim capital replacements and the amount of removal cost incurred and salvage received. These rates and the related lives are subject to periodic review.") (emphasis added).

Q: PLEASE DESCRIBE THE NET BOOK VALUE APPROACH TO EFFICIENT, EQUITABLE NON-RED TAGGED POLE REPLACEMENT COST ALLOCATION.

A: The net book value is the original net pole cost not yet depreciated or recovered by the existing utility pole plant that "but for" the new attachment, could have remained in service until such time as it was fully depreciated and/or reached the end of its useful life. There is also an additional category of incremental costs to apply where the existing pole is not near the end of its useful life as measured by the utility's current depreciation rate, and is used to account for the cost differential, to the extent any could be demonstrated with verifiable data, between the replacement pole and the pole the utility would otherwise have installed upon retirement of the existing pole "but for" the new attacher. Except in limited cases where the additional cost component can be fully supported and well documented, as explained above, the utility will be made whole by make-ready charges that simply recover the average net book value of the earlier retired replaced pole remaining on its books. In many respects, this charge is analogous to a stranded investment recovery charge, a widely accepted practice for making utilities whole in light of events or decisions to replace plant earlier than planned or anticipated or before the end of the plant's historical useful life.

Q: HOW IS THE NET BOOK VALUE CALCULATED?

A: The remaining net book value of the existing pole to be replaced, which is at the core of the approach, is readily calculated on an average historic booked basis (*i.e.*, total gross booked investment in Account 364 pole plant less total accumulated depreciation divided

by total corresponding number of poles). It relies on the same data used to calculate the recurring pole rental rate[12] either under the widely used FCC formula or the Kentucky specific variation of the federal formula.[13]

Table 1 provides an illustrative example of that sort of calculation for an illustrative electric utility. The per-unit net bare pole cost is calculated in the following four steps: *First*, the electric utility's gross investment in pole cost is determined based on amounts reported in the utility's books of account in Account 364 ("Poles, Towers and Fixtures"). *Second*, this gross investment amount is converted to a net investment figure by subtracting accumulated depreciation for pole plant, and accumulated deferred taxes applicable to poles (not applicable to cooperatively and municipally owned utilities). *Third,* the net investment in bare pole plant is determined by making a further reduction to remove amounts booked to Account 364 for "appurtenances," such as cross-arms, used in the provision of the core electric service only and from which communications attachers do not derive benefit. The *fourth* and final step is to divide the net investment in bare pole plant figure by the total number of poles the utility has in service to derive a per-unit pole cost figure, which can then be scaled to the number of poles replaced in the course of a particular project.

[12] Employing the recurring rate formula methodology as a basis for calculating the net book value offers many advantages. The methodology is widely accepted and used throughout the country, it relies primarily on publicly available utility cost information (the one exception being aggregate utility pole count, but that is generally available data and provided in recurring rate calculations), and parties can rely on existing agency and judicial precedent accumulated over the past four decades in providing substantial guidance.

[13] The Kentucky pole attachment rate formula applies a more disaggregated two/three user approach as compared to the federal formula, but the underlying calculation of the average cost per unit of net bare pole investment as well as other formula inputs is conceptually the same.

Table 1 **Illustrative Example of Per-Pole Average Remaining Net Book Value** **(Based on FCC Recurring Rate Formula Methodology Applied to a Cooperatively Owned Utility)**		
Formula Calculation: **Net Bare Pole Cost Component**	**Data as of 12/31/xx** **Current Cost Year**	*Sources/ Notes*
Investment in Pole Plant Acct 364	$37,500,000	Utility Accounting Records corresponding to FERC Form 1 Report Acct 364
- Accumulated depreciation for poles	$15,000,000	Prorated from Electric/ Distribution Plant or Internal Utility Records
- Accumulated deferred income taxes for poles	$00.00	Prorated from Total/Electric Plant including Excess ADIT Amounts N/A for Coop and Muni Owned Util.
= Net Pole Investment	$22,500,000	
x (1- Appurtenances Factor)	.85	FCC 15% Rebuttable Presumption or Actual
= Net Pole Investment allocable to Attachments	$19,125,000	
/ Total Number of Poles	50,000	Utility Records
= **Estimated Average Remaining Net Book Value/Pole**	**$382.50**	

Q: SHOULD THE NET BOOK VALUE APPROACH CREATE ANY REBUTTABLE PRESUMPTIONS?

A: Yes. Either party should have the opportunity to challenge the use of the average net book cost based on the average age of the utility's pole plant and support instead of the use of a net book value amount associated with the actual vintage of the removed pole. In particular, the pole owner could seek to use a higher net book value to calculate make-ready charges where it could demonstrate with verifiable data that the age of the removed pole was younger than the average vintage pole and hence subject to fewer than average years of depreciation-related capital recovery. Similarly, an attacher could seek to use a lower net book value where it could demonstrate that the age of the removed pole was

older than the average vintage pole and hence subject to more years of depreciation-related capital recovery (*i.e.*, write-down) by the utility. As with the rebuttable presumptions in the recurring rate formula, the parties would have the opportunity to challenge the presumption based on actual, well-supported and documented data that could be substantiated and verified. In light of the utility's opportunity and incentive to seek additional cost recovery in excess of true "but for" costs, such additional cost recovery to the utility would be allowed only in those instances where the utility can provide actual, detailed factual documentation in support of such a claim. Additionally, given the utility's informational advantage relative to the attachers, the utility should be required to provide, upon request by an attacher who has reason to challenge the presumption, any pertinent pole inventory records or data available to the utility that would support such a challenge.

Table 2 provides an illustrative example of how adjustments to the net book value approach would work in practice.

Table 2 Illustrative Calculation of Net Book Value Approach for Pole Replacement			
	Newer Than Average Vintage Poles	**Average-aged Poles, or No Verifiable Pole-Specific Data**	**Older Than Avg. Poles/Poles Scheduled for Near-Term Replacement**
Estimated Average Remaining Net Book Value (NBV)/Pole	$382.50	$382.50	$382.50
+/– Reasonable Adjustment to Accumulated Depreciation (Add/Subtract Annual Depreciation Accrual x No. Years Younger/Older than Average)	+$425.00	n/a	-$190.00
+ Additional Unique Cost/Pole (in Limited Cases Where Documented/Demonstrated Costs Caused by Attacher)	+$200.00	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation
– Less Net Cost Savings (from Earlier Replacement and Lower Maintenance Amortized over Life)	-$50.00	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation
Adjusted Average NBV/Pole	$957.50	$382.50	$192.50

Q: DOES THE NET BOOK VALUE APPROACH CREATE ANY "UNNECESSARY DISPUTES AND DELAYS" IN YOUR OPINION?[14]

A: No. As explained above, the net book value approach is a simple calculation based on publicly available data and is widely accepted across the United States. The net book value approach reflects the same depreciation assumptions regarding average useful lives, cost of removal, salvage, and retirement experience for poles incorporated in the utility's depreciation allowances. There should not be any dispute in the calculation itself. And if

[14] Kentucky Public Service Commission, Statement of Consideration Relating to 807 KAR 5:015, at 47-48, *available at* https://psc.ky.gov/agencies/psc/Proposed%20Amendments/092021/807%20KAR%205015%20amended%20after%20comment.pdf.

the Commission is called upon to resolve any dispute, it will have ample precedent to guide any decision it must make.[15]

Q. ARE YOU FAMILIAR WITH THE COMMISSION'S STATED BASIS FOR WANTING TO ADDRESS THE ISSUE OF POLE REPLACEMENT COSTS FOR NON-RED TAGGED POLES IN TARIFFS?

A. Yes, I am. It is my understanding the Commission reserved treatment of the cost allocation of non-red tagged poles until the utilities submitted proposed tariffs and it had data to inform its analysis. The Commission stated this approach would "allow the commission to address the issue in a more nuanced manner based on evidence regarding specific utilities, including information regarding the age of each utility's poles and the level of specificity with which they track depreciation expense for utility poles."[16]

[15] *See, e.g.*, *In re Amendment of Rules & Policies Governing the Attachment of Cable Television Hardware to Utility Poles*, Report and Order, 2 FCC Rcd 4387, 4397 ¶76 & n.44 (1987) (acknowledging that under federal law, Congress "did not contemplate that cable would pay the entire cost of replacing the pole even when the change was necessitated to accommodate cable facilities," and that such demands by utilities were an "area[ ] of possible abuse" and that should be "given close scrutiny"); *In re Accelerating Wireline Broadband Deployment By Removing Barriers To Infrastructure Investment*, WC Docket No. 17-84, Order (August 13, 2020) (considering a proposal by the cable industry to more clearly and fairly allocate the costs of pole replacements to reflect that both the new attacher and the pole owner benefit from pole replacements and should share in their cost); Maine Administrative Code 65-407, Chapter 880, Section 5.C ("Excess Height") (recognizing that a new attacher whose attachment precipitates a pole replacement should only be responsible for the remaining depreciated value of the old pole being prematurely retired, and any difference in cost between the replacement pole and the replacement pole the utility *would* have installed if not for the attachment).

[16] *Supra* note 14.

Q. GIVEN THE COMMISSION'S DESIRE TO ADDRESS THE POLE REPLACEMENT ALLOCATION ISSUE BASED ON UTILITY-SPECIFIC DATA ON AGE AND DEPRECIATION EXPENSES, WHAT DO THE DATA PROVIDED BY THE UTILITIES IN RESPONSE TO DISCOVERY REVEAL AND WHAT CONCLUSIONS CAN BE DRAWN?

A. Utility data on depreciation rates, vintage/age composition and other characteristics of installed and retired poles provided in discovery reveal a number of interesting high-level patterns pertinent to the Commission's determination of how best to allocate the costs for replacement poles as between the pole owner and a new attacher. These patterns are generally reflected across the various types of pole owners, *i.e.*, investor-owned electric utilities, cooperatively owned electric, and telephone utilities. The patterns revealed in the utility data further corroborate my testimony that pole owners are inappropriately seeking to shift a disproportionate amount of the costs associated with the normal and anticipated upgrade and modernization of their pole networks onto attachers.

Q. WHAT HIGH-LEVEL PATTERNS PERTINENT TO THE APPROPRIATE ALLOCATION OF POLE REPLACEMENT COSTS ARE REVEALED IN THE UTILITY DEPRECIATION AND POLE AGE DATA?

A. The data reveal a number of high-level patterns pertinent to the appropriate allocation of pole replacement costs. First, the data show a wide range of variation in the depreciation assumptions used by utilities for purposes of determining the depreciation allowances relating to poles (inclusive of allowances pertaining to pole replacement) built into both electric distribution rates and recurring pole rental rates charged attachers. On the one

hand, this may seem somewhat surprising given the inherent homogeneity of pole plant and its classification under FERC accounting rules as a mass asset for which individual accounting records are not required. Under mass asset accounting, all costs incurred in connection with newly installed poles or "retirement units" as they are referred (including labor, materials, contractors, overheads) as well as in connection with poles removed from service can be recorded as a group, not generally as a specific vintage.[17] For example, as shown in Table 4 below, Duke Energy applies a useful life assumption for poles of 52 years, producing a depreciation accrual rate of 2.05%, whereas peer IOU Kentucky Power applies a useful life assumption for poles of 28 years, producing a depreciation accrual rate of 3.52%. This variation is similarly observed for electric cooperatives, with reported accrual rates ranging from 2% to 5%, based on useful lives of poles ranging from 50 to 23 years.

