EXHIBIT 1

****REDACTED -- FOR PUBLIC DISCLOSURE****

An Economic Study of the Barriers Erected by Current Utility Pole Replacement Practices and of Policy Prescriptions to Better Align Incentives and Promote Broadband Expansion

Submitted in The Matter of Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment, Federal Communications Commission, WC Docket No. 17-84

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* This paper has been underwritten by Charter Communications, Inc. The opinions and viewpoints expressed are those of the authors alone.

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An Economic Study of the Barriers Erected by Current Utility Pole Replacement Practices and of Policy Prescriptions to Better Align Incentives and Promote Broadband Expansion

By:

Patricia D. Kravtin and Edward J. Lopez

I. INTRODUCTION

This white paper draws on widely established economic theory, coupled with extensive evidence on real-world pole attachments (including new field data provided by Charter Communications, Inc. ("Charter"), to demonstrate the presence of market distortions and economic inefficiencies in current practice regarding pole replacements, and to analyze the impact of proposed new cost-sharing rules around pole replacements.

This paper is founded on the basic principle that market competition promotes ***economic efficiency***—*i.e.*, that market competition serves the public interest and promotes overall societal welfare by incentivizing market participants to contain costs and to allocate resources to highest-valued uses.

As we have demonstrated in recent work, achieving full broadband expansion in the United States would generate between $83 billion and $314 billion of new economic gains to America's homes and small businesses.[1] These gains encompass the productive, commercial, educational, health and other benefits of connecting the more than 14 million currently unserved Americans.

[1] Edward J. Lopez & Patricia D. Kravtin, *Advancing Pole Attachment Policies to Accelerate National Broadband Buildout*, *Connect The Future* 7 (Nov. 2021), https://connectthefuture.com/wp-content/uploads/2021/11/Advancing-Pole-Attachment-Policies-To-Accelerate-National-Broadband-Buildout-National-Report.pdf ("*Advancing Pole Attachment Policies*").

Pole owners currently have the incentive and opportunity to use pole replacement charges to capture a portion of broadband providers' investment in deploying networks to unserved areas, at the expense of the public interest and societal welfare.

Drawing on our recent work, we identify the source of this inefficiency as what is known in economics as the ***holdup problem***, a form of inefficient concentration of ***market power*** that incentivizes pole owners to make decisions adverse to the public interest.[2] These incentives lead pole owners to impose added costs on third-party attachers, resulting in avoidable delays to broadband deployment and reducing incentives to invest in broadband expansion. This white paper demonstrates how the holdup problem manifests in real-world practice, and why the status quo harms economic efficiency to the detriment of the public interest and societal welfare as quantified by foregone consumer gains and downstream economic losses.

This white paper analyzes a number of corrective policy prescriptions to ameliorate the inefficiencies and social harms of the holdup problem, including standards for determining cost-causation and efficient allocation of pole replacement costs, thus facilitating mutually beneficial negotiations between pole owners and attachers as a means to expedite the deployment of broadband infrastructure. Drawing on standard economic theory including the field known as "mechanism design," which has been awarded multiple economics Nobel prizes, this paper focuses on the need for rules that induce honesty in bargaining[3] by instilling incentive compatibility among market participants[4]. The most efficient policy mechanism would: 1) elicit accurate information from pole owners regarding the true economic cost that pole replacements cause to their operations

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[2] Lopez & Kravtin, *Advancing Pole Attachment Policies* at 5, 7.
[3] *See e.g.*, S. Brams, R.J. Quarles, D.H. McElreath, M.E. Waldron, & D.E. Milstein, *Negotiation Games.* London: Routledge (2d ed. 2002), doi:https://doi.org/10.4324/9780203180426.
[4] *See e.g.*, O.E. Williamson, *The Mechanisms of Governance.* New York: Oxford University Press (1996); J. Tirole, *The Theory of Industrial Organization.* Cambridge, Mass.: The MIT Press (1993)

(net of offsetting benefits they receive from new investment in improved assets); and 2) hold attachers responsible for the objectively determined "cost causative" incremental costs of accommodating new attachments. By contrast, the status quo creates incentives for pole owners to strategically misreport or under-report private information and to use holdup leverage to impose full replacement costs on attachers—even in circumstances where the utility is the primary, and immediate, beneficiary of the gain from the upgraded pole plant (frequently referred to as the "betterment" gain from improved assets). An economically equitable cost-sharing rule for pole replacements would correct these inefficiencies, achieve fair outcomes for market participants (*i.e.*, sufficient compensation for the pole owner and cost-causative allocation to attachers), and reduce risk of holdup problems, which would advance the desired public policy objective of expanding broadband access.

The paper is organized into eight sections. Following this Introductory Section, Section II develops the underlying logic of the holdup problem and how it (in the pole attachment context) manifests as a menu of five mutually inclusive strategies that pole owners can utilize to capture a portion of attachers' investment. Section III summarizes our previous quantitative analysis of the social costs of delayed broadband deployment and presents new market-wide data and econometric results that demonstrate how pole owner holdup is bearing out in actual practice. Section IV shows why these status quo practices result in significant economic inefficiencies. Section V presents a comparative analysis of alternative reform proposals before the Federal Communications Commission ("Commission" or "FCC"). Section VI argues that the Commission's alternative proposal to allow pole owners to recover pole replacement costs through capital recovery mechanisms built into recurring rates (as opposed to non-recurring charges) is supportable as a matter of economic theory and in practice. Section VII explains the sufficient recovery that utilities would achieve under the proposed approach of allowing them to charge non-recurring pole replacement charges tied to the net value of the replaced poles. Finally, Section VIII demonstrates that neither theory nor evidence support claims that reform proposals under consideration by the Commission would adversely impact ratepayers.

II. CURRENT MARKET CONDITIONS CREATE OPPORTUNITIES FOR POLE OWNERS TO ENGAGE IN HOLDUP, INCLUDING THROUGH POLE REPLACEMENTS.

The current marketplace for broadband deployment is uneconomic at the initial point of pole attachments, due to inefficient and inequitable concentration of market power in the possession of pole owners, in the form of market power known as the holdup problem. This power manifests as various combinations of mutually inclusive pole owner strategies, each of which presents a specific need for correction.

In general, holdup leverage derives from incomplete contracts that empower one party to impede another party's ongoing investments. Holdup power arises in market situations whenever one party makes an investment that is ***<u>relation-specific</u>***, meaning that the returns on the investment depend on the investing party subsequently forming a transactional relationship with another market participant. Knowing that the investing party's investment is relation-specific, the non-investing party has an incentive to capture some of the investing party's downstream returns. In many market situations, the investing party can mitigate holdup power through certain contractual provisions (for example, reliance or duress), or through certain organizational changes (for example, merger). In those market situations, if market participants can work out private means of mitigating holdup, corrective regulation is not necessary to achieve equitable and efficient outcomes.[5] However, as a leading scholar in the field has summarized, "if such [mitigation] cannot

[5] B. Hermalin, *Holdup: Implications for Investment and Organization*, 52 Cal. Mgmt. Rev. 132-137 (2010).

be obtained or is less than 100%, the investing party will not invest optimally relative to the amount that maximizes total wealth or well-being”[6].

In the specific context of broadband deployment, such private mitigation of holdup between pole owners and attachers tends to fail for at least three reasons.

1) Pole owners uniquely control access to the post-investment transactional relationship, leaving attachers no practical “walk away” option other than to invest sub-optimally (*i.e.*, less build out and/or at greater cost and delay, such as by diverting underground or to less-efficient routes). Once attachers commit to relation-specific investment in broadband deployment, the downstream social returns on those investments depend uniquely, or at least substantially, on access to poles. Attachers cannot realistically seek out alternative pole networks and usually face significantly greater costs and delays with underground build options.

2) Pole owners often possess publicly disclosed information about the details of attachers’ pre-investments, especially those underwritten by public funds. Insofar as public funds represent a share of investment resources—through RDOF, ARPA, BEAD, and state, local, and tribal initiatives—attachers make relation-specific investments on behalf of taxpayers. These public-private investments are pre-assigned and announced publicly. In the case of RDOF, for example, the public announcements include dollar amounts, geographic areas of deployment, and required number of locations to connect.

3) Pole owners possess private, internally kept information about their underlying cost structures, which under current practices define the terms of the downstream transactional relationships. Pole owners have a distinct informational advantage regarding the characteristics of their existing pole plant and whether new attachment requests can be accommodated with or without pole replacement. Additionally, pole owners lack adequate incentives to contain pole replacement costs under the current practice of passing these costs entirely onto attachers.

These factors provide pole owners with strong incentives and leverage to impose excessive costs on new attachers (excessive relative to what would prevail in absence of this unique holdup leverage) and to shut down the bargaining process with “take or leave it” offers. Attachers’ lack of leverage makes it unlikely that private mitigation of pole owner holdup will consistently or reliably occur under market conditions.

[6] *Id.* at 133.

Regulatory intervention has the potential to mitigate the effects of holdup leverage in settings where market-based solutions are unavailable. A class of economic models from the field of "mechanism design," which is used to study bargaining under conditions of asymmetric information, is well-suited to evaluating regulatory corrections of pole owner holdup. The Commission itself relied on mechanism design theory during reforms to its spectrum allocation rules in the 1990s.[7] In the current context of pole attachments, bargaining mechanisms (rather than auction mechanisms, which were at issue in the Commission's prior proceedings) are at the heart of the Commission's call for solutions that align economic incentives.[8] From the perspective of mechanism design theory, the Commission's objectives could be advanced by adopting rules that (a) induce honesty in negotiations between pole owning utilities and attachers; and (b) compensate at an optimal level to incentivize investment in both pole plant and broadband facilities without creating adverse incentives to over- or under-invest in either.

Pole owners can exercise holdup leverage to impose excessive costs on communications attachers (either directly in the form of excessive pricing, or indirectly in the form of time delays); strategic misreporting or under-reporting of private information; and market foreclosure.[9] In the

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[7] A vast literature has developed around the subject of mechanism design as applied to radio frequency spectrum auctions. For accessible reviews, *see* R.P. McAffee & J. McMillan, *Analyzing the Airwaives Auction*, 10 J. Econ. Perspectives 159-175 (1996) and more recently A.E. Roth & R.W. Wilson, *How Market Design Emerged from Game Theory: A Mutual Interview*, 33 J. Econ. Perspectives 118-143 (2019).

[8] *See In re Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Second Further Notice of Proposed Rulemaking, WC Docket No. 17-84, FCC 22-20 ¶ 29 (rel. Mar. 18, 2022) ("*FNPRM*"), "We are particularly interested in additional information and analyses that expand the economic arguments made by utilities and attachers, including those addressing their respective economic incentives and how our rules do or do not effectively align them."

[9] As the authors have shown in previous work: "Through the make-ready process, pole owners have the opportunity and incentive to impose a number of direct and indirect cost and time related barriers on third party providers. . . ." *See* Edward J. Lopez & Patricia D. Kravtin, *Utility Pole Policy: A Cost-Effective Prescription for Achieving Full Broadband Access in North Carolina* 21 (Aug. 2021), https://nccta.com/report/ ("*Utility Pole Policy*"). The indirect strategies are specified in the strand of the mechanism design literature known as "raising rivals' costs." *See also* T.G. Krattenmaker & S.C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price*, 96 Yale L. J. 209-293 (Dec. 1986).; S.C. Salop & D.T. Scheffman, *Raising Rivals' Costs*, 73 Am. Econ. Rev. 267-271 (1983).

absence of external constraints, such as regulatory requirements, pole owners can manifest their holdup leverage by selecting one or more of five mutually inclusive strategies, each of which can enhance pole owners' interests at the expense of the public interest. These holdup strategies include the following:[10]

A. Direct Strategies Via Excessive Pricing.

1. Excessive upfront, non-recurring dollar costs imposed on communications attachers at the point of initial attachments through make-ready charges (including pole replacement charges).

2. Excessive recurring dollar costs imposed on communications attachers for continued, ongoing attachment through recurring rental rates.

B. Indirect Strategies That Raise Attachers' Costs, Thereby Negatively Affecting Pole Attachment Negotiations to the Detriment of Broadband Deployment.

3. Time delays imposed on communications attachers in the form of lengthy reviews, pre- and post-construction requirements, and slow timetables as part of the make-ready process.

4. Strategic misreporting or under-reporting by the utility of private, internally kept information pertaining to characteristics of their existing pole plant such as pole height, condition, and net salvage value (salvage minus cost of removal).

5. Market foreclosure, the ultimate extension of leverage over existing pole networks by vertically integrating into the downstream market as broadband communications suppliers.[11]

From the perspective of pole owners, therefore, these five various strategies are all interchangeable—each is capable of utilizing pole owner leverage to increase pole owner interests at the expense of the public interest. The interchangeability of these strategies explains why regulatory interventions that constrain one or more of these available options, while leaving the others free, can alter the *composition* of exercised holdup power but may not succeed at reducing

[10] For discussion of various holdup strategies in bilateral bargaining between suppliers whose coordination is necessary for the provision of an end-user consumer good, specifically discussion of various market foreclosure strategies, *see* Tirole (1993) at 193-198.

[11] T. R. Beard, G. S. Gord, L. J. Spiwak, & M. Stern, *The Law and Economics of Municipal Broadband*, 73 Fed. Commc'ns L. J. 1-98 (Apr. 2021).

the *total* extent of holdup. For instance, a given pole owner subject to federal pole attachment regulations may be constrained (by the possibility of facing a complaint) in its ability to impose strategic time delays when handling attachment requests, yet could still exercise its preferred degree of holdup power by more heavily relying on strategic use of private information. For example, as described in Section VI below, pole owners can (by withholding complete information about their pole plant and instead opting to rely on more-advantageous presumptive values) impose substantially greater dollar costs on attachers in recurring rental rates, even without use of any delay tactics. To the pole owner possessing holdup power, time delays and misreporting of private information are substitute strategies.