[17] *See, e.g.*, Inter-County Energy Response to Commission RFI 1, Exhibit 7(b), at 1-2; Kentucky Power Company, FERC Form 1, Year Ending 2019, p. 123.9, *available at* https://www.aep.com/assets/docs/investors/fercfilings/docs/2020/Kentucky%20Power%20Company.pdf; *see also* Blue Grass Energy Cooperative Corporation, Response to Commission's Second Request For Information 1 (stating "[t]he Cooperative does not assign different service lives to poles of different type and vintage") (response representative of the responses of Clark Energy Cooperative, Inc., Cumberland Valley Electric, Inc., Farmer Rural Electric Cooperative Corporation, Fleming-Mason Energy Cooperative, Inc., Inter-County Cooperative Corporation, Jackson Energy Cooperative Corporation, Jackson Purchase Energy Corporation, Kenergy Corporation, Shelby Energy Cooperative, Inc., and Taylor County Rural Electric Cooperative Corporation).

Table 3 Comparisons of Useful Life and Depreciation Accrual Rates for Illustrative Utilities		
Utility[18]	**Depreciation Accrual**	**Useful Life**
Investor Owned Utilities		
Kentucky Power Company	3.52%	28 years
Duke Energy	2.09%	52 years
Rural Electric Cooperative Corporations		
Blue Grass Energy Cooperative Corporation	3.30%	39 years
Fleming-Mason Energy Cooperative, Inc.	3.69%	33 years
Grayson Rural Electric Cooperative Corporation	4.99%	24 years
Owen Electric Cooperative, Inc.	4.12%	46 years
Rural Local Exchange Carriers		
Brandenburg Telephone Company, Inc.	5.60%	26 years
South Central Rural Telecommunications Cooperative, Inc.	5.60%	26 years
Incumbent Local Exchange Carriers		
Cincinnati Bell Telephone Company	8.20%	29 years
AT&T	3.70%	27 years

On the other hand, the variation among utilities in useful life assumptions and the depreciation accrual rates derived based on those useful lives is not surprising given the discretion afforded electric pole owners in choosing depreciation parameters pursuant to applicable state and federal accounting guidelines and the inherent subjectivity built into

[18] Windstream Kentucky East, LLC, and Windstream Kentucky West, LLC, refused to answer the Commission's Request For Information regarding depreciation rates and useful lives of poles, stating that "Windstream will file a confidential supplement with this information." *See* Windstream Kentucky, East, Response to Commission's Initial Request 1-8; Windstream Kentucky, West, Response to Commission's Initial Request 1-8. To date, Windstream, collectively, has yet to file a supplement with this information. I reserve the right to supplement my report once Windstream provides its data.

the depreciation study process – especially in connection with estimation of the utility's actual and expected vintage retirement experience typically involved with a mass asset account. In the case of a mass asset account, the pattern of survivorship/mortality of total units in a mass asset account installed during the same year or span of years, is most typically predicted statistically as a function of age in "survivor curve."

But the key point here in the cost allocation context at issue in this proceeding, is that variation in useful life assumptions and depreciation accrual rates among utilities for purposes of determining depreciation allowances built into utility electric rates and recurring pole rental fees paid by attachers, *does not affect the utility's being made whole for the costs of replacing its poles.* At best, it just affects the timing of the utility's full capital recovery of the costs for pole replacement through depreciation allowances built into utility rates, which the utility enjoys as part of its social compact to provide reliable electric distribution service.

These depreciation allowances include both the annual depreciation accrual expense, which provide a free source of cash to finance the replacement of its plant in service, and periodic adjustments the utility may make to the accumulated depreciation reserve for poles (the contra fixed asset account to which the annual depreciation accruals for poles are booked and which apply as an offset to gross pole investment to determine the net book value of plant in service for ratemaking purposes and purposes of the recurring pole rental rate) for identified deficiencies in the annual accrual rates in providing a source of funds to replace its plant over a time frame commensurate with the utility's identified average service life of the pole asset group due to changing factors. These factors are

both physical (e.g., wear and tear, decay or deterioration, climate events) and functional (e.g., inadequacy, obsolescence, changing service/reliability standards).

The utility's depreciation allowances allow it to revise the depreciation parameters to better match its current pattern of survivorship and mortality for poles, and permit the utility to set rates that enable it to fully recover the costs of replacing its pole inventory over a period commensurate to the utility's own useful life depreciation parameter. So for example, for a utility applying the more typical useful life for poles of 30 years, depreciation allowances by design provide for the capital recovery of the utility's gross investment in poles at levels sufficient to provide a source of cash to the utility for the replacement of the utility's poles in service roughly every 30 years. On average, this implies a pole replacement rate of approximately 3% per year.

There is a fundamental relationship between the useful life of poles and the expected rate of utility pole replacement implicit in the depreciation allowances enjoyed by the utility and that provide the utility with a free source of cash to fund the future replacement of its plant necessary to ensure reliable electricity service to its customers. For a utility applying a shorter useful life of 17 years, the depreciation allowances built into utility rates provide a source of cash to the utility for the replacement of the utility's poles in service roughly every 17 years. This faster amortization schedule implies a rate of pole replacement on average of approximately 6% per year. The discovery data provided by the utilities reveal a disconnect between this expected rate of pole replacement and the reported incidence of red-tagged poles, which as defined by the Commission's rules, also include poles replaced as part of the utility's normal ongoing program of replacing its pole plant (and factored into its depreciation allowances) independent of new attachment

requests and *in addition to* poles designated as non-compliant poles or otherwise failing inspection, specifically red-tagged as candidates for replacement within two years.[19]

That individual poles may have a longer or shorter life than the average useful life of the utility's pole plant as a group is a matter of interest to the utility's field operations, but is irrelevant in the cost allocation context. For cost allocation purposes, given the utility enjoys capital recovery of poles through depreciation allowances determined on an average group basis, the average net book value of the pole approach, which ties to the same set of depreciation parameters used by the utility, provides the most efficient and equitable sharing of pole replacement costs as between the pole owner and the attacher.

Q. CAN YOU EXPLAIN FURTHER THIS SECOND MAJOR POINT GLEANED FROM THE UTILITY DATA, *I.E.*, THE DISCONNECT BETWEEN THE EXPECTED RATE OF UTILITY POLE REPLACEMENT AND THE RED-TAG RATE, AND ITS POLICY IMPLICATIONS FOR ALLOCATING COSTS OF POLE REPLACEMENT?

A. Yes, I can. For many if not most of the utilities providing responses, there is a major disconnect between the rates of normal pole replacement for physical and functional obsolescence that would be expected based on the life cycle parameters applied by the utility for purposes of their depreciation allowances and the utility's reported rates of red-tagged poles. Given the definition of red-tagged poles includes poles designated for replacement as part of the utility's ongoing normal life cycle replacement of poles *in addition to* non-complaint poles and poles failing inspection, one would expect to

[19] *See* 807 KAR 5:015 § 1(10).

observe a red tag rate in the range of, if not higher than, the normal rate of life cycle replacement reflected in the utility's depreciation allowances. But surprisingly, data provided by the utility shows the opposite.

Table 4[20] [21] [22] [23] below compares expected normal life-cycle pole replacement rates based on the utility's own depreciation parameters with the utility's reported red-tag rate for an illustrative set of IOUs, RECCs, and telephone utilities. As shown in Table 4, the

[20] Column 2 addresses the **total poles** reported by the utilities. *See, e.g.*, Kentucky Power Company, Response to Commission's Initial Request For Information 1-10; Blue Grass Energy Cooperative, Corp., Response to Commission's Initial Request For Information 1-9; Fleming-Mason Energy Cooperative, Inc., Response to Commission's Initial Request For Information 1-9, Grayson R.E.C.C., Response to Commission's Initial Request For Information 1-9; Owen Electric Cooperative, Inc., Response to Commission's Initial Request For Information 1-9 (Exhibit 9); Brandenburg Telephone Co., Response to Commission's Initial Request For Information 1-9; South Central Rural Telecommunications Cooperative, Inc., Response to Commission's Initial Request For Information 1-9; Cincinnati Bell Telephone Company, Response to Commission's Initial Request For Information 1-9; AT&T, Response to Commission's Initial Request For Information 1-14.

[21] Column 3 addresses the **annual utility replacement rate** reported for each utility. The annual utility replacement rate is calculated by dividing 100 by the useful life of the poles, as reported by the utilities. This number represents the utility's recovery each year such that it recovers 100% of its investment over the stated life of the pole. *See, e.g.*, Kentucky Power Company, Response to Commission's Initial Request For Information 1-9; Blue Grass Energy Cooperative, Corp., Response to Commission's Initial Request For Information 1-8; Fleming-Mason Energy Cooperative, Inc., Response to Commission's Initial Request For Information 1-8, Grayson R.E.C.C., Response to Commission's Initial Request For Information 1-8; Owen Electric Cooperative, Inc., Response to Commission's Initial Request For Information 1-8; Brandenburg Telephone Co., Response to Commission's Initial Request For Information 1-8; South Central Rural Telecommunications Cooperative, Inc., Response to Commission's Initial Request For Information 1-8; Cincinnati Bell Telephone Company, Response to Commission's Initial Request For Information 1-8; AT&T, Response to Commission's Initial Request For Information 1-13.

[22] Column 4 addresses the **current percentage of poles the utilities currently estimated are red-tagged**. Each utility reported the estimated percentage of red-tag poles currently in its system in response to RFIs from KBCA. *See, e.g.*, Kentucky Power Company, Response to KBCA's Initial Request For Information 1-3; Blue Grass Energy Cooperative, Corp., Response to KBCA's Initial Request For Information 1-6; Fleming-Mason Energy Cooperative, Inc., Response to KBCA's Initial Request For Information 1-6, Grayson R.E.C.C., Response to KBCA's Initial Request For Information 1-6; Owen Electric Cooperative, Inc., Response to KBCA's Initial Request For Information 1-6; Brandenburg Telephone Co., Response to KBCA's Initial Request For Information 1-1; South Central Rural Telecommunications Cooperative, Inc., Response to KBCA's Initial Request For Information 1-1; Cincinnati Bell Telephone Company, Response to KBCA's Initial Request For Information 1-1.

[23] Column 6 shows the **projected percentage of red tagged poles** per year for the next five years for the referenced utilities. Each utility reported the percentage of red-tag poles it expects over the next five years in response to RFIs from KBCA. Where necessary, I divided the number by five to obtain an annual percentage based on the current pole numbers. *See, e.g.*, Kentucky Power Company, Response to KBCA's Initial Request For Information 1-4; Blue Grass Energy Cooperative, Corp., Response to KBCA's Initial Request For Information 1-7; Fleming-Mason Energy Cooperative, Inc., Response to KBCA's Initial Request For Information 1-7, Grayson R.E.C.C., Response to KBCA's Initial Request For Information 1-7; Owen Electric Cooperative, Inc., Response to KBCA's Initial Request For Information 1-7; Brandenburg Telephone Co., Response to KBCA's Initial Request For Information 1-2; South Central Rural Telecommunications Cooperative, Inc., Response to KBCA's Initial Request For Information 1-2; Cincinnati Bell Telephone Company, Response to KBCA's Initial Request For Information 1-2.

reported red-tag rates are in many instances, fractions of the expected utility replacement rates.