Pole owners possess varying degrees of holdup power depending on prevailing market and regulatory circumstances in their area. This explains why pole owners subject to the regulated rate formulas and application processing timelines (such as investor-owned utilities) would rely relatively heavily on the other non-regulated strategies, whereas pole owners not subject to those requirements (such as electric cooperatives in jurisdictions where pole attachments are governed solely by private contractual agreements) may pursue a different mix of strategies.

When pole owners adopt holdup strategies in the specific context of broadband attachments, they raise societal costs in addition to the costs they impose directly on attachers. As detailed in Section III below, delayed broadband expansion costs Americans between $491 million and $1.86 billion of foregone economic gains per month, corresponding to potential lifetime gains of $83 billion to $314 billion. This harm to the public interest provides a basis for regulatory correction of the various holdup strategies that pole owners can choose to exercise. Evidence from the field reported in Section III below also suggests that current regulations that constrain only some of these strategies—such as strategic delay—are not overall optimal in achieving incentive compatibility in the absence of regulations addressing the pole owner's ultimate holdup power over the attacher's investment outlay through excessive pole replacement costs.

III. POLE REPLACEMENT COSTS ARE A MAJOR BARRIER TO BROADBAND DEPLOYMENT AS POLE OWNERS ACT ON THEIR ADVERSE INCENTIVES TO HOLD UP ENTRY BY THIRD-PARTY BROADBAND ATTACHERS.

In this section, we utilize standard economic methods to calculate economic estimates of the social gains of full broadband expansion to currently unserved areas. Using the same methodology, we also calculate the social costs per month of delayed expansion. These calculations of economic gains and delay costs draw directly on our recent studies conducted at the national and state levels.[12] In addition, this section presents new field evidence and econometric estimates demonstrating actual consequences of strategic holdup in prevailing market practice.

A. Economic Gains of Achieving Full Broadband Expansion, and Costs of Delayed Expansion.

To calculate the social gains of closing the digital divide, standard economic analysis utilizes the concept known as *willingness-to-pay*. Widely used introductory economics textbooks define willingness-to-pay as "the maximum price a consumer will pay for a good or service".[13] Similarly, a leading law-and-economics treatise states, "the economic value of something is how much someone is willing to pay for it."[14] Willingness-to-pay has explicit origins extending back to at least Alfred Marshall's classic 1890 textbook, and it has been a fixture in the analysis of consumer value ever since.

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[12] *See* Lopez & Kravtin, *Advancing Pole Attachment Policies* and Lopez & Kravtin, *Utility Pole Policy*.
[13] D. Mateer & L. Coppock, *Principles of Microeconomics* at 157 (3rd ed; New York: W. W. Norton and Company 2021).
[14] R.A. Posner, *Economic Analysis of Law* at 12 (4th ed.; New York: Little Brown and Company 1992).

In the broadband space, economists have researched various ways to quantify willingness-to-pay, and this white paper presents estimates of overall economic gain as a measurement of how important expanding broadband access would be to overall societal welfare. As described in our initial paper:[15]

> To estimate the household's [willingness-to-pay], a straightforward approach would be to simply ask them: "how much are you willing to pay to improve the speed of your access from mobile 5/1 Mbps to fixed 1000/100 Mbps?" A major limitation of this approach is that survey responses to unconstrained questions rarely reflect what responders would do in actual practice. Furthermore, real-world choices involve many different options that consumers select from, including a large variety of options for pricing, speed, data caps, latency, and more. Households in unserved areas have fewer options, which is a primary focus of this paper, but for purposes of estimating willingness to pay, part of the challenge to the analysis is how best to incorporate the wide variety of options. Furthermore, households also vary greatly in their usage rates (GB/month).
>
> Recent economics literature has provided two complementary approaches to empirically grapple with these measurement problems. One method is to gather granular data on broadband usage under a variety of different observed conditions, and from that data extrapolate a map of consumer demand across a range of broadband speeds and options. This is the approach taken in two studies by economists Aviv Nevo, John L. Turner and Jonathan W. Williams (Nevo et al. 2016, 2015). Another method, taken by economists Yu-Hsin Liu, Jeffrey Prince, and Scott Wallsten, is to combine survey analysis with "discrete choice experiments" designed to elicit realistic responses, and to then build the demand curve with laboratory instead of observational data (Liu et al. 2018). Liu et al. discuss various approaches to estimating broadband demand. The major advantage of their approach for our purposes is the ability to estimate WTP at various speed thresholds, which available observational studies cannot do. Table 1 below presents our main findings, which we organize along three speed thresholds that are comparable to existing and planned broadband service plan offerings at the time of this writing.[16]

Appendix B of the above-quoted paper provides complete details and step-by-step explanations of the methodology, including alternative assumptions considered. Utilizing that same methodology in a follow-up paper, the authors present estimates of the overall aggregate

[15] Lopez & Kravtin, *Utility Pole Policy*.
[16] Lopez & Kravtin, *Utility Pole Policy* at 14.

economic gains, broken down for three speed and latency thresholds under three sets of alternative modeling assumptions. The information summarized in the table below suggests that the economic gains to expanding broadband availability are substantial.

The methodology was further enhanced in our subsequent study expanding the analysis to unserved locations nationwide and accounting for an additional range of possibilities regarding unserved populations at varying broadband service quality levels (*i.e.*, speed, and latency). In the follow-up paper, we calculated willingness-to-pay estimates at thresholds of 150/25 Mbps with less than 10 ms latency, up to 1000/100 Mbps at less than 10 ms. All calculations are net present value over 25 years assuming a 5% discount rate. As Table III.A.1 reports, if all currently unserved RDOF locations are connected at the highest threshold, an estimated $98.07 billion of economic gains would result. If all currently unserved locations as estimated by the FCC become connected, we estimate that would create $104.87 billion in economic gains. And if all 42 million unserved population as estimated by BroadbandNow were connected, a resulting $313.92 billion in economic gains would ensue.[17]

[17] *See* Lopez & Kravtin, *Advancing Pole Attachment Policies* at 7–8.

Table III.A.1: Economic Gains if all Currently Unserved Population Achieves Broadband Access

	All Unserved RDOF Locations Gain Access	*All FCC Unserved Population Gains Access*	*All Broadband Now Unserved Population Gains Access*
150/25 Mbps at <10 Ms	$ 82.96b	$88.71b	$265.56b
300/100 Mbps at <10 Ms	$91.90b	$98.27b	$294.17b
1000/100 Mbps at <10 Ms	$98.07b	$104.87b	$313.92b

Note: Table entries equal net present value of annualized gains over 25 years at 5% discount rate.

Focusing on Table 2 below, this same computation methodology demonstrates the foregone economic gains, known in economics as deadweight loss ("DWL"), due to delayed broadband expansion (to which the pole owner holdup problem contributes). As our previous analysis demonstrated, the identified losses in the form of potential foregone consumer value welfare from the delay or unavailability in broadband access, are also quite substantial. As shown in Table 2, aggregated across the fifty states, we compute the magnitude of potential losses nationwide to be in the range of $491 million to $1.86 billion per month of delay.

Table III.A.2: Monthly Foregone Economic Gains (Deadweight Losses) of Delayed Access

	All RDOF Locations Gain Access	*All FCC Estimated Population Gains Access*	*All BroadbandNow Estimated Population Gains Access*
150/25 Mbps at <10 Ms	$0.491b	$0.524b	$1.57b
300/100 Mbps at <10 Ms	$0.543b	$0.581b	$1.74b
1000/100 Mbps at <10 Ms	$0.579b	$0.620b	$1.86b

Note: Table entries are monthly aggregate foregone economic gains.

The national and state-specific estimates in these studies are conservative, because they do not reflect higher broadband demand since the onset of the Covid-19 pandemic or the increases in broadband speed being deployed under existing expansion plans. True economic gains nationwide of full broadband expansion likely exceed the estimates shown in Table III.A.1 above.

The magnitude of total consumer value realized from full broadband expansion underscores the potential impact of the public's return on its broadband investment. Such returns would be more likely and quicker if policies aimed at reducing pole owner holdup power were implemented, facilitating the achievement of the full range of productive, commercial, educational, health, civic, and other social benefits widely associated with full broadband expansion.

B. Statistical Findings on the Prevalence and Evidence of Pole Owner Holdup in the Current Broadband Ecosystem.

Charter has collected detailed information on nearly 600 of its pole applications across 35 states since January 2020.[18] Almost half of these applications for which Charter has collected data

[18] The dataset was assembled by Charter's Field Operations teams during the spring of 2022. The goal in assembling the dataset was to achieve a representative sample of Charter's recent experience rather than a comprehensive view of all projects. The specific criteria used for sampling were: ****BEGIN**

are from RDOF builds. In the subsections below, we analyze and report on how these data demonstrate the prevalence and severity of pole owner holdup leverage.

Among the paper's key findings: In Charter's recent experience, replacement charges paid to pole owners account for roughly ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** of the construction costs of an average new deployment project. Pole owners are demanding, on average, that ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****poles to be replaced. Recent experience also shows how hard it can be to predict pole replacements in advance— ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****. And while the reasons provided for replacement requirements do vary, by far the most common reason is "mid-span clearance," with "red-tagged" poles (i.e., poles already identified by the utility as requiring replacement) ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****. As for height advantage, ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****. Finally, Charter is facing long timetables and delays to complete projects.

1. <u>High Variability and Unpredictable Nature of Pole Replacement Demands</u>

Table II.B.1 below summarizes information from as many as ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** recent applications regarding the percent of poles requiring replacement. The information is broken down by build type, namely RDOF projects versus those financed with private capital. On its recent non-RDOF projects, pole owners

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CONFIDENTIAL** [redacted] ****END CONFIDENTIAL****.

have required Charter to replace ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** of the number of poles to which Charter initially applies for attachment; on RDOF projects, the equivalent percentage equals ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****. Overall, combining both types of projects, pole owners demand pole replacement for ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** of poles to which Charter applies for access.

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The columns in Table III.B.1 labeled “Std. Dev.” and “Coef. Var.” help to illustrate just how unpredictable and highly variable these pole owner-imposed requirements are. As the table shows, the standard deviations of pole replacement requirements are relatively high compared to the means. The statistical concept (known as “coefficient of variation”) is a measure of dispersion within a sample, or simply the variability of a data series about its mean. In non-RDOF as well as RDOF builds, the coefficient of variation is high, ranging from ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****.

To visualize the high variability and unpredictable nature of pole owner replacement demands, Figure III.B.2 below presents a simple histogram visualization. On the left of the histogram are graphed all pole applications for which less than 15% of poles require replacement.

On the right are applications with greater than 15%. The naked eye is able pick up the "all over the place" nature of pole replacement percentages, in a way that would not be as obvious without this split at the 15% mark. What stands out is that ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****. This high variability makes it difficult for Charter to predict and plan for pole replacement demands while working to deploy broadband.

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2. Percentage of Charter's Broadband Deployment Costs Absorbed by Pole Replacement Charges Paid to Pole Owners

One consequence of holdup can be detected in high and variable dollar costs imposed by pole owners at the point of initial attachment. Evidence of this is borne out in the dataset. Through data that tracks Charter's broadband deployment costs per mile closely, we have the capability to calculate the percentage of each project's costs that get absorbed by pole replacement charges. In addition, since Charter is deploying broadband under a variety of project sizes and geographic settings, we can also use different modeling assumptions to gain a rich understanding of the attacher's pole replacement costs under varying circumstances. Furthermore, we can also compare actual costs incurred in the field with Charter's anticipated costs for those same projects.

The calculations in Table III.B.2 represent the average pole replacement costs that Charter has incurred per pole application as a percentage of Charter's projected aerial build costs per project.[19] Under moderately conservative to more conservative sampling assumptions, which incorporate a variety of Charter's project sizes and geographic settings, pole replacement charges have been accounting for between ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** percent of Charter's aerial construction costs on the reviewed projects.

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3. <u>Frequency of Different Reasons for Requiring Pole Replacements</u>

The dataset collected by Charter regarding its recent broadband deployment projects also includes qualitative information containing the primary reason for pole replacement cited by the pole owner in response to each application. We emphasize that the unit of observation in this

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[19] ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****. To ensure consistency across projects, actual (field-collected) pole replacement costs were compared to projected aerial construction expenses based upon historical data..

[20] There is substantial variety in the size and location of Charter's recent broadband expansion projects. As a consequence of this variation, the table presents the share of pole replacement charges under alternative ways of defining what constitutes an "average" project for purposes of extrapolating, from the sample, conclusions regarding the overall profile of Charter's construction costs. We conducted an outlier analysis that was used to define the 6 alternative scenarios reported in the table. The "Moderately Conservative" and "More Conservative" rows of the table remove sequentially greater numbers of outliers. Thus, the table provides a range of calculations based on the varying ways to define what is the "average" project. The number of outliers removed can be seen from the column labeled "N" for number of observations.

dataset is at the project level, not at the level of individual poles.[21] Table III.B.4 below summarizes the frequency of pole replacements per project. Notice that the vast majority of cases show "Mid-Span Clearance" as the stated reason for pole replacement, making up ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** total responses in the dataset. By comparison, "Red-Tagged" ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** cases reporting reasons. In the moderate range of this series, "Loading" and "Capacity" are cited each ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** of the time.

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4. Average Pole Replacement Charges Per Project by Pole Owner Type

In Table III.B.5, we summarize how pole replacement charges per project can vary by pole owner type. Among the nearly ****BEGIN CONFIDENTIAL**** [redacted] ****END**

[21] The data were collected at the project level rather than the individual pole level for reasons of practical feasibility. Charter's ongoing broadband expansion projects number in the hundreds nationwide and involve thousands of individual poles. Collecting data at the individual pole level would be practically infeasible.

CONFIDENTIAL** pole attachment applications in the dataset, ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****of them report both the project total pole replacement charges and the pole owner type. These data show that although many costly pole replacement demands are driven by pole owners outside of the Commission's pole attachment regime,[22] such as municipal pole owners, electric cooperatives, and public utility districts, investor-owned utilities also play a significant role in driving pole replacement costs.

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5. Height Increments Pole Owners Acquire When Replacing Poles

The dataset also contains information about the heights of old poles being replaced and new poles. Figure III.B.6 provides a visual understanding of the height differences between old, replaced poles and new poles. On the left, the ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** of old poles are ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** feet, with the greatest number of those being [redacted]. ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** of replaced poles are ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****. On the other

[22] Even for pole owners outside of the Commission's jurisdiction, many of those are subject to state jurisdictional authority that looks to the FCC rules as guidance.

hand, the right side of the figure shows that ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****.

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In Tables III.B.6.A and B, we summarize the height increments that pole owners have been acquiring in Charter's recent broadband builds. On average, new poles exceed old poles by ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** feet. Since pole heights are uniformly denominated in increments of five feet, the table also reports the frequency of applications in which the majority of replaced poles gain 5 feet, 10 feet, and over 10 feet. Of all the applications in the dataset, ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL**** of them feature no gain in pole height. Meanwhile, ****BEGIN CONFIDENTIAL**** [redacted] ****END CONFIDENTIAL****.

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In addition, Table III.B.6.B cross-tabulates the frequency of height increments against the replaced pole height. This table shows that **BEGIN CONFIDENTIAL** [redacted] **END CONFIDENTIAL** cases of height increases are acquired in cases where the replaced pole height is **BEGIN CONFIDENTIAL** [redacted] **END CONFIDENTIAL**. By far the most common scenario is when **BEGIN CONFIDENTIAL** [redacted] **END CONFIDENTIAL**.

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6. Number of Days to Complete Pole Attachment Projects, by Stages, Weighted by Size of Project

Finally, the dataset contains information that can show how long projects are taking. Since larger projects are naturally expected to take longer, Table III.B.7 weights the durations by the number of poles in an application. For example, if a project has 8 poles and takes 80 days to complete, the table will report (80 / 8) = 10 *days per pole*. However, a project that is twice as big but also takes 80 days to complete would report as (80 / 16) = 5 *days per pole*. Since 10 is twice as big as 5, the table entries enable comparisons of small and big projects. As the table reflects, the data show that investor-owned utilities take longer to complete make-ready and other pole attachment tasks than cooperative or municipal pole owners.

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IV. THE STATUS QUO PRACTICE OF CHARGING ATTACHERS THE ENTIRE COST OF A NEW REPLACEMENT POLE AS DETERMINED BY THE POLE OWNER—IN ADDITION TO A RECURRING POLE RATE—RESULTS IN SIGNIFICANT ECONOMIC INEFFICIENCIES AND SUBSTANTIAL FOREGONE CONSUMER GAIN.

A. The Common Exercises of Holdup Power.

As described in the conceptual framework underlying the holdup problem,[23] pole owners can exercise holdup using combinations of a number of mutually inclusive strategies. Over the past several decades, the Commission has made strides in mitigating pole owners' ability to exercise holdup power using these available strategies.

However, pole owners' ability to deny access to attachers due to a purported lack of capacity, to control the decision about whether a pole replacement takes place, and to charge attachers for the entire cost of a new replacement pole, remain as areas where pole owners have been able to take advantage of the gap in the Commission's existing regulations. The status quo, under which new attachers are required to reimburse utilities for the entire cost of replacing poles as a condition of attachment,[24] is economically inefficient, at odds with the economic reality of utility pole replacement requirements, and impedes broadband development.

B. Pole Owners Can Leverage Asymmetric Information to Impose Holdup Power.

Current rules require a pole owner to comply with its engineering and safety standards in deciding whether to grant or deny access. However, because a utility is permitted to rely on its *internal* engineering and safety standards in making those decisions, utilities' ability to set those

[23] *See* II for expanded discussion.

[24] With the limited exception of poles already found to be out of compliance with current safety or construction standards or explicitly "red tagged" by the pole owner and specifically scheduled for replacement (a process the attacher has no information to affirm at its end).

standards creates a strategic opportunity for pole owners to hold up access by setting and applying standards in excess of industry norms and minimums.

Opportunities within the status quo for a pole owner to strategically exercise holdup power include the incentive and ability to:

- overstate the need for pole replacement (versus remediation) to accommodate a new attachment;
- overattribute the reason for a pole replacement to a new attachment, as opposed to the utility's own core need to replace the pole proactively, whether as part of a hardening program, or as part of its normal life cycle replacement program; and
- misreport or underreport the number of red-tagged poles or poles out of compliance prior to the attachment request.

The Status Quo of Pole Replacements. Absent incentives to exercise holdup power, replacement of the older (and typically undersized) poles would be expected to be occurring as part of a utility's normal capital planning process, and at a level commensurate with the useful life assumptions relied on by the utility for purposes of supporting the depreciation allowances it uses to set existing electricity rates and recurring pole attachment rental rates. The purpose of depreciation in general, as applied to any fixed assets of a utility, is to capture the expectation that depreciated assets will be replaced at or near the end of their useful life, using funds generated by annual depreciation expenses that are allowed to accumulate on the utility's books, at an accrual rate specifically tied to the average useful life of the asset group. Poles are no exception to this general purpose of depreciation, and it underlies why utilities treat depreciation as an expense that they recover from attachers and ratepayers.

The current practice of charging new attachers the full cost of a replacement pole as a condition of their attachment is inconsistent with the classic treatment of depreciation within utility accounting. It erroneously implies that depreciation allowances enjoyed by the utility for ratemaking purposes (and reflected in recurring pole rates) are only sufficient to provide a source of funding for utility-initiated pole replacements (such as those poles specifically identified as "red tagged" or previously targeted by utility for replacement failing inspection). However, a utility's rates for both electric customers and attachers are set, pursuant to utility group depreciation accounting practices, at levels designed to provide the utility with capital recovery (through both 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.

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. A new attacher's request to attach to a pole changes only the timing of the pole's eventual replacement. In other words, the replacement of poles is an inevitable or unavoidable cost to a utility that will occur in the normal course of utility operations, independent of the existence of the third-party attacher, and a utility is reimbursed for that cost through depreciation allowances in both its electric distribution rates and its recurring pole rental rates charged to attachers in accordance with identified finite useful life assumptions.

Utility poles invariably need to be replaced—whether due to failure, destruction, storm hardening, or routine retirements and capital replacement activities. This is especially true in recent years as utilities face additional pressures and mandates to upgrade and harden their existing pole networks to provide more reliable power for their electric customers.[25] As part of utility

[25] *See, e.g.*, *Application of the Connecticut Light and Power Company d/b/a Eversource Energy to Amend its Rate Schedules*, Docket No. 17-10-46, Pre-filed testimony of Kenneth B. Bowes at 38 (Conn. Pub. Utils. Regul. Auth. Nov. 22, 2017) (stating that in addition to replacing shorter poles with stronger taller poles, the company is installing "cross-arms made of stronger, man-made composite materials rather than wood");

hardening objectives, utility best practices increasingly call for the replacement, rather than reinforcement or restoration, of potentially undersized poles showing signs of deterioration or decay in order to better protect against future outages.[26]

Utilities have the unilateral opportunity to set the replacement costs for poles, giving them the incentive and opportunity to force attachers to bear more than their economically efficient, fair share of the costs of pole replacements. Such actions result in a market failure, as utilities shift a disproportionate cost recovery onto attachers. Pole owners fail to take into account the harms of this cost-shifting to the public interest, including their own customers who would otherwise benefit from broadband expansion, and the loss of positive welfare gains resulting from broadband expansion to their customers' communities.[27]

Application of the Connecticut Light and Power Company for Approval of its System Resiliency Plan — Expanded Plan, Docket No. 12-07-06RE01, Decision at 2, 7, 8 (Conn. Pub. Utils. Regul. Auth. June 3, 2015); *In re Petition of Public Service Electric and Gas Co. for Approval of The Second Energy Strong Program (Energy Strong II)*, Docket Nos. EO18060629 and GO18060630, Direct Testimony of Edward F. Gray, Attachment 2 at 23, 25 (N.J. Bd. Pub. Utils. June 8, 2018) (outlining, as part of larger safety, reliability, and resiliency efforts, a subprogram that would replace approximately 7,100 poles along 450 miles of circuits, specifically targeting "smaller diameter poles that are greater than 30 years of age" and other "aged facilities"), https://nj.pseg.com/aboutpseg/regulatorypage/-/media/6DCDE89354844F93975C0DA2D98825C6.ashx; *In re Filing by Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company of a Grid Modernization Business Plan*, Case Nos. 16-481-EL-UNC et al., Stipulation and Recommendation at 2 (Ohio Pub. Utils. Comm'n Nov. 9, 2018) ("…the [s]tipulation provides for electric distribution grid modernization initiatives [that will improve system reliability, enable faster restoration of services after outages, improve voltage conditions on the distribution system, allow customers to make more informed choices about energy usage, facilitate access to customer data by authorized competitive retail electric service providers, and better enable the Companies to make future electric distribution grid modernization investments"); *see also In re Proceeding to Examine Options Pertaining to Pole Viability, Pole Attachments, and all Areas that may Affect the Reliability and Sustainability of Louisiana's Electric Utility Distribution Grid*, Docket No. R-35394, RFP 21-32 Louisiana Public Service Commission Request for Proposals (La. Pub. Serv. Comm'n Dec. 14, 2021).(seeking proposals to upgrade the resiliency of the Louisiana electrical grid).

[26] *See Public Service of New Hampshire d/b/a Eversource Energy*, Docket No. DE 21-020, Response to New Hampshire Public Utilities Commission Staff, Request No. TS-1-001 (witness Lee G. Lajoie) (N.H. Pub. Utils. Comm'n May 28, 2021) ("Response to New Hampshire Public Utilities Commission Staff, Request No. TS-1-001") ("Replacing a pole which has failed in service can preempt pole failure, thereby enhancing public safety by keeping overhead lines and equipment in place, enhance reliability by preventing a potential outage, and decrease the need for an emergency replacement which is generally more expensive than planned work performed during normal business hours.")

[27] *See* Lopez & Kravtin, *Advancing Pole Attachment Policies* at 4-6.

C. Pole Owners Receive Primary Direct Benefit from Pole Replacements.

The pole owner's imposition of the entire cost of replacing a pole on a new attacher is based on the false assumption that a utility receives no benefit from the replacement of a pole.[28] As articulated in Kravtin 2020, the economic reality, however, is that when a new attacher replaces a pole, red-tagged or non-red-tagged alike, the primary direct benefit is to the utility—it immediately gains an improved, hardened pole facility with joint economic value to both the utility and the attacher.[29]

Moreover, the overwhelming share of the betterment value inherent in the replacement pole accrues to the utility, who has the most to gain from the replaced pole. Very little of that value flows to the attacher, who obtains no additional rights of ownership, control, preferential access, or improved terms and conditions pertaining to the replaced pole. Indeed, once attached, the new attacher immediately assumes the same role as any other lessee and begins paying the fully allocated rental rate charged to all other attaching entities. At best, the new attacher can be said to be the direct beneficiary of the earlier than otherwise naturally occurring upgrades and replacements of the utility's pole plant. In limited cases, the new attacher can also be said to be the beneficiary of any incremental improvements in pole height/strength over what the utility

[28] *See, e.g., In re Electronic Investigation of the Proposed Pole Attachment Tariffs of Rural Electric Cooperative Corporations*, Case No. 2022-00105, Kentucky Power, Response to Kentucky Broadband and Cable Associations' ("KBCA's") Initial Request For Information 1.6 (Ky. Pub. Serv. Comm'n May 4, 2022) ("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.").

[29] *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: Long Overdue, But Particularly Critical Now in Light of the Pressing Need to Close the Digital Divide* at 16-17, 37-38 (Sept. 2, 2020) ("Kravtin 2020"); *see also* Response to New Hampshire Public Utilities Commission Staff, Request No, TS-1-001 (witness Lee G. Lajoie) ("The sooner a reliability project is completed, the sooner its intended purpose of improving reliability takes effect.")

would have installed "but for" the attachment. Otherwise, the new attacher's betterment is limited to the same incidental benefits that accrue to any other attacher to the shared pole facility.

The post-replacement condition of the pole owner, conversely, is entirely different. As laid out in Kravtin 2020,[30] "early" pole replacements confer a number of substantial direct, exclusively realized, and immediately incremental benefits to the pole owner. These come in multiple forms:

- Operational/functional benefits of the replacement pole, *i.e.*, additional height, strength, and resiliency. These features enhance the productive capacity of the plant to meet higher service quality, safety, and performance standards, as well as other regulatory mandates applicable to the utility's core business, such as the achievement of pole hardening goals.

- At a minimum, the pole owner enjoys immediate additional capacity of 4 feet, since poles come in standard 5 feet increments, and attachments typically require only 1 foot of space, inclusive of required clearances. Recent data from Charter show that in at least half of Charter's projects, pole owners have replaced older poles with new ones that are *more* than 5 feet taller than the replaced pole, adding height, capacity, and strength well beyond what is needed to accommodate the new attachment.

- Operational cost savings in the form of lower maintenance and operating expense inherent to added 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 materials.

- Reduced liability exposure in connection with failed poles creating or exacerbating potential hazards (*e.g.*, in the case of wildfires or storms) and especially where remedial or replacement work may have been deferred.

- Freed up capital reserves that would otherwise been needed to fund the future planned plant upgrades and normal cyclical replacement programs cost needs, including the future replacement of the replaced pole had it remained in service and left to age and obsolesce.

- Strategic benefits including the ability to offer additional service offerings and enhancements of its own, such as new smart-grid applications, and the utility's own broadband or fiber service (including internal communications functionalities).

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[30] *See* Kravtin 2020 at 37-38.

- Enhanced rental opportunities from the increased capacity on the replacement pole, including rents paid immediately by the new attacher, as well as any subsequent attachers that can be accommodated at a later date.

- Other enhanced revenue expansion opportunities related to the utility's own new smart-grid offerings and broadband or fiber services.