Table 4
Comparisons of Expected Normal Life-Cycle Pole Replacement Rates and Percentage of Reported Red-Tagged Poles for Illustrative Utilities (Annual Basis)

Utility	Total Poles	Annual Utility Replacement Rate (100/Useful life)	Current Red-Tag Percentage	Difference Between Utility's Replacement Rate and Red-Tag Pct.	Projected Red Tag Percentage (Annual Basis)
Investor Owned Utilities					
Kentucky Power Company	218,310	3.571%	.138%	(3.433%)	.105%
Rural Electric Cooperative Corporations					
Blue Grass Energy Cooperative Corporation	100,700	2.564%	.15%	(2.414%)	n/a (refused to answer KBCA RFI)
Fleming-Mason Energy Cooperative, Inc.	58, 518	3.030%	.427%	(2.603%)	.147%
Grayson Rural Electric Cooperative Corporation	35,409	4.167%	.076%	(4.091%)	n/a (refused to answer KBCA RFI)
Owen Electric Cooperative, Inc.	68,182	2.174%	.19%	(1.984%)	.023%
Rural Local Exchange Carriers					
Brandenburg Telephone Company, Inc.	11,858	3.846%	1.20%	(2.646%)	0%
South Central Rural Telecommunications Cooperative, Inc.	17,466	3.846%	.020%	(3.826%)	.058%
Incumbent Local Exchange Carriers					
Cincinnati Bell Telephone Company	48,532	3.448%	.087%	(3.361%)	.383%
AT&T	324,516	3.704%	Do not have data	n/a	Do not have data

This data has significant implications for pole replacement cost allocation, as it makes apparent the problem with existing rules that allow the pole owner to shift 100% of the cost burden of pole replacement onto attachers for all poles other than those specifically designated by the utility as red-tagged. The shortfall in the reported red-tag rate for most utilities as compared with the expected rate of replacement based on the parameters relied on by the utility for its own capital recovery purposes creates an effective loophole for utilities to shift a disproportionately high amount of replacement costs onto attachers, especially for older vintage, typically undersize poles that it is already accruing capital recovery to fund the replacement of through depreciation allowances built into customer (and pole attacher) rates.

In effect, the data shows the ability of pole owners, under existing rules that restrict efficient, equitable pole replacement cost allocation principles to red-tagged poles only, to use new attachers to fund the utility's deferred replacement of older vintage undersized poles with newer, taller, stronger poles – a capital expenditure the utility would incur in the absence of new attachers for purposes of ensuring the reliability of its core electricity service – and for which the utility's depreciation allowances have been set to fully fund within the average useful life applied to the pole group account. Indeed, under the current rules, which allow the utility to shift the full cost burden of the replacement of all non-red tagged poles onto attachers, utilities have even more incentive to under-report red tagged poles and defer normal life cycle replacement of their pole plant as it allows them to shift an even greater proportion of the costs of their normal life cycle utility pole replacement onto attachers.

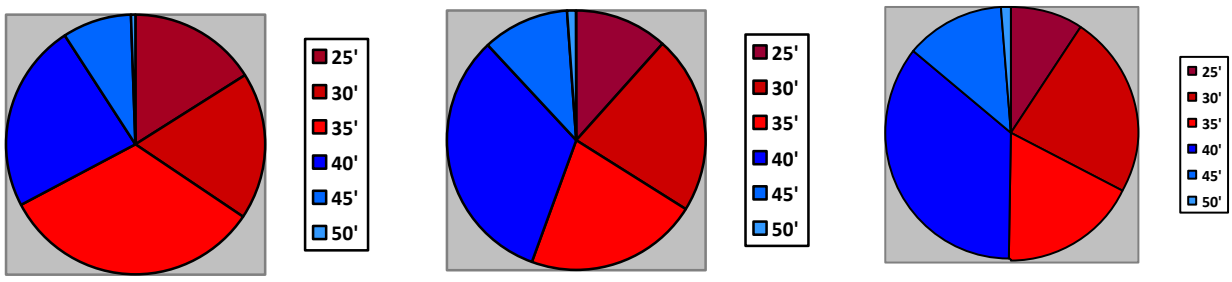
Q. DOES THE DATA PROVIDED BY THE UTILITIES SUPPORT THE SUPPOSITION THAT EVEN IN THE ABSENCE OF NEW ATTACHERS, UTILITIES WOULD BE REPLACING OLDER VINTAGE UNDERSIZED POLES WITH NEWER, TALLER, STRONGER POLES FOR PURPOSES OF THEIR OWN CORE ELECTRIC SERVICE?

A. Yes, it does. Although only a few utilities provided data at the necessary level of detail for both vintage and pole height, the data that was provided shows a clear trend of older, shorter poles being replaced by taller, stronger poles by the utility, going back many years and without regard for additional broadband attachments, as depicted in the example from South Kentucky RECC below. This is a trend occurring nationwide, and linked to increasing needs for enhanced resiliency and reliability of electric distribution service as discussed earlier in this testimony.[24]

[24] *See, e.g.*, South Kentucky Rural Electric Cooperative Corporation, Response to Commission's Second Request For Information 3 (stating "South Kentucky does not have a policy or practice of replacing poles purely based on age or location. The Cooperative replaces poles based on the pole inspection program, when building or upgrading an existing line, or as needed based on circumstances (vehicle damage, e.g.)"); Farmers Rural Electric Cooperative Corporation, Response to Commission's Second Request For Information 3 (stating "[i]n the design phase of a Construction Work Plan project, poles may also be identified for replacement based on criteria of height, strength, remaining life, etc."); Kentucky Power Company, Response to Commission's Second Request for Information 2_09 (explaining "Kentucky Power does not have a policy or practice of replacing poles based on vintage age or average useful life. Poles may be replaced as part of capital improvement projects based on the condition of the pole or to meet current design standards when modifications are performed to meet core electric service needs").

South Kentucky RECC[25]

1995 **2008** **2021**



[25] South Kentucky Rural Electric Cooperative Corporation, Response to Commission's Initial Request For Information 1-9 (Exhibit 6).

Q: ARE YOU CONCERNED THAT REQUIRING UTILITIES TO PAY A PORTION OF NON-RED TAGGED POLE REPLACEMENT COSTS WOULD NEGATIVELY IMPACT THEIR BUDGETS?[26]

A: No.

Q: WHY NOT?

A: As explained above, all types of utilities, including those cooperatively and municipally owned, write down the cost of their assets over those assets' average service lives in recognition of the loss in service value due to the "consumption" or prospective retirement of the asset over time by virtue of "wear and tear" and/or the natural obsolescence of the plant in the course of service as the plant matures in age. Accordingly, plant asset values that decline over time as depreciation expenses (an accounting allocation/accrual, not an actual cash outlay of the utility) associated with those assets are recognized on the utilities' books of account. Utilities recognize these expenses in each period and accumulate them on their books as the assets approach the end of their normal useful service life to the utility. The older the pole asset subject to replacement (compared to the pole's average service life), the lower the net investment value remaining on the utility's books that would be left unrecovered due to the earlier-than-planned retirement.

[26] *See* Clark Energy Cooperative, Response to KBCA's Initial Request For Information 1-9 ("If the cooperative were required to pay for the costs of new poles it did not budget or otherwise need to replace, this would have a negative impact on other areas of the Cooperative's budget, potentially deferring other investments intended for the economic benefit of the Cooperative's members."); *see also* Fleming-Mason, Response to KBCA's Initial Request For Information 1-9 ("The Cooperative operates on an annual budget to ensure costs are incurred and managed in a prudent way. When new attachers seek to attach to Cooperative poles, this is a request that occurs outside of the cooperative's annual budgeting process. If a pole is replaced due to the new attacher's request, this replacement is

As explained earlier, under the mass asset group accounting generally applied to poles, the average net book value carried on a utility's book will reflect both the earlier-than-average and later-than-average retirement of poles relative to their average useful life, such that requiring attachers pay the utility the average net book value of a pole as recorded on the utility's books of account for any given pole that the utility deems must be replaced before a new attachment can be made, assures the utility a sufficient, if not generous, amount of cost recovery toward the replacement of a non-red tagged pole.

From an economic perspective, the deviation from the otherwise planned or naturally-occurring retirement or replacement of the utility pole in the normal course of its operations creates no net impact on the utility's depreciation accrual due to pole attachments. Therefore, allocating a portion of non-red tagged pole replacement costs to utilities would not negatively impact their annual budgets.

The adjustment of depreciation parameters due to changing factors experienced by the utility are part and parcel of the depreciation process. In this regard, utility claims that the use of net book value to apportion pole replacement costs to attachers would add too much unpredictability or uncertainty into its capital budgeting process[27] are facially disingenuous given the nature of the depreciation process which inherently involves the utility making judgements regarding future trends and conditions applicable to groups of fixed assets based on past experience and projections of future experience. Indeed, based on the data the utilities have made available in this proceeding, they have depreciation

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an unforeseen, unbudgeted action taken to allow the attacher to comply with NESC requirements. It is not related to the useful life of the pole.").

[27] *See, e.g.*, Blue Grass Rural Electric Cooperative Corporation, Response to KBCA's Initial Request For Information 1-9 (response representative of RECC responses to KBCA's Initial Request For Information 1-9).

schedules that are far more rapid than their pole replacement programs such that they are amassing far more cash on hand for pole replacements than they are timely deploying in the field. As South Kentucky Rural Electric Cooperative Corporation explained in this proceeding, "[a]ll poles are depreciated over 25 years, but their life is typically closer to 40 years."[28]

Q: DO YOU AGREE WITH THE ASSERTION BY UTILITIES THAT ATTACHERS SHOULD BEAR THE ENTIRE COST OF REPLACING NON-RED TAGGED POLES BECAUSE THEY ARE THE "COST CAUSER"?[29]

A: No.

Q: WHY NOT?

A: As explained above, new attachers do not in fact cause a utility to need to replace a pole. A utility would have to replace its plant in the normal course of business with or without

[28] *See, e.g.*, South Kentucky Rural Electric Cooperative Corporation, Response to Commission's Second Request For Information 1.

[29] *See* KU and LG&E, Response to KBCA's Initial Request For Information Q-4 ("The Commission's longstanding "cost causation" principles dictate that the cost of prematurely replacing a non-"red-tagged" pole with a pole that is tall enough and strong enough to host an additional communications attachment should be borne solely by the party necessitating the additional capacity afforded by a taller/stronger pole—i.e., the cost causer."); *see also* Nolin R.E.C.C., Response to KBCA's Initial Request For Information 1-9 ("Under normal circumstances, a pole is not replaced until age and condition warrant replacement. Since the cooperative would not otherwise replace the pole and incur cost until necessary due to age and condition, the cost should be the responsibility of the "cost causer."); Ballard Rural Telephone Cooperative Corp., Response to KBCA's Initial Request For Information 1-4 ("[T]he requirement that an attacher bear the cost of replacing a pole that only needs replacement to accommodate the attacher's request for attachment is based upon a reasonable, common sense approach that an attacher should not be allowed to force another party to incur additional costs on its behalf."); Windstream Kentucky, East & West, Response to KBCA's Initial Request For Information 1-4 ("If Windstream is required to replace a non-red-tagged pole to accommodate the request of a new attacher, that new attacher should carry the burden of that cost, the change is being made as a result of its request."); Big Rivers Electric Corporation, Response to KBCA's Initial Request For Information 1-9 ("[T]he Cooperative and its membership should not be forced to pay for new poles required solely by a requesting attacher, especially given the approximately $1 billion dollars in new federal and state subsidies provided to encourage broadband deployment."); *see also* Kentucky Public Utilities Commission, Statement of Consideration Relating to 807 KAR 5:015, at 46-47 (Sept. 15, 2021).

the presence of a new attacher, and from a cost-causation perspective, there is no net impact on the utility's depreciation accrual due to pole attachments. If new attachments require a utility to replace a pole, the new attacher is only potentially changing the timetable on which a utility has to replace that pole. As a result, it is economically inefficient to require a new attacher to pay more than its proportionate share of costs causally linked to the timing of the pole replacement.