- And enjoyment of additional tax savings from the accelerated depreciation and/or interest deductions as allowed under the tax code for new asset purchases.[31]

D. The Economic Inefficiencies of the Status Quo.

Requiring an attacher to pay the entire cost to replace a pole without acknowledging the betterment value to the utility and/or the capital recovery built into the utility's depreciation allowances is contrary to the economic principles of cost causation and economic efficiency, and it leads to inefficient outcomes.[32]

This status quo distorts efforts to achieve widespread broadband deployment, resulting in substantial welfare losses. These distortions emanate from the effective subsidy by broadband providers to the capital expenses of the pole owner. Economic theory maintains that current practices reduce incentives for broadband providers to invest in broadband deployment, given that the investment amount required is suboptimal and the broadband provider's capital budgeting dollars are limited. Current practices also create delays in broadband deployment due to pole owner exercise of holdup power, resulting in foregone economic gains.[33] Current practices can also result in increased rates for broadband customers insofar as broadband providers seek to

[31] *See* IRS Publication 946 at 106 (2022), establishing a recovery period for Electric Utility Transmission and Distribution Plant of 20 years under the Modified Accelerated Cost Recovery System ("MACRS") as compared to a Class Life straight line (ADS) recovery period of 30 years. By comparison, regulatory depreciation lives for electric utility poles are typically between 35 and 50 years. *See also*, Tracey M. Roberts, *Stranded Assets and Efficient Pricing for Regulated Utilities: A Federal Tax Solution*, 11 Colum. J. Tax L. 1, 23 (2019) ("As a result of the timing differences in tax and financial accounting rules, the utility enjoys tax savings from accelerated tax depreciation.")
[32] *See* Kravtin 2020 at 11, 15-17.
[33] *See* Lopez & Kravtin, *Advancing Pole Attachment Policies* at 4-6.

recover the resulting added costs for project redesigns and deployment delays, and delays in or loss of economic multiplier effects associated with broadband.[34]

Current practices also provide utilities added incentive to misreport and/or under-report red-tagged poles or poles failed in service, as well as to defer normal life cycle replacement of their pole plant. Doing so allows them to shift an even greater proportion of the costs of their normal life cycle utility pole replacement onto attachers.

Pole owners also have both the opportunity and incentive to exploit their informational advantage as to which poles are identified (or likely candidates) for red-tagging or up for inspection in the current inspection cycle. 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" (subject to cost sharing requirements under current Commission rules) or non-red-tagged (exempted from cost sharing requirements) actually matches to current utility replacement best practices, or whether the utility's classification of the pole is consistent with the utility's own hardening objectives.[9] Available data shows that utilities have differing and *ad hoc* approaches for designating red-tagged poles, with no objective mechanism for attachers to question or verify the designation.[35]

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[34] *See* Kravtin 2020 at 25-26.

[35] *See*, Before the Commonwealth of Kentucky Public Service Commission, *In re Electronic Investigation of the Proposed Pole Attachment Tariffs of Rural Electric Cooperative Corporations*, Case Nos. 2022-00105 (Investor Owned Utilities), 2022-00106 (Rural Electric Coop. Corporations), 2022-00107 (Rural Local Exchange Carriers), 2022-00108 (Incumbent Local Exchange Carriers) ("*Kentucky 2022 Pole Amendment Tariff Investigations*"); *e.g.*, *Id.* Case No. 2022-00105, LG&E and KU, Response to KBCA's Initial Request For Information 1-3 (May 5, 2022) (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"); *Id.* Case No. 2022-00106, Jackson Energy, Response to KBCA's Initial Request For Information 1-8 (May 5, 2022) ("If there is any question . . . [the attacher] can contact Jackson Energy Cooperative and have a Jackson Energy employee check it."); *Id.* Case No. 2022-00106, Jackson Purchase Energy, Response to KBCA's Initial Request For Information 1-8 (May 5, 2022) (Red-tagged poles that have been visited by technicians will have red ribbons. Otherwise, the attacher will have to obtain verification from Jackson Purchase.); *Id.* Case No. 2022-00106, 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

An example illustrates this point. In a recent ratemaking proceeding in Kentucky, pole owners provided information in discovery regarding their classification of poles.[36] The data show that, in many cases, the number of poles that pole owners identified as red-tagged are inexplicably low relative to the replacement rates implicit in the useful life assumptions used by those utilities in their depreciation analyses. In other words, the utilities' reported depreciation schedules suggest the utilities should have far more red-tagged poles than they are reporting. As illustrated in Table IV.D.1, the Kentucky data showed reported red-tag rates that are, in many instances, fractions of the expected utility replacement rates.

are questions about whether a pole is red-tagged."); *Id.* Case No. 2022-00108, Cincinnati Bell Response to KBCA's Initial Request For Information 1-3 (May 5, 2022) (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.").

[36] *See Kentucky 2022 Pole Amendment Tariff Investigations*, Case No. 2022-00105, Kentucky Power Company Response to Commission's Initial Request For Information 1-9 and KBCA Initial Request For Information 1-3, 1-4; *Id.* Case No. 2022-00106, Blue Grass Energy Cooperative, Corp. Response to Commission's Initial Request For Information 1-8 and KBCA Initial Request For Information 1-6, 1-7 (May 5, 2022); *Id.* Case No. 2022-00106, Fleming-Mason Energy Cooperative, Inc. Response to Commission's Initial Request For Information 1-8 and KBCA Initial Request For Information 1-6, 1-7 (May 5, 2022); *Id.* Case No. 2022-00106, Grayson R.E.C.C. Response to Commission's Initial Request For Information 1-8 and KBCA Initial Request For Information 1-6, 1-7 (May 5, 2022); *Id.* Case No. 2022-00106, Owen Electric Cooperative, Inc. Inc., Response to Commission's Initial Request For Information 1-8 KBCA Initial Request For Information 1-6, 1-7 (May 5, 2022); *Id.* Case No. 2022-00107, Brandenburg Telephone Co. Response to Commission's Initial Request For Information 1-8 and KBCA Initial Request For Information 1-1, 1-2 (May 5, 2022); *Id.* Case No. 2022-00107, South Central Rural Telecommunications Cooperative, Inc. Response to Commission's Initial Request For Information 1-8 and KBCA Initial Request For Information 1-1, 1-2 (May 5, 2022); *Id.* Case No. 2022-00108, Cincinnati Bell Telephone Company Response to Commission's Initial Request For Information 1-8 and KBCA Initial Request For Information 1-1,1-2.

Table IV.D.1 Comparisons of Expected Normal Life-Cycle Pole Replacement Rates and Percentage of Reported Red-Tagged Poles for Illustrative Utilities					
Pole Owner	Total Poles	Expected Annual Utility Replacement Rate (100 / Useful Life)	Current Utility Identified 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[37]	218,310	3.571%	.138%	(3.433%)	.105%
Rural Electric Cooperative Corporations					
Blue Grass Energy Cooperative Corp.[38]	100,700	2.564%	.15%	(2.414%)	n/a
Incumbent Local Exchange Carriers					
Cincinnati Bell Telephone Co.[39]	48,532	3.448%	.087%	(3.361%)	.383%

The shortfall in the reported red-tag rate, as compared with the expected rate of replacement implied by the utility's own capital recovery procedures, suggests that utilities have strategized an effective loophole to shift a disproportionately high amount of replacement costs onto attachers. This is especially apparent for older, typically undersized poles near or at the end of their depreciation life. For older poles, the utility will likely have accrued sufficient (if not more than sufficient) capital recovery for replacement through the depreciation allowances built into their ratepayer and attacher rates. The expectation therefore would be that a large percentage of these

[37] *See Kentucky 2022 Pole Amendment Tariff Investigations*, Case No. 2022-00105, Kentucky Power Company, Response to Commission's Initial Request For Information 1-9, 1-10 and KBCA Initial Request For Information 1-3, 1-4.
[38] *See id.*, Case No. 2002-00106, Blue Grass Energy Cooperative, Corp., Response to Commission's Initial Request For Information 1-8, 1-9 and KBCA Initial Request For Information 1-6, 1-7.
[39] *See id*., Case No. 2002-00108, Cincinnati Bell Telephone Company, Response to Commission's Initial Request For Information 1-8, 1-9 and KBCA Initial Request For Information 1-1, 1-2

poles would be red-tagged or otherwise identified as ready for normal life-cycle replacement by the utility consistent with the capital recovery provided through its depreciation allowances. The data show that pole owners can use new attachers to fund the utility's deferred replacement of older vintage undersized poles with newer, taller, stronger poles, without facially violating the existing rules.[40]

This white paper supports Commission adoption of policies to remedy the status quo that has permitted utilities to transfer all pole replacement costs onto attachers. This practice is inconsistent with the economic reality that pole owners derive the primary, direct betterment value from pole replacements, including early pole replacements, and the utility's group depreciation allowances factor in along with average and late pole retirements. As described in the next section of this white paper, adoption of efficient and equitable cost sharing arrangements between new attachers and pole owners, such as embodied in the NCTA proposal, would ensure attachment costs are efficient and competitive, and would better promote social welfare.

V. REFORMS TO THE COMMISSION'S APPROACH TOWARDS POLE REPLACEMENTS ARE NEEDED TO ALLOCATE COST OF POLE REPLACEMENT IN ECONOMICALLY EFFICIENT AND EQUITABLE MANNER.

As described in Section II of this white paper, pole owners have several strategies available to them to exercise holdup power over attachers.[41] These strategies are mutually inclusive and therefore effectively interchangeable. Accordingly, regulatory intervention is required to address each of the available strategies and reduce pole owners' incentives and ability to exercise this power. Pole owner incentives to holdup third-party entry are best mitigated through a mix of

[40] *See In re Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Declaratory Ruling, 36 FCC Rcd 776, 780-81 ¶¶ 8-9 (WCB 2021). Although the specific example arises in the case of a Kentucky proceeding, Kentucky operates under cost-sharing rules substantially similar to those applied by the Commission. *See* 807 Ky. Admin. Regs, 5:015 amended.
[41] *See supra* Section II.

policies addressing both cost and non-cost manifestations of holdup, and addressing both recurring and non-recurring charges. Such regulatory interventions include:

- Rules to correct for excessive upfront charges;
- Rules to correct for excessive recurring charges;
- Rules to correct for incentives to strategically delay;
- Rules to correct for incentives to misreport, under-report, or withhold private information;[42] and
- Rules to correct for market foreclosure, for example in connection with the utility's actual or potential vertical integration into broadband supply.

The current *FNPRM* focuses on the first of these regulatory interventions—rules to correct the inefficient upfront charges that new attachers face in connection with pole replacement. Historically, this area has been less of a focus in pole attachment regulation, but its importance has increased as inefficient upfront charges can create a bottleneck to the national priority of broadband expansion into underserved or unserved areas. To effectively constrain pole owners' ability and incentives to exercise holdup power, any regulatory intervention must take into account the interplay of the various sources of holdup and, accordingly, be prepared to implement complementary rules as required to fully mitigate pole owners' holdup powers.

From a pure perspective of allocating shared resources, the most desirable economic solution to correct for inefficient upfront charges would be to limit upfront make-ready charges for pole replacement to pole owners' incremental cost, as opposed to the gross, total out-of-pocket costs (or outside contractor costs that could be even higher) that utilities typically assess today.

[42] These would include rules that impose a set of standard discovery requirements on the utility regarding the provision of accurate, actual internally kept data concerning the utility's pole inventory at the simple request of the pole attacher in pole rental negotiations. *See also* mechanism design literature for incentive compatible bargaining rules (not auctions) that induce honesty, including Brams et al., *Negotiation Games* (2d ed. 2002).

The true economic incremental cost of a pole replacement to a pole owner is the cost of the replacement, net of all offsetting betterment value of any capital recovery provided in the recurring rate.

In this case, a pole owner's incremental costs are equal to the temporal costs—*i.e.*, the time-adjusted costs from replacing the pole earlier than would have occurred in the course of the utility's provision of its core electric distribution service. Reimbursement of temporal costs would still efficiently compensate pole owners, particularly given the cost recovery that utilities are provided through recurring charges,[43] and would better align with principles of cost causation, economic efficiency, and distributional equity.

A proposal for cost sharing measured by temporal costs was advanced in the 2020 Kravtin Study.[44] It was based on the regulatory principle of "stranded investment," which established the remaining net book value ("NBV") of the pole being replaced (*i.e.*, the remaining undepreciated value of the replaced plant) as an appropriate measurement for the temporal incremental costs caused by a replacement. A pole replacement charge based on NBV is analogous to a stranded investment recovery charge, a widely accepted practice for making utilities whole when plant is replaced earlier than planned or before the end of the plant's historical useful life.[45]

Applying a stranded cost model in the pole replacement context is, in fact, even more generous to the utility. Stranded investments are typically reimbursed in situations where a utility can no longer make economic use of the remaining value of its investment (such as in the case of a nuclear power plant decommissioned ahead of schedule). However, there is no corresponding

[43] *See infra* Section VI.
[44] *See* Kravtin 2020 at 6, 16, 45-46.
[45] There is a rich literature on the use of remaining net book value in the utility "stranded investment" context. *See* Kravtin 2020 at 46 & n.76.

"stranding" of the utility's investment in an old utility pole taken out of service prematurely.[46] The remaining (if any) undepreciated value of poles replaced earlier than anticipated is not removed from a utility's capital expense components for purposes of calculating its rates—rather, that value is accounted for on the utility's books for full recovery through the utility's depreciation allowances. Additionally, stranded investment recovery vehicles typically provide a utility the ability to recover its stranded investments over time, through the creation of a special class of regulatory assets on which it is allowed to earn a return on unamortized balances over a prescribed period.[47] The NCTA proposal to reimburse utilities for pole replacements using a one-time charge

[46] *See, e.g.*, 18 C.F.R. Ch. 1, pt. 101 Account 342. Following the FERC guidance, when an existing pole asset is retired from service, the historical original book cost of the retired plant is credited from the FERC Account 364 pole asset account (Part 101 – [P]lant in [S]ervice) and also debited to (charged against) the Accumulated Depreciation (Part 108 – Accumulated [P]rovision for [D]epreciation of [E]lectric [U]tility [P]lant). In debiting the total original cost of the retired plant from the Accumulated Depreciation, the utility effectively charges the Accumulated Depreciation for any remaining undepreciated amount of the original cost of the retired poles. Additionally, the utility is able to charge against the depreciation reserve for current costs of removal of the retired plant. *See also* Cal. Pub. Utils. Comm'n, *Standard Practice for Determination of Straight-Line Remaining Life Depreciation Accruals*, Standard Practice U-4 at 5 (San Francisco, California, revised Jan. 3, 1961) ("CPUC Standard Practice"), "Accounting Transactions Relating to Depreciations" detailing the various accounting entries pertaining to the retirement of pole plant, including the debit (-) entries to the accumulated depreciation reserve account for the full historical cost of the retired plant and the costs of removal pertaining to the retired plant applicable at the time of the plant's retirement from service.