The Commission recognized this concept in requiring utilities to bear the cost of replacing red tagged poles.[30] Because a utility would have had to replace a red tagged pole in the immediate future, the Commission recognized a new attacher did not cause the utility to replace the pole any more quickly than it than it otherwise would have, and thus should not have to pay for the replacement. Rather, the utility's provisions of its core service caused the need for a new pole. Thus, the utility properly bears the cost of replacing that red-tagged pole.

The replacement of non-red tagged poles follows the same logic. Utilities must replace poles as a result of their provision of their core service, which they are planning to do on more rapid timelines and consistent with the need to upgrade and harden their own facilities. The only impact a new attacher has on the pole replacement is the timing of the replacement. As result, from an economic perspective the new attacher should only bear the costs associated with the utility's earlier replacement of the pole. The net-book value approach accounts for these costs and compensates the utility accordingly.

[30] 807 KAR 5:015 § 4(6)(b).

This temporal approach to the sharing of pole replacement costs between pole owner and new attachers avoids cross-subsidies and inefficiencies in make-ready charges. These are very real concerns where, based on available data, the utilities are undertaking of their own volition to upgrade and harden their facilities and already and more rapidly recovering the capital to do so through rates charged their utility customers and third-party attachers. A temporal approach is also consistent with the proper, long-run economic perspective that utilities themselves take in assessing capital investment decisions, given that most of the economic value of a utility pole replacement comes in its usefulness to core utility service operations. And it ensures that pole owners are compensated for the marginal costs of the pole replacement associated with the new attachment request. It takes into account the actual betterment value or economic gains that the pole owner receives from make-ready – of which pole replacement is the starkest example and also the clearest instance of an otherwise inevitable utility investment given all poles eventually must be replaced.

Q: DO YOU HAVE AN OPINION ON THE ASSERTION BY THE UTILITIES THAT THERE IS NO BENEFIT TO THEM FROM AN EARLY REPLACEMENT OF A NON-RED TAGGED POLE?[31]

A: Yes.

Q: WHAT IS YOUR OPINION?

A: The utilities assertion is fundamentally mistaken from an economic and practical common sense perspective. A utility receives significant benefits from pole

replacements, even if the replacements are of poles that have remaining lives. The economic gains enjoyed by the pole owner in connection with the pole replacement as with other utility planned pole upgrades are multi-fold and apply for all poles – not just the limited set of poles "red tagged" by the utility as slated for imminent replacement. These include:

- Operational benefits of the replacement pole (*e.g.*, additional height, strength and resiliency) that can enhance the productive capacity of the plant to meet service quality and other regulatory mandates and utility objectives to harden its pole network for greater resiliency and reliability;

- Strategic benefits, including the ability to provide additional service offerings and enhancements of its own network (*e.g.*, smart grid applications) as well as broadband in competition with the attacher;

- Revenue-enhancing benefits, including enhanced rental opportunities from the increased capacity on the new replacement pole;

- Capital cost savings associated with future planned plant upgrades and cyclical replacement programs;

- Operational cost savings in the form of lower maintenance and operating expenses inherent to features of the new, upgraded/higher-class replacement pole, or as a result of the earlier time shift of the removal and installation of the new pole, given the generally rising costs of labor and material over time as measured by published industry cost indices; and,

- Enjoyment of additional tax savings or cash flow opportunities from the accelerated depreciation of a new capital asset which reverses as the asset ages.

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[31] *Supra* note 5.

Q: DO YOU HAVE ANY CONCLUDING COMMENTS?

A: Yes. The utilities proposal for attachers to pay the entire replacement costs for non-red-tagged poles is unjust and unreasonable. Based on the same cost-causation rationale that embodies the Commission's red-tagged pole regulation and the data provided by utilities, it is clear there is no sound economic justification for requiring pole attachers to pay the entire cost of pole replacements, whether or not those poles are red tagged. It only results in fewer or delayed broadband infrastructure investments, reduced service availability, and ultimately higher broadband prices in unserved areas of the Commonwealth. From an economic and common sense perspective, the more an attacher must pay over economically fair and efficient pole replacement cost, the higher the attacher's cost of entry into the market. Needlessly high entry costs put new attachers at an absolute and/or relative competitive disadvantage as compared to the utility's own potential broadband activities. In other words, charging new attachers the complete replacement cost of a pole creates consumer welfare *losses* by siphoning off funds a new attacher could be using to further expand broadband access, resulting in delayed or foregone broadband expansion.

On the flip side of the economic calculus, there are substantial and real economic gains to be realized by the consuming public and overall societal welfare from the realignment of make-ready charges pertaining to replacement poles to more economically efficient, cost effective levels based on the net book value of the replaced pole. The potential substantial gains to Kentuckians from the adoption of policies that promote broadband deployment, such as the pole replacement cost sharing approach, can be measured in

terms of the additional "consumer surplus" that would accrue to Kentucky households and businesses from efficient and timely access to high quality broadband.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A: Yes, it does.

[VERIFICATION ON SEPARATE PAGE]

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:		
ELECTRONIC INVESTIGATION OF THE	)	
PROPOSED POLE ATTACHMENT	)	Case No.
TARIFFS OF RURAL LOCAL	)	2022-00107
EXCHANGE CARRIERS	)	

VERIFICATION

The undersigned, Patricia Kravtin, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in her direct testimony, and that the answers contained therein are true and correct to the best of her information, knowledge, and belief.

Patricia Kravtin

STATE OF UTAH)
SUMMIT COUNTY)

SUBSCRIBED AND SWORN TO before me by Patricia Kravtin on this the 8 day of June, 2022.

DYLAN PINKNEY
NOTARY PUBLIC-STATE OF UTAH
COMMISSION EXP. 02/26/2026
COMMISSION NO. 723130

EXHIBIT 1

Patricia D. Kravtin

pdkravtin@comcast.net

Summary

Consulting economist with specialization in telecommunications, cable, and energy markets. Extensive knowledge of complex economic, policy and technical issues facing incumbents, new entrants, regulators, investors, and consumers in rapidly changing telecommunications, cable, and energy markets.

Experience

CONSULTING ECONOMIST

2000– Principal and Owner, PDK Economic Consulting, Park City, UT

- Providing expert witness services and full range of economic, policy, and technical advisory services in the fields of telecommunications, cable, and energy.

SENIOR VICE PRESIDENT/SENIOR ECONOMIST

1982–2000 Economics and Technology, Inc., Boston, MA

- Active participant in regulatory proceedings in over thirty state jurisdictions, before the Federal Communications Commission, Federal Energy Regulatory Commission, Canadian Radio-Television and Telecommunications Commission, Ontario Energy Board, and other international regulatory authorities on telecommunications, cable, and energy matters.

- Provided expert witness and technical advisory services in connection with litigation and arbitration proceedings before state and federal regulatory agencies, and before U.S. district court, on behalf of diverse set of pubic and private sector clients (see Record of Prior Testimony).

- Extensive cable television regulation expertise in connection with implementation of the Cable Act of 1992 and the Telecommunications Act of 1996 by the Federal Communications Commission and local franchising authorities.

- Led analysis of wide range of issues related to: rates and rate policies; cost methodologies and allocations; productivity; cost benchmarking; business case studies for entry into cable, telephony, and broadband markets; development of competition; electric industry restructuring; incentive or performance based regulation; universal service; access charges; deployment advanced services and broadband technologies; access to pole attachments, conduit, and other rights-of-way.

- Served as advisor to state regulatory agencies, assisting in negotiations with utilities, non-partial review of record evidence, deliberations and drafting of

final decisions.

- Author of industry reports and papers on topics including market structure, competition, alternative forms of regulation, patterns of investment, telecommunications modernization, and broadband deployment.

- Invited speaker before various national organizations, state legislative committees and participant in industry symposiums.

- Grant Reviewer for the Broadband Technology Opportunities Program (BTOP) administered by National Telecommunications and Information Administration (NTIA), Fall 2009.

RESEARCH/POLICY ANALYST

1978–1980 Various Federal Agencies, Washington, DC

- Prepared economic impact analyses concerning allocation of frequency spectrum (Federal Communications Commission).

- Performed financial and statistical analysis concerning the effect of securities regulations on the acquisition of high-technology firms (Securities and Exchange Commission).

- Prepared analyses and recommendations on national economic policy issues including capital recovery. (U.S. Dept. of Commerce).

Education

1980–1982 Massachusetts Institute of Technology, Boston, MA

- Graduate Study in the Ph.D. program in Economics (Abd). General Examinations passed in fields of Government Regulation of Industry, Industrial Organization, and Urban and Regional Economics.

- National Science Foundation Fellow.

1976–1980 George Washington University, Washington, DC

- B.A. with Distinction in Economics.

- Phi Beta Kappa, Omicron Delta Epsilon in recognition of high scholastic achievement in field of Economics. Recipient of four-year honor scholarship.

Prof. Affiliation

American Economic Association

Reports and Studies (authored and co-authored)

"Advancing Pole Attachment Policies to Accelerate National Broadband Buildout," co-authored with Dr. Edward Lopez, underwritten by Connect the Future, December, 2021.

"Pole Attachment Policies and Broadband Expansion in the State of Florida, co-authored with Dr. Edward Lopez, underwritten by Connect the Future, December, 2021.

"Pole Attachment Policies and Broadband Expansion in the State of Kentucky, co-authored with Dr. Edward Lopez, underwritten by Connect the Future, December, 2021.

"Pole Attachment Policies and Broadband Expansion in the State of Texas, co-authored with Dr. Edward Lopez, underwritten by Connect the Future, December, 2021.

"Pole Attachment Policies and Broadband Expansion in the State of Missouri, co-authored with Dr. Edward Lopez, underwritten by Connect the Future, December, 2021.

"Pole Attachment Policies and Broadband Expansion in the State of Wisconsin, co-authored with Dr. Edward Lopez, underwritten by Connect the Future, December, 2021.

"Utility Pole Policy: A Cost-Effective Prescription for Achieving Full Broadband Access in North Carolina," co-authored with Dr. Edward Lopez, underwritten by the North Carolina Cable Telecommunications Association, August 2021.

"Pole Policy and the Public Interest: Cost Effective Policy Measures for Achieving Full Broadband Access in the Commonwealth of Kentucky," July 22, 2021, underwritten by Charter Communications and submitted to the Kentucky Public Service Commission in *Regulations Regarding Access and Attachments to Utility Pole and Facilities*; 807 KAR 5:015.

"The Economic Case for a More Cost Causative Approach to Make-ready Charges Associated with Pole Replacement in Unserved/Rural Areas: Long Overdue, But Particularly Critical Now in Light of the Pressing Need to Close the Digital Divide," dated September 2, 2020, underwritten Charter Communications, Inc. and submitted to the Federal Communications Commission in WC Docket No. 17-84.

"An Analysis of Just and Reasonable Pole Attachment Rates for Bandera Electric Cooperative Pursuant to Senate Bill 14," prepared on behalf of Guadalupe Valley Telephone Cooperative, Inc., Preliminary Report dated December 6, 2019.

Report on the Ohio Municipal Electric Association Pole Attachment Rate Study, prepared for the Ohio Cable Telecommunications Association, November 9, 2012.

Report on the Financial Viability of the Proposed Greenfield Overbuild in the City of Lincoln, California, prepared for Starstream Communications, August 12, 2003.

"Assessing SBC/Pacific's Progress in Eliminating Barriers to Entry, The Local Market in California is Not Yet 'Fully and Irreversibly Open," prepared for CALTEL, August 2000.

"Final Report on the Qualifications of Wide Open West-Texas, LLC For a Cable Television Franchise in the City of Dallas," prepared for the City of Dallas, July 31, 2000.

"Final Report on the Qualifications of Western Integrated Networks of Texas Operating L.P. For a Cable Television Franchise in the City of Dallas," prepared for the City of Dallas, July 31, 2000.

"Price Cap Plan for USWC: Establishing Appropriate Price and Service Quality Incentives in Utah" prepared for The Division of Public Utilities, March, 2000.

"Building a Broadband America: The Competitive Keys to the Future of the Internet," prepared for The Competitive Broadband Coalition, May 1999.

"Broken Promises: A Review of Bell Atlantic-Pennsylvania's Performance Under Chapter 30," prepared for AT&T and MCI Telecommunications, June 1998.

"Analysis of Opportunities for Cross Subsidies Between GTA and GTA Cellular," prepared for Guam Cellular and Paging, submitted to the Guam Public Utilities Commission, July 11, 1997.

"Reply to Incumbent LEC Claims to Special Revenue Recovery Mechanisms," submitted in the Matter of Access Charge Reform in CC Docket 96-262, February 14, 1997.

"Assessing Incumbent LEC Claims to Special Revenue Recovery Mechanisms: Revenue opportunities, market assessments, and further empirical analysis of the 'Gap' between embedded and forward-looking costs," FCC CC Docket 96-262, January 29, 1997.

"Analysis of Incumbent LEC Embedded Investment: An Empirical Perspective on the 'Gap' between Historical Costs and Forward-looking TSLRIC," Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, FCC CC 96-98, May 30, 1996.

"Reply to X-Factor Proposals for the FCC Long-Term LEC Price Cap Plan," prepared for the Ad Hoc Telecommunications User Committee, submitted in FCC CC Docket 94-1, March 1, 1996.

"Establishing the X-Factor for the FCC Long-Terms LEC Price Cap Plan," prepared for the Ad Hoc Telecommunications User Committee, submitted in FCC CC Docket 94-1, December 1995.

"The Economic Viability of Stentor's 'Beacon Initiative,' Exploring the Extent of its Financial Dependency upon Revenues from Services in the Utility Segment," prepared for Unitel, submitted before the Canadian Radio-television and Telecommunications Commission, March 1995.

"Fostering a Competitive Local Exchange Market in New Jersey: Blueprint for Development of a Fair Playing Field," prepared for the New Jersey Cable Television Association, January 1995.

"The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers," Feb. 1994.

"A Note on Facilitating Local Exchange Competition," prepared for E.P.G., Nov. 1991.

"Testing for Effective Competition in the Local Exchange," prepared for the E.P.G., October 1991.

"A Public Good/Private Good Framework for Identifying Pots Objectives for the Public Switched Network" prepared for the National Regulatory Research Institute, October 1991.

"Report on the Status of Telecommunications Regulation, Legislation, and modernization in the states of Arkansas, Kansas, Missouri, Nebraska, Oklahoma and Texas," prepared for the Mid-America Cable-TV Association, December 13, 1990.

"The U S Telecommunications Infrastructure and Economic Development," presented at the 18th Annual Telecommunications Policy Research Conference, Airlie, Virginia, October 1990.

"An Analysis of Outside Plant Provisioning and Utilization Practices of US West Communications in the State of Washington," prepared for the Washington Utilities and Transportation Commission, March 1990.

"Sustainability of Competition in Light of New Technologies," presented at the Twentieth Annual Williamsburg Conference of the Institute of Public Utilities, Williamsburg, VA, December 1988.

"Telecommunications Modernization: Who Pays?," prepared for the National Regulatory Research Institute, September 1988.

"Industry Structure and Competition in Telecommunications Markets: An Empirical Analysis," presented at the Seventh International Conference of the International Telecommunications Society at MIT, July 1988.

"Market Structure and Competition in the Michigan Telecommunications Industry," prepared for the Michigan Divestiture Research Fund Board, April 1988.

"Impact of Interstate Switched Access Charges on Information Service Providers - Analysis of Initial Comments," submitted in FCC CC Docket No. 87-215, October 26, 1987.

"An Economic Analysis of the Impact of Interstate Switched Access Charge Treatment on Information Service Providers," submitted in FCC CC Docket No. 87-215, September 24, 1987.

"Regulation and Technological Change: Assessment of the Nature and Extent of Competition from a Natural Industry Structure Perspective and Implications for Regulatory Policy Options," prepared for the State of New York in collaboration with the City of New York, February 1987.

"BOC Market Power and MFJ Restrictions: A Critical Analysis of the 'Competitive Market' Assumption," submitted to the Department of Justice, July 1986.

"Long-Run Regulation of AT&T: A Key Element of a Competitive Telecommunications Policy," *Telematics*, August 1984.

"Economic and Policy Considerations Supporting Continued Regulation of AT&T," submitted in FCC CC Docket No. 83-1147, June 1984.

"Multi-product Transportation Cost Functions," MIT Working Paper, September 1982.

Record of Prior Testimony

2022

Before the **State of New Hampshire Public Utilities Commission,** Public Service Company of New Hampshire d/b/a/Eversource Energy and Consolidated Communications of Northern New England Company, LLC d/b/a Consolidated Communications, *Joint Petition to Approve Pole Asset Transfer*, DE 21-020, Prefiled Direct Testimony, January 31,2022, Cross-examination March 15, 2022, May 10, 2022.

2021

Before the **Commonwealth of Kentucky Public Service Commission**, *Regulations Regarding Access and Attachments to Utility Poles and Facilities*; 807 KAR 5:015, Oral Testimony, July 29, 2021.

Before the **United States District Court Western District of New York**, ExteNet Systems Inc., Plaintiff, vs. City of Rochester, New York, Defendant, Civil Action No. 6:20-cv-7129, Expert Report submitted August 12, 2021.

2020

Before the **Georgia Public Service Commission***, In Re: Generic Proceeding to Implement House Bill 244*, Docket No. 43453, Pre-filed Direct Testimony submitted October 23, 2020, Rebuttal Testimony submitted November 9, 2020, Cross-examination, November 19, 2020.

Before the **Public Utilities Commission of the State of California,** in *Southern California Edison 2021 General Rate Case (U 338-E), Docket No. A. 19-08-013 (Filed August 30, 2019),* Pre-filed Direct Testimony submitted May 5, 2020.

2019

Before the **Public Utilities Commission of Ohio,** *In the Matter of the Application of the Filing by Ohio Edison Company, The Cleveland Electric Illuminating Company, and the Toledo Edison Company, of a Grid Modernization Plan, of an Application for Approval of a Distribution Platform Modernization Plan, to Implement Matters Relating to the Tax Cuts and Jobs Act of 2017, and for Approval of a Tariff Change,* Case Nos. 16-481-EL-UNC, Case No. 17-2436-EL-UNC, Case No.18-1604-EL-UNC, and Case No. 18-1656-EL-ATA, adopted and accepted into evidence, February 6, 2019.

2018

Before the **Public Utilities Commission of the State of California,** in *California Cable & Telecommunications Association, Complainant v. San Diego Gas & Electric Company (U902E) Defendant, Case No. C.17-11-002 (Filed November 6, 2017),* Pre-filed Direct Testimony submitted November 21, 2018, Rebuttal submitted December 28, 2018, Cross-examination January 8, 2019.

Before the **Public Utilities Commission of Ohio,** *In the Matter of the Application of the Commission's Investigation of the Financial Impact of the Tax Cuts and Jobs Act of 2017 on Regulated Ohio Utility Companies,* Case No. 18-47-AU-COI, filed June 29, 2018.

Before the **Louisiana Public Service Commission**, in *Re: Complaint and Petition for Declaratory Ruling on Proper Formula for the Pole Attachment Rental Rate Under Louisiana Public Service Commission Order Dated September 4, 2014*, Docket No. U-34688, Affidavit submitted March 27, 2018.

Before the **Connecticut Department of Public Utility Control,** in *Re: In the Matter of the Application of The Connecticut Light and Power Company d/b/a Eversource Energy, to Amend its Rate Schedule*, Dkt. No. 17-10-46, Direct Prefiled January 26, 2018.

2017

Before the **North Carolina Public Utility Commission,** in *Blue Ridge Electric Membership Corporation, Complainant v. Charter Communications Properties LLC, Respondent,* Docket No. EC-23, SUB 50, Responsive Pre-filed October 30, 2017; Cross-examination November 8, 2017, December 18, 2017.

Before the **Kentucky Public Service Commission**, *In the Matter of: Electronic Application of Kentucky Power Company for (1) A General Adjustment of its Rates for Electric Service: (2) An Order Approving its 2017 Environmental Compliance Plan; (3) An Order Approving its Tariffs and Riders; (4) An Order Approving Accounting Practices to Establish Regulatory Assets and*

Liabilities, and (5) An Order Granting All Other Required Approvals and Relief, Case No. 2017-00179, Direct Testimony submitted on behalf of The Kentucky Cable Telecommunications Association, October 3, 2017.

Before the **North Carolina Public Utility Commission,** in *Re: In the Matter of Time Warner Cable Southeast LLC, Complainant v. Carteret-Craven Electric Membership Corporation, Respondent,* Docket No. EC-55, SUB 70, Direct Pre-filed May 30, 2017; Rebuttal Pre-filed June 15, 2017; Cross-examination June 20, 2017.

Before the **North Carolina Public Utility Commission,** in *Re: In the Matter of Time Warner Cable Southeast LLC, Complainant v. Jones-Onslow Electric Membership Corporation, Respondent,* Docket No. EC-43, SUB 88, Direct Pre-filed May 30, 2017; Rebuttal Pre-filed June 15, 2017; Cross-examination June 20, 2017.

Before the **North Carolina Public Utility Commission,** in *Re: In the Matter of Time Warner Cable Southeast LLC, Complainant v. Surry-Yadkin Electric Membership Corporation, Respondent,* Docket No. EC-49, SUB 55, Direct Pre-filed May 30, 2017; Rebuttal Pre-filed June 15, 2017; Cross-examination June 20, 2017.

Before the **North Carolina Public Utility Commission,** in *Re: In the Matter of Union Electric Membership Corporation, Complainant v. Time Warner Cable Southeast LLC, Respondent,* Docket No. EC-39, SUB 44, Responsive Pre-filed June 15, 2017; Cross-examination June 20, 2017.

2016

Before the **State of Connecticut Department of Public Utility Control,** in *Re: In the Matter of the Application of The United Illuminating Company to Increase Its Rates and Charges*, Docket No. 16-06-04, filed September 9, 2016.

Before the **United States District Court, District of Maryland**, *Zayo Group, LLC, et al., Plaintiffs v. Mayor and City of Council of Baltimore, et al., Defendants,* Civil No. 16-cv-592, Declaration filed March 30, 2016; Cross-ex. May 17, 2016.