[47] *See, e.g.*, FERC USOA Accounting Rules, 18 C.F.R. pt. 101, at 320, 329-330, 364, defining regulatory assets as probable future revenues associated with costs the utility expects to recover through customers through the regulatory ratemaking process and directing the booking of those future amounts to FERC account 182.3 ("Other [R]egulatory [A]ssets"). Inherent to deferred asset accounting is a regulatory assurance of future recovery. A regulatory asset allows the utility to carry the net book value of plant in its rate base even though the plant has been retired, permitting the utility to recover – and earn a return on its investment and of its investment through depreciation allowances. *See* Kenneth Rose, *Electric Restructuring Issues for Residential and Small Business Customers*, The National Regulatory Research Institute, NRRI 00-10, at 4, 22, 27 (June 2000) (describing customer charges relating to "three basic types of uneconomic or 'stranded costs:' potentially 'stranded' production or generation costs, net regulatory assets, and state and federal mandated program costs."). *See also id.* at 26, and Roberts, 11 Colum. J. Tax L. at 38 (describing amortized recovery of stranded investment through securitization mechanisms: "Historically, several states have authorized utilities to securitize their stranded costs. Under securitization, utilities issue bonds, the revenues of which will be used to repay investors for their remaining unrecovered capital expenditures in plant, property, and equipment ('PPE'). The bonds will be repaid by consumers over time…" (footnotes omitted)). In a recent rulemaking proceeding, the State of Connecticut Public Utilities Regulatory Authority ("PURA") proposed creation of a regulatory asset to recover from ratepayers anticipated make-ready costs to be incurred by the utility in coming years for work not properly billed to

is more equitable to the pole owner, as it would provide for the full return of the remaining undepreciated plant value of the replaced pole upfront in one lump sum payment.

The NBV is the original net pole cost not yet depreciated or recovered by the utility 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. In other words, the NBV is the accounting value of the old pole as recorded on the utility's regulatory books of accounts. The NBV approach is a ubiquitous and straightforward method, is based on publicly available data, is used in the valuation of stranded investment, and is used as the basis of the appropriate measure of pole costs in the Commission's existing recuring rate formula.

The NBV approach relies on the same depreciation assumptions regarding average useful pole life, cost of removal, salvage, and retirement experience for poles incorporated in the utility's depreciation allowances. Utilities have significant experience with the application of NBV-based recovery mechanisms in the stranded investment context, and in other regulatory settings, utilities have embraced the use of remaining NBV as a compensatory capital recovery vehicle for plant prematurely taken out of service.[48] As such, it is a familiar metric whose application in the pole context would benefit from utilities' experience with it in other settings. The large body of

third-party attachers. *See PURA Investigation of Developments in the Third-Party Pole Attachment Process – Make Ready*, Docket No. 19-01-52RE01, Proposed Final Decision at 42-43 (Conn. Pub. Utils. Regul. Auth. Apr. 12, 2022) ("The EDCs may record these costs in a regulatory asset and seek approval for them in the next general rate case.").

[48] *See, e.g.*, Order Instituting Rulemaking to Promote Policy and Program Coordination and Integration in Electric Utility Resource Planning, R.04-04-003, Opinion Adopting Pacific Gas & Electric, Southern California Edison Company, and San Diego Gas & Electric Company's Long-Term Procurement Plans, D.04-12-048 Section I. A. 2. A at 56-60 (Cal. Pub. Utils. Comm'n Dec. 16, 2004) ("The IOUs support the concept of stranded cost recovery for their investments and believe it is a critical factor that needs to be resolved in order for them to plan their future procurement strategies…. For the above reasons, it appears that the utilities may need to make longer-term commitments for capacity and energy that may become stranded at some point during the life of these projects…Therefore, the utilities should be allowed to recover the net costs of these commitments from all customers…. This does not mean they the utility should recover the total costs of these commitments, only the uneconomic portion."); *see also* Me. Stat. tit. 35, § 3208.

precedent about how to calculate and apply the method would also facilitate the resolution of any disputes.

The NBV approach aligns with the intrinsic nature of the avoidable costs causally linked to a pole replacement to accommodate a new attachment request, *i.e.*, the temporal costs of shifting forward the inevitable replacement of the existing pole that otherwise would have ensued in the normal course of utility operations. Of the out-of-pocket costs incurred to replace a pole, the only component that aligns with the marginal or incremental costs—*i.e.*, the costs "but for" the attacher would not be incurred by the pole owner in its normal course of operations—are the costs associated with the temporal shift of the replacement or upgrade to the pole. These are mainly in the form of the remaining (yet to be depreciated) NBV of the retired pole, corresponding to the amount of the original plant capital-related costs that the utility has yet to recover through its depreciation allowances.

As described in Kravtin 2020, in limited cases there may also be additional unique, incremental costs (*e.g.*, the use of a taller pole than the utility would have installed in the absence of the new attachment) that could be directly traced to the attacher rather than the utility's normal course of operations.[49] However, absent regulatory intervention, pole owners will have an incentive to claim such costs as a strategy for exercising holdup leverage, and to selectively disclose private information (such as the utility's typical pole replacement practices) in support of such claims. Therefore, effective mitigation of this adverse incentive requires a regulatory regime that places the burden of objectively demonstrating such costs on the pole owner.

The Commission could mitigate pole owner use of its informational leverage by requiring any additional cost recovery above the NBV to be demonstrated with verifiable, substantiated data

[49] *See* Kravtin 2020 at 49.

for the specific poles to be replaced. Given current utility construction practices that routinely install standard pole heights of 40 to 45 feet, and because utilities typically use standard pole heights of 40 to 45 feet when performing pole replacements for broadband attachers, use of more expensive non-standard installation poles to accommodate new attachments may not be common.[50]

Specific Valuation Methods to Implement NBV Standard:

There are several viable methods by which the NBV standard could be implemented in the pole replacement context. This paper identifies three straightforward valuation methods for determining the pole investment "stranded" by the earlier replacement in connection with a new attachment.

Method 1: Pole-Specific Valuation. Where a utility has accounting records reflecting the vintage (age) of the pole, individual measurements can be used; this method would use the pole owner's records of the actual vintage of the replaced pole in order to accurately calculate and target the appropriate reimbursement. Under such a regime, parties would have the opportunity to rely on actual cost data for the specific pole or pole vintage at issue. The pole owner would have the opportunity to establish that a pole is at an early stage of its lifecycle, not otherwise scheduled to be replaced by the utility, and that the remaining value is greater than the average net book investment. The exact evidence appropriate to calculate these factors likely will vary case-by-case, but still may be derived primarily using either publicly available or routinely reported and verifiable information. For instance, the utility's fixed asset accounting records pertaining to FERC Account 364 (poles, towers, fixtures) detailing depreciation for regulatory purposes may provide a more specific measurement of a pole's remaining net book value than on either an average vintage or mass asset basis.

[50] *See supra* Section III for expanded discussion.

While the pole-specific option affords the most accuracy and hence theoretically would produce the most efficient rate outcome, it is more transactionally complex, and requires use of the pole owner's internal accounting and survey records. If the Commission authorizes this method where data is available, mechanism design theory suggests that it would be made more effective through a companion rule that induces honesty, namely, to ensure that utilities do not use their informational leverage to "game" it by selectively disclosing individual pole information only when advantageous. Specifically, the Commission could require any utility relying on pole-specific cost data in this manner to make such accounting information available to attachers in order to enable them to determine the appropriate reimbursement for pole replacements, and also to ensure against the utility's exercise of holdup power in the calculation of the *recurring* rate. In its calculation of *recurring* rates, the utility possesses leverage over the data inputs in that it can choose between relying on actual utility data and Commission-set presumptive values.[51] To mitigate use of holdup leverage to game the measurement of non-recurring and recurring charges, an effective regulatory intervention would require any utility that uses actual pole cost data to make such data available to attachers and use it consistently for both make-ready charges and pole rental fees.

As identified in the 2020 Kravtin Study, a pole-specific valuation could also be derived based on the utility's identified current cost of a replacement pole by applying standard industry cost indices to discount the current value based upon the age of the pole being replaced. This method could be applied when the age of the pole is known, but where individual pole costs are either not available or cumbersome to obtain. Table V.1 below provides an illustrative calculation of this method.

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[51] *See infra* Section VI for expanded discussion.

Table V.1
Illustrative Calculation of Estimated Remaining Net Book Value of an Installed Pole, Under Method No. 1, Where Age of Pole Is Known, but Original Cost Data by Pole Vintage May Not Be Available

Description	Younger than Average [8]	Older than Average [8]
L 1 Identified/Verified Age of Pole Being Replaced	12 years	26 years
L 2 Utility Current Installed Per-Pole Cost (2021)	$3,500.00	$3,500.00
L 3 Cost Deflator from 2021 to Year Corresponding to Identified Age of Pole Being Replaced [1]	0.7893	0.5108
L 4 Estimated Installed Per-Pole Cost [2]	$2,762.55	$1,787.88
L 5 Depreciation Rate [3]	3.75%	3.75%
L 6 Annual Depreciation [4]	$103.60	$67.05
L 7 Accumulated Depreciation [5]	$1,243.15	$1,743.18
L 8 Accumulated Deferred Taxes [6]	469.63	-303.94
L 9 Net Installed Per-Pole Cost (2021) [7]	**$1,049.77**	**$348.64**

Notes:
[1] The Handy Whitman Index, Bulletin No. 175, North Central Region, was used to deflate pole from current 2021 cost to year corresponding to placement of pole of identified age. For 12-year pole, deflator based on change in index 2009-2021, for 26-year pole, change in index 1995-2021.
[2] Line 2 x Line 3
[3] Annual depreciation (straight-line) using composite depreciation rate of 3.75% (2.50% Life Rate based on a pole life of 40 years plus 1.25% Negative Net Salvage Rate). Based on actual reported utility depreciation parameters for Account 364 and/or used in the setting of depreciation allowances for ratemaking purposes and in the calculation of the recurring rate formula.
[4] Line 4 x Line 5
[6] Accumulated deferred taxes (ADT) are allocated to pole at same proration as used in the calculation of the recurring rate formula. This illustrative example assumes a proration of 17%. The ADT applies an offset to younger than average poles, and as an add back to older than average poles, consistent with the manner in which the tax benefits are realized over the life of the asset.
[7] Line 4 minus Line 7 minus Line 8.
[8] Average age assumed one-half of useful service life used by utility for depreciation purposes.

Method 2: Valuation Based on Pole Age Ranges. As a practicable, streamlined adaptation of the pole-specific valuation method, the Commission could alternatively establish, as a rebuttable option, the application of various pole age range categories with fixed or sliding percent adjustments up or down from average net book value (*e.g.*, different cost-sharing percentages for newer poles, average poles, older poles). This would allow for a continuum of cost sharing from attachers, for example, from a smaller share for the oldest/older pole age ranges to average NBV for the middle pole age ranges, to much larger cost share for the newer pole age ranges. This could include at the most upper bound of the continuum, a multiple of NBV up to 100% of the cost of replacement in the limited case of the replacement of a newly placed pole. This pole age range approach provides a built-in layer of guarantee the utility is afforded sufficient recovery for temporal costs associated with the new attachment. It would do so by explicitly linking a new attacher's cost-sharing obligation to the useful life of poles embodied in the utility's current depreciation rate used for purposes of calculating its ratepayer rates and pole rental charges. Electric utilities apply a wide range of assumptions regarding the useful lives of their poles for purposes of the depreciation analyses they use for electric ratemaking purposes; this method would consistently reimburse utilities based upon the expected pole life and other capital recovery-related depreciation parameters that they themselves have chosen based upon the circumstances of their specific operations.[52]

To effectuate such a methodology, the Commission could establish a predetermined set of pole age range categories based on (1) the data provided in response to the instant *FNPRM* and as reported in the FERC Form 1 for electric utilities (generally between 35 and 50 years), (2) prior findings related to pole lives of the Commission (most recently noting a pole life of 23 years),[53] (3) and in accordance with useful lives for utility distribution plant codified in IRS regulations (30

[52] *See infra* Section VI for an expanded discussion.

[53] *See In re Comprehensive Review of the Part 32 Uniform System of Accounts*, Report and Order, 32 FCC Rcd 1735, 1746 ¶ 36 n.98 (2017) ("*Part 32 USoA Order*") (noting "a typical life is 23 years.").

years).[54] For example, the Commission could establish rules specifying that poles between 0 and 24 years are valued at a multiple of 1.5 to 2 times the utility's average net book value, poles between 13 and 25 years old have a remaining book value equal to the utility's average net book value, and poles between 26-39 years retain one quarter of this value, and so on.

While this method would sacrifice some accuracy, it would allow for faster calculations and benefit from ease of administration so long as the pole owner retains and makes available records of the vintage of its pole plant, or there are discernable visible age tags on the physical pole. In order to reduce the costs of imprecision (since there will be many cases where the age of the pole alone should not be solely determinative of the value of the pole), the Commission could also presume that relying on the age range categories to determine the value of a pole is reasonable but allow parties to rebut this presumption with additional facts—including depreciation accounting data—where appropriate. In addition, to achieve greater accuracy, the Commission could allow for the NBV retention factors to vary according to the utility's own depreciation parameters. This would be somewhat analogous to the Commission's rules pertaining to cost factors used to calculate the telecom formula. In its original rules, the Commission established only two presumptive cost factors (.44 corresponding to 3 attaching entities for rural, and .66 corresponding to 5 attaching entities for urban) to apply to all utilities,[55] but later revised its rule to require the interpolation of the cost factor according to each utility's actual number of attaching entities.[56] Table V.1 above provides an illustrative calculation under this second method, corresponding to the utility depreciation parameters modeled above.