2015

Before the **Arkansas Public Service Commission**, *In the Matter of a Rulemaking Proceeding to Consider Changes to the Arkansas Public Service Commission's Pole Attachment Rules*, Docket No. 15-019-R, Report filed July 22, 2015, Second Report filed August19, 2015; Cross-examination October 27, 2015.

Before the **Public Service Commission of Wisconsin**, Wisconsin Cable Communications Association, Charter Cable Partners, LLC, and Time Warner Cable Midwest LLC, Complainants, v. City of Oconomowoc, Respondent, Docket No. 4340-El-100, Direct Testimony submitted May 29, 2015; Rebuttal Testimony submitted June 19, 2015; Surrebuttal Testimony submitted July 2, 2015; Cross-examination July 9, 2015.

Before the **Kentucky Public Service Commission***, In the Matter of: Application of Kentucky Utilities Company for An Adjustment of its Base Rates*, Case No. 2014-00371, submitted March 6, 2015.

Before the **Kentucky Public Service Commission** *In the Matter of: Application of Louisville Gas and Electric Company for An Adjustment of its Electric and Gas Base Rates*, Case No. 2014-00372, submitted March 6, 2015.

2013

Before the **Commonwealth of Virginia State Corporation Commission**, in *Application of Northern Virginia Electric Cooperative, For Approval of pole attachment rates and terms and conditions under § 56-466.1 of the Code of Virginia*, Pre-filed Direct Testimony on behalf of Comcast California/Maryland/Pennsylvania/Virginia/West Virginia LLC, August 29, 2013. Live testimony and cross-examination, November 22/25, 2013.

Before the **General Court of Justice Superior Court Division, State of North Carolina, County of Rutherford,** *Rutherford Electric Membership Corporation, Plaintiff, vs. Time Warner Entertainment– Advance/Newhouse Partnership d/b/a Time Warner Cable, Defendant*, 13 CVS 231, submitted July 10, 2013, Deposition July 22, 2013. Live testimony and cross-examination, September 6, 2013.

Before the **Chancery Court for Davidson County, Tennessee at Nashville**, *The Metropolitan Government of Nashville and Davidson County, Tennessee, Plaintiff v. XO Tennessee, Inc., Defendant, Docket No. 02-679-IV; The Metropolitan Government of Nashville and Davidson County, Tennessee, Plaintiff v. TCG Midsouth, Inc., Defendant, Docket No. 02-749-IV,* Affidavit dated January 25, 2013, Reply Affidavit dated February 19, 2013. Live testimony and cross-examination, May 14-15, 2013.

2012

Before the **State of New Hampshire Public Utilities Commission**, in *Time Warner Entertainment Company L.P. d/b/a Time Warner Cable, Petition for Resolution of Dispute with Public Service Company of New Hampshire*, DT 12-084, on behalf of Time Warner Entertainment Company L.P. d/b/a Time Warner Cable, Comcast Cable Communications Management, LLC, Comcast of New Hampshire, Inc., Comcast of Massachusetts/New Hampshire, LLC, and Comcast of Maine/New Hampshire, Inc. Initial Direct Testimony submitted July 20, 2012; Reply Direct Testimony submitted October 31, 2012; Live panel testimony, November 14, 2012.

Before the **Ontario Energy Board**, *In the Matter of the Application by Canadian Distributed Antenna Systems Coalition ("CANDAS")*, File No. EB-2011-1020, Joint Written Statement (with J. Lemay, M. Starkey, A. Yatchew), filed July 20, 2012.

Before the **Chancery Court for Davidson County, Tennessee at Nashville**, *The Metropolitan Government of Nashville and Davidson County, Tennessee, Plaintiff v. XO Tennessee, Inc., Defendant, Docket No. 02-679-IV; The Metropolitan Government of Nashville and Davidson County, Tennessee, Plaintiff v. TCG Midsouth, Inc., Defendant, Docket No. 02-749-IV,* Expert Report submitted May 15, 2012; Supplemental Report dated November 6, 2012.

2011

Before the **Ontario Energy Board**, *in the Matter of the Application by Canadian Distributed Antenna Systems Coalition ("CANDAS")*, File No. EB-2011-1020, Reply Evidence, filed December 16, 2011.

Before the **Public Utilities Commission of Ohio,** *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company, Individually and, if Their Proposed Merger is Approved, as a Merged Company (collectively, AEP Ohio) for an Increase in Electric Distribution Rates, Case No. 11-351-EL-AIR, Case No. 11-352-EL-AIR; In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company, Individually and, if Their Proposed Merger is Approved, as a Merged Company (collectively, AEP Ohio) for Tariff Approval, Case No. 11-353-EL-ATA Case No. 11-354-EL-ATA; In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company, Individually and, if Their Proposed Merger is Approved, as a Merged Company (collectively, AEP Ohio) for Approval to Change Accounting Methods, Case No. 11-356-EL-AAM, Case No. 11-258-EL-AAM.*filed October 24, 2011.

Before the **Virginia State Corporation Commission**, *In the Matter of Determining Appropriate Regulation of Pole Attachments and Cost Sharing in Virginia,* Case No. PUE-2011-00033, Affidavit filed June 22, 2011, Live Testimony given July 13, 2011.

Before the **Public Utility Commission of Texas**, State Office of Administrative Hearings, *Petition of CPS Energy for Enforcement Against AT&T Texas and Time Warner Cable Regarding Pole Attachments,* SOAH Docket No. 473-09-5470, PUC Docket No. 36633, Supplemental Testimony submitted March 17, 2011; Further Supplemental Testimony submitted April 22, 2011, Cross-examination, September 13, 2011.

2010

Before the **General Court of Justice Superior Court Division, State of North Carolina, County of Rowan,** *Time Warner Entertainment– Advance/Newhouse Partnership, Plaintiff, V. Town Of Landis, North Carolina, Defendant*, 10 CVS 1172, Expert Report submitted October 20, 2010, Deposition December 1, 2010, Live testimony and cross-examination July 20, 2011.

Before the **Federal Communications Commission**, *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, Attachment A to Comments filed by the National Cable and Telecommunications Association.

Before the **Public Utility Commission of Texas**, State Office of Administrative Hearings, *Petition of CPS Energy for Enforcement Against AT&T Texas and Time Warner Cable Regarding Pole Attachments,* SOAH Docket No. 473-09-5470, PUC Docket No. 36633, Direct Testimony submitted July 23, 2010.

Before the **Kentucky Public Service Commission***, In the Matter of: Application of Kentucky Utilities Company for An Adjustment of its Base Rates*, Case No. 2009-00548, submitted April 22, 2010.

Before the **Kentucky Public Service Commission** *In the Matter of: Application of Louisville Gas and Electric Company for An Adjustment of its Electric and Gas Base Rates*, Case No. 2009-00549, submitted April 22, 2010.

Before the **Arkansas Public Service Commission***, Coxcom, Inc., D/B/A Cox Communications, Complainant V. Arkansas Valley Electric Cooperative Corporation*, R*espondent.* Docket No. 09-133-C, submitted March 17, 2010.

2009

Before the **Circuit Court of the Thirteenth Judicial Circuit in and for Hillsborough County***, State of Florida, Tampa Electric Company, Plaintiff, vs. Bright House Networks, LLC, Defendant,* Case No. 06-00819, Division L. Expert Report submitted December 30, 2009, Deposition February 2, 2010, Live testimony and cross-examination, March 24, 2010.

Before the **Superior Court of the State Of Washington for the County of Pacific,**, *Pacific Utility District No. 2 Of Pacific County, Plaintiff, V. Comcast of Washington Iv, Inc., Centurytel of Washington, Inc., and Falcon Community Ventures I, L.P. D/B/A Charter Communications, Defendants, Case No. 07-2-00484-1,* Expert Report filed September 18, 2009, Reply Report filed October 16, 2009, Deposition December 21, 2009, Live testimony and cross-examination October 12-13, 2010.

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2008

Before the **Arkansas Public Service Commission**, *In the Matter of a Rulemaking Proceeding to Establish Pole Attachment Rules In Accordance With Act 740 of 2007*, Docket No. 08-073-R, filed May 13, 2008, reply filed June 3, 2008, Cross-examination June 10, 2008.

Before the **Federal Communications Commission**, *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, RM 11293, RM 11303, filed March 7, 2008, reply filed April 22, 2008.

2006

Before the **State of New Jersey Board of Public Utilities**, Office of Administrative Law, *in the Matter of the Verified Petition of TCG Delaware Valley, Inc. and Teleport Communications New York for an Order Requiring PSE&G Co. to Comply with the Board's Conduit Rental Regulations*, OAL Docket PUC 1191-06, BPU Docket No. EO0511005, filed September 29, 2006; rebuttal filed November 17, 2006.

Before the **Federal Communications Commission***, In the Matter of Florida Cable Telecommunications Association, Inc., Comcast Cablevision of Panama City, Inc.; Mediacom Southeast, L.L.C.; and Cox Communications Gulf, L.L.C.; Complainants v. Gulf Power Company, Respondent.* EB Docket No. 04-381. Testimony on behalf of Complainants, March 31, 2006, Deposition March 15, 2006, Live Cross April 26-27, 2006.

2005

Before the **United States District Court for the Eastern District of New York**, *Coastal Communication Service, Inc. and Telebeam Telecommunications Corporation, Plaintiffs - against –The City of New York and New York City Department of Information Technology and Telecommunications*, 02 Civ. 2300 (RJD) (SMG), Expert Report filed February 4, 2005; Rebuttal Expert Report, filed August 29, 2005, Deposition December 1, 2005.

2004

Before the **Ontario Energy Board***, In the Matter of the Ontario Energy Board Act* 1998, S.O.1998, c.15, (Schedule B); and *In the Matter of an Application pursuant to section 74 of the Ontario Energy Board Act*, 1998 by the Canadian Cable Television Association for an Order or Orders to amend the licenses of electricity distributors, RP-2003-024, Reply Evidence, filed September 27, 2004 (joint w/ Paul Glist), Cross-examination October 26-27, 2004.

2003

Before the **United States District Court for the Southern District of California,** *Level 3 Communications, LLC v. City of Santee,* Civil Action No. 02-CV-1193, Rebuttal Expert Report,
filed July 18, 2003.

2002

Before the **New York State Public Service Commission***, In the Matter of the Cable Television & Telecommunications Association of New York, Inc., Petitioner, v.Verizon New York, Inc., Respondent*, Case 02-M-1636, Affidavit filed Dec. 19, 2002.

Before the **West Virginia Public Service Commission**, Community Antenna Service, Inc. v. Charter Communications, Case No. 01-0646-CTV-C, Live Direct Testimony and Cross-examination, June 12, 2002.

Before the **Public Service Commission of the District of Columbia,** Comcast Cablevision of the District, L.L.C., Complainant, v. Verizon Communications Inc. – Washington, D.C., Respondent, Formal Case No. 1006, Direct Testimony filed June 11, 2002; Rebuttal Testimony filed June 24, 2002.