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[54] *See* IRS Publication 946 (2022).

[55] *See In re Implementation of Section 224 of the Act*, Report and Order and Order on Reconsideration, 26 FCC Rcd 5240, 5303-04 ¶ 147 (2011) ("*2011 Pole Attachment Order*"), *aff'd sub nom. Am. Elec. Power Serv. Corp. v. FCC*, 708 F.3d 183 (D.C. Cir. 2013).

[56] *See In re Implementation of Section 224 of the Act*, Order on Reconsideration, 30 FCC Rcd 13731, 13756 Appendix A (2015) ("*2015 Order on Reconsideration*").

Method 3: Average Net Book Value Presumption. Where records on individual pole or pole vintage are unavailable or cumbersome to obtain, the average net book value of the utility's pole assets as a group as used in the Commission's recurring rate formula can be used to establish a presumptive value. The average NBV approach is a simple, commonly applied calculation based on publicly available and reported utility cost information and is widely accepted and used throughout the country in calculating recurring rates.[57] Parties can rely on existing agency and judicial precedent relating to the recurring rate formula accumulated over the past four decades to provide guidance on how to apply the NBV calculation for nonrecurring charges.

The use of the average historic NBV method offers a number of key advantages in addition to the administrative ease. This approach achieves consistency with the same depreciation assumptions regarding average useful lives, cost of removal, salvage, and retirement experience for poles incorporated in the utility's depreciation allowances. This is because pole assets are classified as a "mass asset" and depreciated in accordance with group depreciation accounting practices,[58] such that the use of average booked net book value for the utility's fixed pole asset as a group automatically aligns with the life assumptions (total service life and/or remaining life) used by the utility in developing its pattern and timing of capital recovery for regulatory purposes. Under mass asset group accounting practices, depreciation allowances take into account both the earlier-than-average and later-than-average retirement of some poles relative to their average useful life, such that requiring attachers to pay the utility the average net book value of a pole as

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[57] The one data point required by this method that is not already publicly available is the pole owner's aggregate utility pole count. That data point is regularly provided in recurring rate calculations, and therefore should be readily accessible. Nonetheless, it would be helpful for rules to specifically direct utilities to provide supporting pole count data used for these purposes to ensure transparency and ease of administration.

[58] *See infra* Section VI.

recorded on the utility's books of account for any given pole replacement will, in the aggregate, ensure adequate recovery.

Additionally, the use of the average historic net book value method will dampen a utility's ability to exercise its informational advantage to raise attachers' costs by strategically under-identifying, misreporting, or withholding private information pertaining to its net book valuations. Using the same average net book value used to calculate recurring charges for purposes of determining non-recurring charges would make it much more difficult for a pole owner to arbitrage its informational advantage by choosing to rely on individual pole-specific data for purposes of non-recurring charges while choosing to rely on group average actual or presumptive values for purposes of recurring charges.

Table V.2 provides an illustrative example of the average NBV calculation for an electric utility as determined under the Commission's recurring rate formula. The per-unit net bare pole cost is calculated in the following four steps:

1. *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, Fixtures).

2. *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).

3. *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.

4. *Fourth*, the net investment in bare pole plants is divided 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.

Table V.2		
Illustrative Example of Per-Pole Average Remaining Net Book Value Based on FCC Recurring Rate Formula Methodology		
Formula Calculation: Net Bare Pole Cost Component	**Data as of 12/31/xx Current Cost Year**	*Sources/Notes*
Investment in Pole Plant Acct 364	$675,000,000	FERC Form 1 Report Acct 364
- Accumulated depreciation for poles	$300,000,000	Prorated from Electric/ Distribution Plant or Internal Utility Records
- Accumulated deferred income taxes for poles	$120,000,000	Prorated from Total/Electric Plant including Excess ADIT Amounts
= Net Pole Investment	$255,000,000	
x (1- Appurtenances Factor)	.85	FCC 15% Rebuttable Presumption or Actual
= Net Pole Investment allocable to Attachments	$216,750,000	
/ Total Number of Poles	400,000	Utility Records
= Estimated Average Remaining Net Book Value/Pole	**$541.88**	

While this method is well suited to provide the *default* valuation, 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 (*i.e.*, apply the first method described above) or the pole range valuation (*i.e.*, apply the second method). In particular, the pole owner could seek to use a higher net book value to calculate pole replacement 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. The Commission could mitigate the utility's opportunity and incentive to leverage its informational advantage regarding the status of its pole plant to seek additional cost recovery in excess of true "but for" costs by permitting such additional cost recovery 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 V.A.3 below presents illustrative calculations of the Net Book Value approach under three methods described below in a side-by-side comparison.

Table V.3.
Illustrative Calculations of Net Book Value Approach for Pole Replacement for Three Methods for Determining NBV: Pole-Specific, Average Pole in Service, Pole Age Ranges

Method	**Method #1:(1) Pole-Specific Age Data**	**Method #1:(1) Pole-Specific Age Data**	**Method #2:(2) Pole Age Ranges**	**Method# 2:(2) Pole Age Ranges**	**Method# 3:(3) Avg Pole In Service**
Applied to:	**Pole Younger than Average**	**Pole Older than Average**	**Newer Pole Ranges**	**Older Pole Ranges**	**Average Age Pole Rebuttable Default**
Estimated Average Remaining Net Book Value (NBV)/Pole	$541.88	$541.88	$541.88	$541.88	$541.88
+/– Reasonable Adjustment for Years Younger or Older than Avg. to Accumulated Depreciation	+$507.89	-$193.24	+$270.94 to +$541.88	-$135.47 to -$406.41	n/a
+ Additional Unique Cost/Pole (in Limited Cases Where Documented Costs Caused by Attacher)	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation
– Less Net Cost Savings from Earlier Replacement/Lower Maintenance Amortized over Life)	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation	Presumed zero or no sufficient documentation
Adjusted Average NBV/Pole	$1049.77	$348.64	$812.82 To $1,083.76	$352.22 to $135.47	$541.88

Notes:
(1) #1: Add/Subtract Annual Depreciation Accrual x # Yrs. Younger/Older than Average from Original Installed Cost
(2) #2: Apply Adjustments Based on Presumed NBV Retention Multipliers for Pole Age Ranges (*e.g.*, .25 to .65 for Older Age Ranges, 1.0 for Average Age Range, 1.5x to 2.0 x for Newer Age Ranges based on Utility Parameters
(3) #3: Uses Net Book Value per pole as determined in the Recurring Rate Formula (see Table V.A.2)

As shown in Table V.3 when the data and assumptions used to calculate the net book value are aligned with the depreciation parameters and capital recovery patterns used by a utility for ratemaking purposes, the valuations produced by the various methods will converge. There are trade-offs between the three methods for determining net book value, as described above. That said, the use of any of these methods (or combination of) that base the share of pole replacement costs allocated to attachers on the net book value of the pole being replaced is highly superior to the methodology typically used today, under which pole owners charge attachers the full out-of-pocket cost of installing a new pole.

Permitting the pole owner to assign the full cost of the replaced pole onto attachers deviates from cost causation principles, and results in an inherently inefficient amount of excess capital recovery to the pole owner, given (a) the "betterment" value it receives from the new asset, and (b) the recovery it separately obtains through *recurring* charges, as described in the next section of this paper. Current practices allowing pole owners to shift the entire cost of replacement onto third-party attachers also produce highly inefficient outcomes in that pole owners have no incentive to control costs of replacements, especially in regard to the use of outside contractors. This is particularly an issue in connection with the costs of removal of the old pole, which—as described in the next section—have grown substantially in recent years, in many cases, to multiples of the original cost of the installed poles.

VI. RECOVERY OF POLE REPLACEMENT COSTS THROUGH RECURRING RATES WOULD BE ECONOMICALLY EFFICIENT AND ADMINISTRATIVELY SIMPLE, AFFORDING SUFFICIENT CAPITAL RECOVERY TO THE POLE OWNER FOR POLE INVESTMENT WHILE ADVANCING BROADBAND INVESTMENT.

A. Overview of the Two-Part Pricing Structure for Pole Attachments and the Commission's Alternative Proposal for Capital Recovery of Pole Replacement Costs in the Recurring Rate.

In paragraph 31 of the *FNPRM*, the Commission asks a series of questions concerning the "relationship between the upfront costs incurred to replace a pole versus the recovery of pole replacement costs through recurring rates," to better understand the relative efficiency and effectiveness of recovering the costs of pole replacement through depreciation allowances in the recurring rate rather than through the upfront make-ready fees.[59] The overarching question posed by the Commission in paragraph 31 is as follows:

> Specifically, would it be more efficient and effective to require all costs incurred to replace a pole (except where a pole replacement is solely necessitated by a new attachment) to be recovered over time through the allowance for depreciation reflected in recurring rates calculated pursuant to the Commission's pole attachment rate formula, rather than upfront though make-ready fees?

This inquiry recognizes that the allocation of pole replacement costs through non-recurring charges is not independent of how utilities recover their capital expenses from attachers through recurring rates under existing Commission rules.

Under existing rules, pole owners charge attachers pursuant to a two-part pricing structure: (1) a recurring pole rental rate, which (under the Commission's formula) is based on the utility's average embedded costs associated with accommodating pole attachments and is applicable to all attachers,[60] and (2) a set of attacher-specific non-recurring charges (set by the utility) to recover the costs of any upfront make-ready work performed in connection with the accommodation of a third-party attachment. Attachers that pay non-recurring costs to attach to a pole do so in addition to an annual recurring pole rental rate.

Recovering pole replacement costs through non-recurring charges can be done efficiently, as set forth in Part V. However, the option posited in the *FNPRM* to allow pole owners to recover pole replacement costs through recurring rates would have the added advantage of administrative simplicity because it would rely on existing and familiar mechanisms for sharing the fully allocated

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[59] *FNPRM* ¶ 31.
[60] *See* 47 C.F.R. § 1.1406(d).

costs of utility poles across all attachers (on an equivalent per foot of occupancy basis). An alternative approach that relies *solely* on recurring rates to recover pole replacement costs, while a different approach from the Net Book Value approach discussed in Part V, would also appropriately balance incentives for pole owners to invest in pole plant with the goals of promoting broadband deployment, *if* implemented as described above.

B. Depreciation Allowances Factored into the Recurring Rate Provide Capital Cost Recovery for All Utility Poles in Service — Including Poles Retired "Early" and Retired "Late."

The *FNPRM* focuses on the capital recovery opportunities in recurring rates through allowances for depreciation. However, it bears noting that cost recovery associated with pole replacement reflected in recurring rates goes far beyond the "allowance for depreciation" identified in the *FNPRM*.[61] Recurring rates are, by design, set to entirely recover a pole owner's fully allocated costs ("FAC") applicable to pole attachment. In addition to including depreciation costs, the FAC also includes the full range of operating and capital costs incurred by the utility in connection with pole replacement, including a rate of return on total net pole investment.

As explained further below, under the "group depreciation" accounting practices that utilities apply to poles, utilities include—in both their recurring rental rates, and, in the case of rate-regulated electric distributors and rate-of return telecommunications carriers, in the retail rates that they charge to ratepayers—capital costs that afford them sufficient recovery. This recovery takes places through depreciation allowances, both in the form of depreciation expenses and in the form of adjustments to a utility's accumulated depreciation reserve for poles to which the depreciation expenses are allocated and accrue.

[61] *See FNPRM* ¶ 31; *see also* Kravtin 2020 at 53-56.

These depreciation allowances are designed to be sufficient to replace a utility's entire inventory of poles, and to do so over the time period matching the estimated useful life of poles that the utility uses to set those depreciation rates. A utility's use of the widely applied "Straight-Line Remaining Life method" of group depreciation[62] provides additional assurances that the timing pattern of the utility's depreciation allowances will align with the utility's current retirement (or survival) distribution of plant in the pole account, although sufficient capital recovery mechanisms are also provided under the "Total Service Life" method.

The fact that utilities account for poles as "mass assets"[63] subject to group depreciation does not limit their ability to be made whole for poles that are replaced earlier or later than anticipated. Because the depreciation rates that utilities apply to their poles correspond to an average estimated useful life, the average necessarily includes the cost of replacing poles that are retired either earlier or later than anticipated.[64] The respective probabilities of early and late pole replacement are simply incorporated into the utility's aggregated estimated pole life used to set those group depreciation rates.

Utilities vary in the depreciation rates (and implicit estimated life) they set for their pole plant. However, this variation affects only the timing of the utility's full capital recovery of the costs for pole replacement through depreciation allowances built into utility rates; it does not affect the wholeness of the utility's capital recovery. The application of group accounting methods to poles affords the opportunity for enhanced cost recovery. This is because group accounting provides the opportunity to leverage the depreciation parameters driven by the costs of earlier

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[62] The straight-line remaining life (SL-RL) method distributes the unrecovered cost of the utility's fixed capital assets over the remaining amortization period identified for each retirement plant account. *See* Table 6.1 for an illustrative example as applied to pole plant.
[63] *See infra* n.77. *See also supra* Section V.
[64] *See FNPRM* ¶ 31.

replacements (which are characterized by larger negative net salvage and shorter average remaining lives, and which support higher depreciation allowances) by applying those parameters to the utility's total pole assets, including poles remaining in service longer than expected. Utilities acknowledge this opportunity.[65]

Utilities' recovery of pole expenses through recurring rates is also enhanced by the guaranteed rate of return that the Commission's pole rental rate provides on their net investment in total pole plant in service. The Commission's default rate of return of 9.75% may exceed the rates of return approved by state regulatory authorities for utilities' recovery of their expenses through ratepayer rates. Like a utility's group depreciation allowances, the rate of return provides the utility with a source of capital recovery for its total pole plant in service. This rate of return applies equally to poles retired earlier than the utility's reported useful life and to those retired later.

A utility's ability to recover its capital costs pertaining to pole replacement is also not conditioned on the reason that a pole is replaced (*e.g.*, normal life cycle replacement, physical or functional obsolescence,[66] and/or whether or not the replacement involved an attacher). Rather, it is conditioned only on a pole's usefulness to the utility in the provision of its core electric service. Pole attachments have no impact on a utility's ability to recover its capital costs through its depreciation accruals and associated accumulated depreciation reserves, and through the return on capital. For these reasons, and others described below, recurring rates assure the utility sufficient capital recovery of any pole replacement costs that are included within the recurring rate formula, including those in connection with a new attachment.

[65] *See id.* ¶ 30 n.96.
[66] Physical factors include wear and tear, decay or deterioration, and climate events, while functional factors include inadequacy, obsolescence, changing service/reliability standards/hardening requirements.

C. Pole Owners' Ability to Charge Non-Recurring Pole Replacement Costs While Also Charging Recurring Rates Presents Opportunities for Double Recovery, Which Existing Commission Rules May Not Fully Mitigate.

The questions posed in paragraph 31 of the *FNPRM* build on the prescriptive policy foundation the Commission established in its 1987 seminal decision in CC Docket No. 86-212; namely, that the recurring rate formula already provides for recovery of the utility's total fully allocated costs of the pole, including a wide range of operating and capital costs incurred by the utility in the course of providing its core or primary electric distribution service. This cost, by definition, exceeds the avoidable, incremental "but for" costs caused by an attacher.[67] Few, if any, fees beyond the fully allocated cost-based recurring charges are needed to ensure compensatory cost recovery to the pole owner.[68] In the Commission's 1987 Order, as in the present *FNPRM*, the Commission was focused on eliminating unreasonably high recovery through additional fees assessed on top of the recurring rate.[69]

The Commission evaluated a similar phenomenon in 2011, when it recognized that the two-part structure of pole attachment fees (with both recurring rates and non-recurring charges) provided pole owners an opportunity to impose unreasonable fees and to over-recover.[70] In that decision, the Commission explicitly recognized that the capital carrying costs (depreciation, tax, and return) recovered in the recurring rate formula were not cost causatively related to pole

[67] *See In re Amendment of Rules and Policies Governing the Attachment of Cable Television Hardware to Utility Poles*, Report and Order, 2 FCC Rcd 4387, 4397 ¶ 74 (1987); *id.* at 4394 ¶ 53 n.31; *id.* at 4394 ¶ 54 n.34.

[68] *See id.* at 4397 ¶ 74 ("In theory, if a utility is purportedly charging a rate based on fully allocated costs, then it should not also be charging additional fees because, by definition, fully allocated costs encompass all pole-related costs. In addition, if a particular condition is so onerous as to be unreasonable, we will eliminate the unreasonable condition rather than adjusting the rate.").

[69] *See id.*

[70] *See 2011 Pole Attachment Order*, 26 FCC Rcd 5240.

attachments and duplicative with costs recovered in upfront make-ready charges.[71] The current *FNPRM* provides an opportunity to apply the same principle as these earlier findings.

In principle, the Commission's rule requiring pole owners to exclude make-ready fees from the pole line capital account (Account 364)[72] should mitigate the double recovery of pole replacement costs that would otherwise be inherent in assessing non-recurring charges to replace poles whose fully allocated cost (and anticipated replacement) is already recovered through the recurring rate formula. Such credits *should* have the effect of reducing utilities' total gross pole investment to which carrying charge factors are applied, and thereby reducing (by a corresponding amount) the annual costs of the poles allocated to attachers. This rule, however, is administratively complex and confirming compliance with it is difficult. This is due to many factors, including the lack of publicly reported data, lack of visibility into internal utility credit tracking mechanisms, and absence of uniform guidelines on how, or to which FERC account, the required make-ready credits are reflected in the calculation of the recurring rate. Additionally, the rule was not codified until late 2017,[73] calling into question the application of credits to booked Account 364 balances used to calculate recurring rates for pole vintages prior to 2018.

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[71] *See id.* at 5302 ¶ 144 ("In the case here of applying cost-causation principles to identify the lower bound telecom rate, the record includes findings by economists and analysts that capital costs are justifiably excluded from the lower-bound rate[s] because the attachers cause none or no more than a *de minimis* amount of these costs, other than those that are recovered up front in make-ready fees." Having so found, however, the Commission did not mandate the use of the lower-bound formula such that the formula is only applied when the rate produced by the "lower-bound" formula paradoxically produces a *higher* rate than the regular FAC formula.)

[72] *See* 47 C.F.R. § 1.1406(b) ("The Commission shall exclude from actual capital costs those reimbursements received by the utility from cable operators and telecommunications carriers for non-recurring costs."); *see also In re Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Report and Order, Declaratory Ruling, and Further Notice of Proposed Rulemaking, 32 FCC Rcd 11128, 1131 ¶ 7 (2017) ("*2017 Pole Attachment Order*") (describing codification of rule requiring credit "utility's corresponding pole line capital account to insure that. . . operators are not charged twice for the same costs" (quotation marks omitted)); *see id.* ("make-ready costs are non-recurring costs for which the utility is directly compensated and as such are excluded from expenses used in the rate calculation" (quotation marks omitted)).

[73] *See 2017 Pole Attachment Order,* 32 FCC Rcd at 11132 ¶ 8.

These challenges are further compounded by the time lags inherent in utilities' accounting processes. These processes are multi-step and require expenses for actual construction work in the field, based on an individualized work order system, to be processed and recorded on the pole owner's books in accordance with the FERC accounting system, a process referred to as "unitization." Utilities do not allocate or classify specific construction activity costs into the applicable FERC accounts at the time the work is performed; rather, they translate those costs into the appropriate investment and expense categories at a later date.[74] Even a utility that is properly tracking and accounting for make-ready reimbursements received from attachers (and excluding them from capital investment, as envisioned by the Commission's rules, by crediting them to the relevant pole Account 364 instead of spreading them across other FERC accounts not included in the rate formula), they may not be matching them to the appropriate cost year. The increasingly common use of outside contractors to perform the work further complicates the accounting of the make-ready credit.

[74] *See* Response to Complainant CCTA Data Request No. 1 to Defendant SDG&E (Date Received: January 2, 2018, SDG&E Revised and Supplemental Response Dated October 16, 2018), C.17-11-002 (Cal. Pub. Utils. Comm'n Oct. 16, 2018) (identifying a 7-step flow chart and accompanying narrative: "i) Poles are input into a GIS data base as work orders are sent to EGISS. They are entered in GIS in a preliminary status and are then moved to an energized or in-service status as SDG&E receives notification from Electric Distribution Operations and Grid Operations. ii) Upon installation, poles are designated as providing service to either distribution and transmission, and their installation costs are then recorded to FERC Accounts 364 or 355, respectively."). *See also*, *Kentucky 2022 Pole Amendment Tariff Investigations*, Case No. 2022-00105, Kentucky Power Company Response to KBCA Initial Request For Information 1-6 ("Work order costs (i.e. the costs that comprise a make-ready pole replacement reimbursement) are charged against various capital and O&M accounts according to percentages that are dependent upon the project. When an attacher reimburses Kentucky Power for the pole replacement, the reimbursement payment is initially credited to account 1860092, then allocated as a credit to the same accounts to which the work order costs were originally charged in the same percentage.").

Outside of detailed discovery into a utility's accounting records, it is difficult to determine whether (and if so, the extent to which) the Commission's requirement to exclude make-ready charges from recurring rate inputs is actually mitigating double recovery.[75]

D. Utilities are Made Whole for Pole Replacement Expenses As Long as the Depreciation Rate Used in the Recurring Rate Formula is Aligned with the Accrual Rate Applied to the Pole Asset Group for Ratemaking Purposes.

As a threshold question, the *FNPRM* asks whether utilities would be "made whole for early replacement of a structurally sound pole" (*e.g.*, one not "red tagged" for near-term replacement)[76] "through the allowance for depreciation expense reflected in the recurring rental rate, given the use of accurate depreciation rates."[77] The answer is yes.

Before addressing those multiple avenues of capital recovery for pole replacement factored into the recurring rate formula, it is first necessary to clarify the meaning of "accurate depreciation rates" in the context of poles. As the *FNPRM* alludes to, utilities classify poles as "mass assets" subject to group depreciation accounting practices.[78] Because the parameters used to develop

[75] Access to detailed utility accounting records is generally unavailable to attachers outside a formal complaint or litigated proceeding.

[76] An important caveat, as noted in the discussion of holdup power earlier in this paper, is that utilities under current practice have an incentive to leverage their informational advantage to claim the structural soundness of a pole (or under-identify red-tagged poles to the attacher) to shift the cost of a pole replacement onto the attacher.

[77] *FNPRM* ¶ 31.

[78] *See* 18 C.F.R. pt. 101 (allowing a single continuing plant inventory record to be maintained on a group or categorical basis for mass property). Mass assets record all costs (including labor, materials, contractors, and overhead costs) incurred in connection with newly installed poles or "retirement units" as a group. *See also* PriceWaterhouseCoopers, LLP, *Questions and Answers: Interpretations for the Utility Industry*, 1 (2005), https://www.pwc.com/gx/en/energy-utilities-mining/pdf/ppe.pdf ("Utilities often apply the mass-asset convention of accounting (also known as the 'group' method) to certain fixed assets such as utility poles and other components of their transmission and distribution systems which are too numerous to practically track on an individual basis given the small relative value of each individual asset." (footnote omitted)). In lay terms, "'Mass Property' refers to assets such as poles, wires and transformers that are continually added and replaced." Direct Testimony of Ned W. Allis, Florida Power & Light Company, Docket No 20210015-EI, at 16:4-5 (Fla. Pub. Serv. Comm'n Mar. 12, 2021) (distinguishing "life span" from "mass property" accounts and noting that transmission, distribution, and general plant accounts are considered mass property accounts). *See also id.*, Exhibit NWA-1 at 733-36 (noting that retirements are not expected to occur on the same data for mass property accounts that include transmission poles assets).

depreciation allowances for poles are determined for poles as a group, not on the basis of individual poles, utilities' ability to obtain sufficient recovery of pole replacement costs through the recurring rate does not hinge on the "accuracy" of the depreciation rate in the conventional parlance, *i.e.*, whether utilities in fact keep poles in service for the estimated useful lives implied by those depreciation rates. Rather, it depends upon whether the depreciation rate reflected in the formula's depreciation allowances aligns with the accrual rate and depreciation lives (underlying that accrual rate) applied for ratemaking purposes to the capital recovery of the utility's fixed asset pole group. A secondary factor is whether or not the depreciation parameters utilized to determine the accrual rate are current. Both of these criteria are readily met with use of the recurring rate.

The Commission's rules for recurring pole rental charges require the capital-related components of the formula (*i.e.*, the rate of return and depreciation rate) to use, where available, the utility's most-current state-approved figures for rate-of-return ratemaking.[79] State regulatory commissions exercise oversight of electric utilities' depreciation accrual rates and accumulated depreciation reserve balances; however, utilities enjoy substantial leeway in their selection and revision of the basic parameters used to set these depreciation allowances (*i.e.*, estimated total service life, estimated remaining service life, future net salvage (cost of removal less salvage), and survivorship/mortality experience or survivor curves). Utility depreciation allowances are largely set at levels sought by the utility, based on routinely performed utility depreciation studies and analyses performed by specialized depreciation professionals, using internal utility accounting

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[79] *See* 47 C.F.R. §1.1404; *see also In re Verizon Maryland LLC, Complainant v. The Potomac Edison Company, Defendant*, Order on Reconsideration, FCC Proceeding No. 19-355, Bureau ID No EB-19-MD-009, FCC 22-26 ¶¶ 21-23 (rel. Mar. 31, 2022).

data, subject matter expert opinions and projections—a process that provides utilities with substantial flexibility to ensure that their capital expenses are fully reimbursed.[80]

The process of estimating depreciation parameters is based on informed judgment, and hence involves a certain level of subjectivity. This is evident in the observed variation among utilities as to the service lives, net salvage values, and retirement patterns implicit in the depreciation allowances applicable to each fixed asset group. However, this variation does not affect utilities' ability to use those depreciation allowances to fully recover the costs of current and expected future pole replacements. It affects only the timeline and manner in which they achieve this recovery (*e.g.*, through higher depreciation accrual rates and/or periodic amortizations to correct any demonstrated non-minor depreciation reserve imbalances).[81]

But the purpose of group accounting practices, as overseen by state public utility regulators, is to accurately reflect historical evidence and projected future conditions.[82] Any changes to underlying depreciation parameters for a utility's pole plant (*e.g.*, if the "average" pole is retired

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[80] *See* Direct Testimony of Matthew Vanderbilt, San Diego Gas & Electric Company (U 902 M) Proceeding: 2019 General Rate Case Application: A.17-10-007, Exhibit: SDG&E-34 at MCV-8, (Cal. Pub. Utils. Comm'n Oct. 6, 2017), https://www.sdge.com/regulatory-filing/22261/sdge-2019-general-rate-case ("While calculation of rates is a mechanical process, development of the depreciation parameters requires significant effort to identify the appropriate ASL, survivor curve type (*i.e.*, retirement dispersion), and FNS%.").

[81] *In re Amortization of Depreciation Reserve Imbalances of Local Exchange Carriers*, Report and Order, 3 FCC 984, 988 ¶ 26 (1988) ("Minor reserve imbalances resulting from routine revisions in life and salvage factors and changes in retirement patterns are inevitable, and it is not necessary that a carrier so fine-tune its amortization in this regard.").