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Before the **Puerto Rico Telecommunications Regulatory Board**, in *Re: Petition of Centennial Puerto Rico License Corp. for arbitration pursuant to Sections 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Puerto Rico Telephone Company*, on behalf of Centennial Puerto Rico License Corp., Direct Testimony filed April 16, 2002; Deposition May 7, 2002, May 14, 2002; Reply Testimony, May 20, 2002, Cross-examination May 22, 2002.
Before the **Federal Energy Regulatory Commission***, in Re: In the Matter of* ***Transcontinental Gas Pipe Line Corporation****,* Docket No. RP01-245, on behalf of the University of Maryland-College Park, Johns Hopkins University and Johns Hopkins University Health System, and the North Carolina Utilities Commission, Cross-answering Testimony, January 23, 2002; Rebuttal Testimony, May 31, 2002, Cross-examination July 31, 2002.

2001

Before the **United States District Court for the Northern District of New York**, *TC Systems, Inc. and Teleport Communications-New York vs. Town of Colonie, New York,* Civil Action No. 00-CV-1972, Expert Report filed November 16, 2001; Deposition Dec. 7, 2001, Rebuttal Report December 20, 2001, Deposition Jan. 9, 2002.

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Before the **Public Service Commission of the District of Columbia,** Comcast Cable Communications, Inc. d/b/a/Comcast Cable of Washington, D.C., Complainant, v.Verizon Communications Inc. – Washington, D.C., Respondent, filed Sept. 21, 2001.

Before the **Public Utility Commission of Texas**, State Office of Administrative Hearings, SOAH Docket No. 473-00-1014, PUC Docket No. 22349, *Application of Texas-New Mexico Power Company for Approval of Unbundled Cost of Service Rate Pursuant to PURA § 39.201and Public Utility Commission Substantive Rule §25.344*, on behalf of Cities Served by Texas-New Mexico Power, filed January 25, 2001.

2000

Before the **Puerto Rico Telecommunications Regulatory Board**, in *AT&T of Puerto Rico, Inc. et al v. Puerto Rico Telephone Company, Inc., Re: Dialing Parity,* Docket Nos. 97-Q-0008, 98-Q-0002*,* on behalf of Lambda Communications Inc., Cross-examination October 19-20, 2000.

Before the **Department of Telecommunications and Energy of the Commonwealth of Massachusetts**, Docket No. DTE 98-57 – Phase III, *Re: Bell Atlantic- Massachusetts Tariff No. 17 Digital Subscriber Line Compliance Filing and Line Sharing Filing*, (Panel Testimony with Joseph Riolo, Robert Williams, and Michael Clancy) on behalf of Rhythms Links Inc. and Covad Communications Company, filed July 10, 2000.

Before the **New York State Public Service Commission** in *Re: Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements* on behalf of the Cable Television & Telecommunications Association of New York, Inc., Direct Testimony filed June 26, 2000, Supplemental Testimony filed November 29, 2000.

Before the **Maryland Public Service Commission**, on behalf of Rhythms Links Inc. and Covad Communications Company, filed jointly with Terry L. Murray and Richard Cabe, May 5, 2000.

Before the **Public Utility Commission of Texas**, in *Re: Proceeding to Examine Reciprocal Compensation Pursuant to Section 252 of the Federal Telecommunications Act of 1996,* CC Docket No. 21982, on behalf of AT&T Communications of Texas, L.P., TCG Dallas, and Teleport Communications Houston, Inc., filed March 31, 2000.
Before the **Federal Communications Commission**, in *Re: In the Matter of Price Caps Performance Review for Local Exchange Carriers, Access Charge Reform*, CC Dockets 94-1, 96-262, on behalf of Ad Hoc Telecommunications Users Committee, filed January 24, 2000.

Before the **Federal Energy Regulatory Commission**, in *Re: In the Matter of Northern Border Pipeline Company*, on behalf of the Canadian Association of Petroleum Producers and the Alberta Department of Resource Development, filed January 20, 2000.

1999

Before the **Connecticut Department of Public Utilities**, in *Re: Evaluation and Application to Modify Franchise Agreement by SBC Communications Inc., Southern New England telecommunications Corporation and SNET Personal Vision, Inc.*, Docket No. 99-04-02, on behalf of the Office of Consumer Counsel, filed June 22, 1999; cross- examination July 8, 1999

Before the **Illinois Commerce Commission**, in *Re: Illinois Commerce Commission on its own Motion v. Illinois Bell Telephone Company; et al: Investigation into Non-Cost Based Access Charge Rate Elements in the Intrastate Access Charges of the Incumbent Local Exchange Carriers in Illinois, Illinois Commerce Commission on its own Motion Investigation into Implicit Universal Service Subsidies in Intrastate Access Charges and to Investigate how these Subsidies should be Treated in the Future, Illinois Commerce Commission on its own motion Investigation into the Reasonableness of the LS2 Rate of Illinois Bell Telephone Company*, Docket No. 97-00601, 97-0602, 97-0516, Consolidated, on behalf of City of Chicago, filed January 4, 1999; rebuttal February 17, 1999.

Before the **Puerto Rico Telecommunications Regulatory Board**, in *Re: In the Matter of Arbitration of Interconnection Rates, Terms and Conditions between Centennial Wireless PCS Operations Corp., Lambda Communications Inc., and the Puerto Rico Telephone Company*, behalf of Centennial Wireless PCS Operations Corp. and Lambda Communications Inc., cross-examination February 16, 1999.

1998

Before the **California Public Utilities Commission**, in *Re: In the Matter of the Application of Pacific Bell (U 1001 C), a Corporation, for Authority for Pricing Flexibility and to Increase Prices of Certain Operator Services, to Reduce the Number of Monthly Assistance Call Allowances, and Adjust Prices for Four Centrex Optional Features*, Application No. 98-05-038, on behalf of County of Los Angeles, filed November 17, 1998, cross-examination, December 9, 1998.

Before the **Puerto Rico Telecommunications Regulatory Board**, in *Re: In the Matter of PRTC's Tariff K-2 (Intra-island access charges)*, Docket no. 97-Q-0001, 97-Q-0003, on behalf of Lambda Communications, Inc., filed and cross-exam. October 9, 1998.

Before the **Connecticut Department of Public Utility Control**, in *Re: Application of the Southern New England Telephone Company*, Docket no. 98-04-03, on behalf of the Connecticut Office of Consumer Counsel, filed August 17, 1998, cross-examination February 18, 1999.

Before the **California Public Utilities Commission**, in *Re: Pacific Gas & Electric General Rate Case*, A.97-12-020, on behalf of Office of Rate Payers Advocates CA PUC, filed June 8, 1998.

1997

Before the **South Carolina Public Service Commission**, in *Re: Proceeding to Review BellSouth Telecommunications, Inc.'s Cost for Unbundled Network Elements*, Docket no. 97-374-C, on behalf of the South Carolina Cable Television Association, filed November 17, 1997.

Before the **State Corporation Commission of Kansas**, in *Re: In the Matter of and Investigation to Determine whether the Exemption from Interconnection Granted by 47 U.S.C. 251(f) should be Terminated in the Dighton, Ellis, Wakeeney, and Hill City Exchanges*, Docket No. 98-GIMT-162-MIS, on behalf of Classic Telephone, Inc., filed October 23, 1997.

Before the **Georgia Public Services Commission,** in *Re: Review of Cost Studies, Methodologies, and Cost-Based Rates for Interconnection and Unbundling of BellSouth Telecommunications Services*, Docket No. 7061-U, on behalf of the Cable Television Association of Georgia, filed August 29, 1997, cross-examination September 19, 1997.

Before the **Federal Communications Commission**, in *Re: In the Matter of Price Caps Performance Review for Local Exchange Carriers, Access Charge Reform*, CC Dockets 94-1, 96-262, on behalf of Ad Hoc Telecommunications Users Committee, filed July 11, 1997.

Before the **Federal Communications Commission**, in *Re: In the Matter of Amendment of Rules and Policies Governing Pole Attachments*, CS Docket 97-98, on behalf of NCTA, filed June 27, 1997.

Before the **Public Utilities Commission of the State of California**, in *Re: Rulemaking on the Commission's Own Motion to Govern Open Access to Bottleneck Services and Establish a Framework for Network Architecture Development of Dominant Carrier Networks*, R.93-04-003, I.93-04-002 on behalf of AT&T, filed March 19, 1997, reply April 7, 1997.

Before the **Puerto Rico Telecommunications Regulatory Board**, in *Re: In the Matter of Centennial Petition for Arbitration with PRTC,* on behalf of Centennial Cellular Corporation, filed February 14, 1997, supplemental March 10, 1997.

Before the **Federal Communications Commission**, in *Re: In the Matter of Access Charge Reform*, CC Docket 96-262, on behalf of AT&T, filed January 29, 1997, reply February 14, 1997.

1996

Before the **New Jersey Board of Public Utilities**, in *Re: In the Matter of the Investigation Regarding Local Exchange Competition for Telecommunications Services*, TX95120631, on behalf of New Jersey Cable Television Association, filed on August 30, 1996, reply September 9, 1997, October 20, 1997, cross-examination September 12, 1996, December 20, 1996.

Before the **State Corporation Commission of the State of Kansas**, in *Re: In the Matter of a General Investigation Into Competition Within the Telecommunications Industry in the State of Kansas*, 190, 492-U 94-GIMT-478-GIT, on behalf of Kansas Cable Telecommunications Association, Inc., filed July 15, 1996, cross-examination August 14, 1996.

Before the **Federal Communications Commission**, in *Re: Price Caps Performance Review for Local Exchange Carriers*, CC Docket 94-1, on behalf of Ad Hoc Telecommunications Users Committee, filed July 12, 1996.

Before the **State Corporation Commission of the State of Kansas**, in *Re: In the Matter of a General Investigation Into Competition Within the Telecommunications Industry in the State of Kansas*, 190, 492-U 94-GIMT-478-GIT, on behalf of Kansas Cable Telecommunications Association, Inc., filed June 14, 1996, cross-examination August 14, 1996.

Before the **Federal Communications Commission**, in *Re: In the Matter of Implementation of the Local Competition Provisions of Telecommunications Act of 1996*, CC Docket 96-98, filed May 1996.

Before the **Federal Communications Commission**, in *Re: Puerto Rico Telephone Company (Tariff FCC No, 1)*,Transmittal No. 1, on behalf of Centennial Cellular Corp., filed April 29, 1996.

Before the **United States District Court for the Eastern District of Tennessee at Greeneville**, in *Re: Richard R. Land, Individually and d/b/a The Outer Shell, and on behalf of all others similarly situated, Plaintiffs, vs. United Telephone-Southeast, Inc., Defendant*, CIV 2-93-55, filed December 7, 1996.

1995

Before the **Federal Communications Commission**, in *Re: Bentleyville Telephone Company Petition and Waiver of Sections 63.54 and 63.55 of the Commission's Rules and Application for Authority to Construct and Operate, Cable Television Facilities in its Telephone Service Area*, W-P-C-6817, on behalf of the Helicon Group, L.P. d/b/a Helicon Cablevision, filed November 2, 1995.

Before the **US District Court for the Eastern District of Tennessee**, in *Re: Richard R. Land, Individually and d/b/a The Outer Shell, and on behalf of all others similarly situated, Plaintiffs, vs. United Telephone-Southeast, Inc., Defendant*, 2-93-55, Class Action, filed June 12, 1995.

Before the **Connecticut Department of Public Utility Control**, in *Re: Application of SNET Company for approval to trial video dial tone transport and switching*, 95-03-10, on behalf of New England Cable TV Association, filed May 8, 1995, cross-examination May 12, 1995.

Before **Canadian Radio-Television and Telecommunications Commission**, in *Re: CRTC Order in Council 1994-1689*, Public Notice CRTC 1994-130 (Information Highway), filed March 10, 1995.

Before the **Federal Communications Commission**, in *Re: GTE Hawaii's Section 214 Application to provide Video Dialtone in Honolulu, Hawaii*, W-P-C- 6958, on behalf of Hawaii Cable TV Association, filed January 17, 1995 (Reply to Amended Applications).

Before the **Federal Communications Commission**, in *Re: GTE Hawaii's Section 214 Application to provide Video Dialtone in Ventura County*, W-P-C 6957, on behalf of the California Cable TV Association, filed January 17, 1995 (Reply to Amended Applications).

Before the **Federal Communications Commission**, in *Re: GTE Florida's Section 214 Application to Provide Video Dialtone in the Pinellas County and Pasco County, Florida areas*, W-P-C 6956, on behalf of Florida Cable TV Association, filed January 17, 1995 (Reply to Amended Applications).

Before the **Federal Communications Commission**, in *Re: GTE Virginia's Section 214 Application to provide Video Dialtone in the Manassas, Virginia area*, W-P-C 6956, on behalf of Virginia Cable TV Association, filed January 17, 1995 (Reply to Amended Applications).

1994

Before the **Federal Communications Commission**, in *Re: NET's Section 214 Application to provide Video Dialtone in Rhode Island and Massachusetts*, W-P-C 6982, W-P-C 6983, on behalf of New England Cable TV Association, filed December 22, 1994 (Reply to Supp. Responses).

Before the **State Corporation Commission of the State of Kansas**, in *Re: General Investigation into Competition*, 190, 492-U 94-GIMT-478-GIT, on behalf of Kansas CATV Association, filed November 14, 1994, cross-examination December 1, 1994.

Before the **Federal Communication Commission**, in *Re: Carolina Telephone's Section 214 Application to provide Video Dialtone in areas of North Carolina*, W-P-C 6999, on behalf of North Carolina Cable TV Association, filed October 20, 1994, reply November 8, 1994.

Before the **Federal Communication Commission**, in *Re: NET's Section 214 Application to provide Video Dialtone in Rhode Island and Massachusetts*, W-P-C 6982, W-P-C 6983, on behalf of New England Cable TV Association, filed September 8, 1994, reply October 3, 1994.

Before the **California Public Utilities Commission**, in *Re: Petition of GTE-California to Eliminate the Preapproval Requirement for Fiber Beyond the Feeder*, I.87-11-033, on behalf of California Bankers Clearing House, County of LA, filed August 24, 1994.

Before the **Federal Communications Commission**, in *Re: BellSouth Telecommunications Inc., Section 214 Application to provide Video Dialtone in Chamblee, GA and Dekalb County, GA*, W-P-C 6977, on behalf of Georgia Cable TV Association, filed August 5, 1994.

Before the **Federal Communications Commission**, in *Re: Bell Atlantic Telephone Companies Section 214 Application to provide Video Dialtone within their Telephone Services Areas*, W-P-C 6966, on behalf of Mid Atlantic Cable Coalition, filed July 28, 1994, reply August 22, 1994.

Before the **Federal Communication Commission**, in *Re: GTE Hawaii's 214 Application to provide Video Dialtone in Honolulu, Hawaii*, W-P-C 6958, on behalf of Hawaii Cable TV Association, filed July 1, 1994, and July 29, 1994.

Before the **Federal Communication Commission**, in *Re: GTE California's Section 214 Application to provide Video Dialtone in Ventura County*, W-P-C 6957, on behalf of California Cable TV Association, filed July 1, 1994, and July 29, 1994.

Before the **Federal Communication Commission**, in *Re: GTE Florida's 214 Application to provide Video Dialtone in the Pinellas and Pasco County, Florida areas*, W-P-C 6956, on behalf of Florida Cable TV Association, filed July 1, 1994, and July 29, 1994.

Before the **Federal Communication Commission**, in *Re: GTE Virginia's 214 Application to provide Video Dialtone in the Manassas, Virginia area*, W-P-C 6955, on behalf of the Virginia Cable TV Association, filed July 1, 1994, and July 29, 1994.

Before the **Federal Communications Commission**, in *Re: US WEST's Section 214 Application to provide Video Dialtone in Boise, Idaho and Salt Lake City, Utah*, W-P-C 6944-45, before the Idaho and Utah Cable TV Association, filed May 31, 1994.

Before the **Federal Communication Commission**, in *Re: US WEST's Section 214 Application to provide Video Dialtone in Portland, OR; Minneapolis, St. Paul, MN; and Denver, CO*, W-P-C 6919-22, on behalf of Minnesota & Oregon Cable TV Association, filed March 28, 1994.

Before the **Federal Communications Commission**, in *Re: Ameritech's Section 214 Application to provide Video Dialtone within areas in Illinois, Indiana, Michigan, Ohio, and Wisconsin*, W-P-C-6926-30, on behalf of Great Lakes Cable Coalition, filed March 10, 1994, reply April 4, 1994.

Before the **Federal Communications Commission**, in *Re: Pacific Bell's Section 214 Application to provide Video Dialtone in Los Angeles, Orange County, San Diego, and Southern San Francisco Bay areas*, W-P-C-6913-16, on behalf of Comcast/Cablevision Inc., filed Feb. 11, 1994, reply March 11, 1994.

Before the **Federal Communications Commission**, in *Re: SNET's Section 214 Application to provide Video Dialtone in Connecticut*, W-P-C 6858, on behalf of New England Cable TV Association, filed January 20, 1994, reply February 23, 1994.

1993

Before the **Arkansas Public Service Commission**, in *Re: Earnings Review of Southwestern Bell Telephone Company*, 92-260-U, on behalf of Arkansas Press Association, filed September 2, 1993.

Before the **United States District Court for the Eastern District of Tennessee at Greenville**, in *Re: Cleo Stinnett, et al. Vs. BellSouth Telecommunications, Inc. d/b/a/ South Central Bell Telephone Company, Defendant*, Civil Action No 2-92-207, Class Action, cross-examination May 10, 1993, and Feb. 10, 1994.

Before the **Federal Communications Commission**, in *Re: NJ Bell's Section 214 Application to provide Video Dialtone service within Dover Township, and Ocean County, New Jersey*, W-P-C-6840, on behalf of New Jersey Cable TV Association, filed January 21, 1993.

1992

Before the **New Jersey Board of Regulatory Commissioners**, in *Re: NJ Bell Alternative Regulation*, T092030358, on behalf of NJ Cable TV Association, filed September 21, 1992.

Before the **New Hampshire Public Utilities Commission**, in *Re: Generic competition docket*, DR 90-002, on behalf of Office of the Consumer Advocate, filed May 1, 1992, reply July 10, 1992, Surrebuttal August 21, 1992.

Before the **New Jersey General assembly Transportation, Telecommunications, and Technology Committee**, *Concerning A-5063*, on behalf of NJ Cable TV Association, filed January 6, 1992.

1991

Before the **New Jersey Senate Transportation and Public Utilities Committee**, in *Re: Concerning Senate Bill S-3617*, on behalf of New Jersey Cable Television Association, filed December 10, 1991.

Before the **119th Ohio General Assembly Senate Select Committee on Telecommunications Infrastructure and Technology**, in *Re: Issues Surrounding Telecommunications Network Modernization*, on behalf of the Ohio Cable TV Association, filed March 7, 1991.

Before the **Tennessee Public Service Commission**, in *Re: Master Plan Development and TN Regulatory Reform Plan*, on behalf of TN Cable TV Association, filed February 20, 1991.

1990

Before the **Tennessee Public Service Commission**, in *Re: Earnings Investigation of South Central Bell,* 90-05953, on behalf of the TN Cable Television Association, filed September 28, 1990.

Before the **New York Public Service Commission**, in *Re: NYT Rates, 90-C-0191, on behalf of User Parties NY Clearing House Association*, filed July 13, 1990, Surrrebuttal July 30, 1990.

Before the **Louisiana Public Service Commission,** in *Re: South Central Bell Bidirectional Usage Rate Service*, U-18656, on behalf of Answerphone of New Orleans, Inc., Executive Services, Inc., King Telephone Answering Service, et al, filed January 11, 1990.

1989

Before the **Georgia Public Service Commission**, in *Re: Southern Bell Tariff Revision and Bidirectional Usage Rate Service*, 3896-U, on behalf of Atlanta Journal Const./Voice Information Services Company, Inc., GA Association of Telemessaging Services, Prodigy Services, Company, Telnet Communications, Corp., filed November 28, 1989.

Before the **New York State Public Service Commission**, in *Re: NYT Co. - Rate Moratorium Extension - Fifth Stage Filing*, 28961 Fifth Stage, on behalf of User Parties NY Clearing House Association Committee of Corporate Telecommunication Users, filed October 16, 1989.

Before the **Delaware Public Service Commission**, in *Re: Diamond State Telephone Co. Rate Case*, 86-20, on behalf of DE PSC, filed June 16, 1989.

Before the **Arizona Corporation Committee**, in *Re: General Rate Case*, 86-20, on behalf of Arizona Corporation Committee, filed March 6, 1989.

1988

Before **New York State Public Service Commission**, in *Re: NYT Rate Moratorium Extension*, 28961, on behalf of Capital Cities/ ABC, Inc., AMEX Co., CBS, Inc., NBC, Inc., filed December 23, 1988.

1989

Before **Rhode Island Public Utilities Commission**, in *Re: New England Telephone*, 1475, on behalf of RI Bankers Association, filed August 11, 1987, cross-examination August 21, 1987.

Before the **New York State Public Service Commission**, in *Re: General Rate Case Subject to Competition*, 29469, on behalf of AMEX Co., Capital Cities/ ABNC, Inc., NBC, Inc., filed April 17, 1987, cross-examination May 20, 1987.

Before the **Minnesota Public Utilities Commission**, in *Re: Northwestern Bell*, P-421/ M-86-508, on behalf of MN Bus. Utilities Users Counsel, filed February 10, 1987, cross-examination March 5, 1987.

1986

Before the **Kansas Public Utilities Commission**, in *Re: Southwestern Bell*, 127, 140-U, on behalf of Boeing Military, et al., filed August 15, 1986.

1985

Before the **Washington Utilities and Transportation Commission**, in *Re: Cost of Service Issues bearing on the Regulation of Telecommunications Company*, on behalf of US Department of Energy, filed November 18, 1985 (Reply Comments).

1984

Before the **Maine Public Utilities Commission**, in *Re: New England Telephone*, 83-213, on behalf of Staff, ME PUC, filed February 7, 1984, cross-examination March 16, 1984.

Before the **Kentucky Public Service Commission**, in *Re: South Central Bell*, U-4415, on behalf of MS PSC, filed January 24, 1984, cross-examination February 1984.

1983

Before the **Kentucky Public Service Commission**, in *Re: South Central Bell*, 8847, on behalf of KY PSC, filed November 28, 1983, cross-examination December 1983.

Before the **Florida Public Service Commission**, in *Re: Southern Bell Rate Case*, 820294-TP, on behalf of Florida Department of General Services, FL Ad Hoc Telecommunications Users, filed March 21, 1983, cross-examination May 5, 1983.

1982

Before the **Maine Public Utilities Commission**, in *Re: New England Telephone*, 82-142, on behalf of Staff, ME PUC, filed November 15, 1982, cross-examination December 9, 1982.

Before the **Kentucky Public Service Commission**, in *Re: South Central Bell*, 8467, on behalf of the Commonwealth of Kentucky, cross-examination August 26, 1982.