[82] *See In re: Petition Rate Increase, by Florida Power & Light Company*, Direct Testimony of Roxie Mccullar at 11:19–23, Docket No. 20210015-EI (Fla. Pub. Serv. Comm'n June 21, 2021) ("Direct Testimony of Roxie Mccullar") ("Informed judgement is a term used to define the subjection portion of the depreciation study process. It is based on a combination of general experience, knowledge of the properties and a physical inspection, information gathered throughout the industry, and other factors which assist the analyst in making a knowledgeable estimate." (quoting National Association of Regulatory Utility Commissioners (NARUC), *Public Utility Depreciation Practices* (1996) at 128)). *See also* CPUC Standard Practice at 4, pdf page 9 ("Depreciation charges even in the simplest projects should be re-examined from time to time. It is obvious that, until final retirement, deprecation charges involve estimates of future life and salvage.").

earlier as a result of a subset of those poles being retired earlier in connection with utility hardening programs or other reasons), therefore, can be used to update utilities' depreciation allowances accordingly.

One place this has happened is in the context of utility grid-hardening initiatives. State public utility commissions have supported, and in many instances, have mandated utility efforts to harden and modernize their electric distribution networks (including accelerated pole replacement programs) to better meet the needs for greater resiliency in the face of wildfires, storms, and increased customer demand for reliability. State regulators have enabled utilities to obtain the additional capital funding to fulfill those mandates, by, among other cost-recovery mechanisms, authorizing higher depreciation allowances.[83] Depreciation is a "non-cash" expense to the utility, so that annual accruals of depreciation expense accumulate over time to provide an important, free source of cash for the utility to fund current and expected future pole replacements of the utility's plant in service.

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[83] *See, e.g.*, San Diego Gas and Electric, *2020-2022 Wildfire Mitigation Plan Update*, at 194-95, 218 (Feb. 5, 2021), https://www.sdge.com/sites/default/files/regulatory/SDG%26E%202021%20WMP%20Update%2002-05-2021.pdf (describing SDG&E's Pole Replacement and Reinforcement program to "replace[] deteriorated wood distribution poles, as well as other asset-related components identified through SDG&E's various inspection programs. . . in an effort to reduce the risk of ignitions" and listing "the replacement of wood to steel poles" as part of SDG&E's overhead distribution hardening program); News Release, Florida Power and Light, *FPL Delivers Best-Ever Service Reliability in 2018, Plans to Harden All Main Power Lines Within Six Years* (Mar. 1, 2019), http://newsroom.fpl.com/news-releases?item=126077 (noting that FPL plans to "continue hardening the energy grid over the next three years by investing approximately $2 billion, which includes hardening its main power lines and replacing all remaining wooden transmission structures...Hardening means that FPL is installing power poles, which can be a combination of wood and concrete, that will be able to withstand major hurricane-force winds. Hardening includes shortening the span between poles by installing additional poles and possibly placing some sections of power lines underground."); News Release, Ameren Illinois, *Ameren Illinois Files Electric Rate Update with Illinois Commerce Commission* (Apr. 16, 2021), https://ameren.mediaroom.com/2021-04-16-Ameren-Illinois-Files-Electric-Rate-Update-with-Illinois-Commerce-Commission (describing "[i]ntegration of storm-hardening equipment and other updates to the electric grid (stronger wires and poles and new substations)" amongst major investments planned for 2022). *See also* Kravtin 2020 at 31 nn.50-51.

E. Utilities' Varying Assumptions Regarding Pole Life Expectancy, and Variation in Retirement Patterns for Poles, Do Not Detract from the Ability of the Recurring Rate to Fully Compensate Utilities for Pole Replacement Costs.

Under the "group depreciation" accounting method that utilities use for poles, there is no expectation that the depreciation rate applied to poles will reflect the actual retirement experience of any *individual* pole. Rather, the calculation of depreciation expense for poles is based on depreciation parameters applied to the pole fixed asset group *as a whole*, with the expectation that the utility will periodically update these parameters to reflect both recent historical experience and expected future experience.

The fact that any given individual pole or set of poles may have an actual life that differs from the utility's average useful life (such as a pole retired early to allow a pole replacement to accommodate a new attachment) is largely irrelevant to the question of whether the utility is made whole through depreciation allowances for the cost of replacing it. This is because, for cost allocation purposes, the utility enjoys capital recovery of poles through depreciation allowances determined on an average group basis and subject to mass asset accounting retirement principles. In this regard, the average net investment per pole component of the recurring rate formula best aligns cost recovery of utility pole investment (without distinction amongst pole replacement, transfers, or new pole additions) with the manner in which the underlying depreciation allowances for utility poles as a mass asset accounting group are determined. This is also why, as addressed below, the proposal put forward by NCTA—to allow utilities to recover a non-recurring charge for a pole replacement that matches the net book value of the pole being replaced—provides assurance the utility will be made whole for early retirement of the replaced pole. Pole Account

364, under mass asset accounting, already incorporates an expectation that some poles will be retired early and some will be retired late.[84]

For purposes of allocating pole replacement costs, it is important to keep in mind the relationship between (1) the average useful life of poles as a group; and (2) the expected rate of utility pole replacement that is already implicit in the depreciation allowances that utilities use to recover their capital expenses through their rates (both ratepayer rates and pole rent). Utilities already set those rates at levels designed to fully recover their depreciation expenses and capital costs, using the most current depreciation parameters applied to the pole asset group as a whole.[85] Operating as designed, this recovery system, along with the attendant tax benefits, provides utilities with the cash needed to fund current and expected replacement of their pole plant.

To best ensure the utility's full recovery of pole replacement capital costs, the depreciation rate used in the recurring rate formula should equal the most current depreciation rate used by the utility for ratemaking purposes. As long as these depreciation rates align, the utility is assured recovery that encompasses poles retired earlier and later than average. This is because, by design, the application of depreciation group accounting to pole plant booked to Account 364, allows the utility to recover on an average group basis sufficient capital recovery to fund the current and expected future replacement of its total pole plant in service (including net salvage) over that assumed average life for its pole plant as a group.

Take the example of a utility whose depreciation accruals assume an average pole service life of 35 years, which (by design) will provide the utility with enough cash to replace each of its

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[84] *See* Comments of Altice USA, Inc. at 4, WC Docket No. 17-84 (Sept. 2, 2020) (as cited in *FNPRM* ¶ 31 n.97).

[85] This is subject to some degree of regulatory lag in between rate cases or updates by the utility, but regulatory lag is an inherent part of utility ratemaking and work in both directions, as opportunities to over-earn during the lag period balance any opportunities for under-earning. In addition, use of future test years based on forecasted data provides the utility additional opportunities to protect against regulatory lag.

poles in service an average of once every 35 years. On average, this implies a pole replacement rate of approximately 3% per year. For a utility applying a shorter remaining life of 17 years, the depreciation allowances built into utility rates would provide a source of cash sufficient to replace each of the utility's poles every 17 years, or approximately 6% per year.

Current data available from utility rate cases in distribution capital budgeting workpapers, state pole rulemakings, and other pole-related matters reporting "red-tagged" or replacement incidence rates suggest that utilities are not replacing poles at a faster rate than is contemplated in their depreciation allowances. But if pole replacements driven by broadband attachments were to cause utilities to accelerate pole replacements earlier than projected levels, the utilities could (and would have incentives to) respond to any such acceleration by performing updated depreciation studies to support higher accrual rates and/or by seeking additional depreciation expense amortizations to resolve any resulting imbalance between book and theoretical depreciation reserves.[86]

However, such imbalances are unlikely to occur given utilities' increasing use of the straight-line remaining life (SL-RL) method of depreciation. Table VI.E.1 below presents an illustration of this method. Under this method, a utility is able to distribute the unrecovered cost of the pole fixed asset group over the (typically shorter) estimated remaining useful life of its poles. The SL-RL method provides a self-correcting mechanism that modifies a utility's depreciation

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[86] Utilities may, in some instances, realize a periodic infusion of capital recovery through additional amortizations to their annual depreciation accruals. Utilities can seek out these additional amortizations when their booked accumulated depreciation reserves are out of balance with the "theoretical" reserve. *See e.g., In re The Prescription of Revised Percentages of Depreciation Pursuant to the Communications Act of 1934, as Amended*, Order, 4 FCC Rcd 1148, 1148 ¶ 2 n.3 (1989) ("An amortization amount is a specific amount to be charged to depreciation expense each year as opposed to a depreciation rate which is applied to plant investment to determine the depreciation expense charge." (citing *Amortization of Depreciation Reserve Imbalances of Local Exchange Carriers Report and Order*, 3 FCC 984 (1988))).

expense to account for any imbalances between its book and theoretical reserves.[87] Importantly, this includes any imbalance that may arise in connection with any early retirement of poles and/or associated projected increases in projected costs of removal.

Table VI.E.1

Illustration of Common Straight-Line Remaining Life Group Depreciation Method[1] for Calculating the Annual Depreciation Expense for Poles							
(1)	(2)	(3) = (1) x (2)	(4)	(5) = (1)-(3)-(4)	(6)	(7) = (5)/ (6)	(8) = (7) / (1)
Gross Pole Plant Investment	Estimated Future Net Salvage		Accumulated Depreciation Reserve	Depreciable Balance	Estimated Avg. Remaining Life	Annual Depreciation Accrual	Accrual Rate (%) Gross Plant)
	%	Amount					
$675,000,000	(150%)	($1,012,500,000)	$275,000,000	$1,412,500,000	38.7	$36,498,708	5.41%

Table VI.E.1 demonstrates the mechanics by which a utility accrues capital recovery under the SL-RL method over the estimated remaining life of its poles as a group — compared to an unadjusted straight-line accrual rate based on the estimated average total service life of the utility's poles[88] as shown in Table VI.E.2. But, under either method, the utility has opportunity to build in sufficient capital recovery related to earlier-than-planned pole replacement costs.[89] For this illustrative utility based on its selected depreciation parameters, *i.e.*, estimated average service life of 45 years, an estimated average remaining life of 38.7 years, and future net salvage of negative 150%, and

[87] In formulaic terms, the SL-RL method achieves this by adjusting the calculated depreciation accrual rate by the ratio of the depreciation reserve to the original cost (as recorded in the booked gross plant investment) where:
SL-RL Depreciation Rate = [(1-Future Net Salvage) – (ADR/Gross Plant Investment)]/Estimated Future Average Life Expectancy for the Group.
See CPUC Standard Practice at 8. *See also id.* at 9 ("Where the total life plan has been used and original estimates prove inaccurate, excessive or deficient accumulations in the depreciation reserve frequently occur. To overcome this, the use of remaining life principle has been adopted by many utilities."). *See also* Direct Testimony of Roxie Mccullar at 10:1–4 ("The desirability of using the remaining life technique is that any necessary adjustments of depreciation reserves, because of changes to the estimates of life or net salvage, are accrued automatically over the remaining life of the property" (quoting NARUC, Public Utility Depreciation Practices (1996) at 65)).

[88] In formulaic terms, the depreciation rate is derived under SL-ASL method is follows: [(1 – Future Net Salvage/Estimated Average Total Service Life (ASL) for the Group].

[89] *See* Direct Testimony of Roxie Mccullar at 9 ("The whole life technique is almost identical to the remaining life technique when a reserve imbalance amortization over the average remaining life is included.").

the current ratio between the utility's accumulated depreciation reserve and gross plant investment, the annual accrual rates are similar under both depreciation methods. Under the SL-RL method, the two main differences affecting the accrual rate are: (1) the recovery of costs over a shorter estimated average remaining life of the plant group; and (2) the sensitivity of the accrual rate to the relationship of the accumulated depreciation reserve as a percentage of gross plant investment, such that the accrual rate automatically calibrates to correct for any deficiencies or excesses in the utility's Accumulated Depreciation Reserve (ADR) in response to changing retirement patterns.

Table VI.E.2

Illustration of Common Straight-Line Total Life Group Depreciation Method for Calculating the Annual Depreciation Expense for Poles							
(1)	(2)	(3) = (1) x (2)	(4)	(5) = (1)-(3)-(4)	(6)	(7) = (5)/ (6)	(8) = (7) / (1)
Gross Pole Plant Investment	Estimated Future Net Salvage		Accumulated Depreciation Reserve	Depreciable Balance	Estimated Avg. Service Life	Annual Accrual	Accrual Rate (%) Gross Plant)
	%	Amount					
$675,000,000	(150%)	($1,012,500,000)	$275,000,000	1,412,500,000	45	$37,530,000	5.56%[90]

Depreciation allowances provide the utility a source of capital recovery amortized over the useful life of the asset of the full costs pertaining to the installation and retirement of the fixed asset, including the original cost of the asset (*i.e.*, the "life" cost) and the cost of removal ("COR") net of gross salvage ("GS") (*i.e.*, net salvage). Historically, the net salvage component was a small increment or decrement to the original installed cost of a pole as the two components tended to offset each other.[91] In more recent years, it has become common for utilities to build additional cost recovery into their depreciation allowances for distribution poles, primarily pertaining to the increased early pole replacement in connection with pole hardening programs,

[90] The total composite SL-ASL rate can also be expressed into its two component parts: a life rate [1/ASL] plus a net salvage rate [(1-FNS)/ASL]. In the example above, the SL rate breaks down into a life rate of 2.22% and a FNS rate of 3.33%.

[91] The outlay by the utility for the cost of removal applies as an addition to the original cost whereas the proceeds from gross salvage apply as a reduction to the original cost.

with the factoring in of negative net salvage rates of upwards of *negative* 150 to 200 percent.[92] This means for every dollar of pole investment retired off the utility's books, its ADR is written down by *double* the amount of retired pole investment, as illustrated below. Under group depreciation accounting, this affords the utility the opportunity to build in substantial additional cost recovery for earlier-replaced poles, as shown in Appendix 1 below. If a utility's actual costs of removal are lower than those reflected in the future negative net salvage ratios, or the number of poles retired are fewer than projected, the utility has the opportunity to build in excess recovery for earlier replaced poles.[93]

In sum, under the current regulatory ecosystem, pole owners have opportunity to regularly adjust their pole depreciation rates to reflect changes in the average total service life, average remaining life, and pole retirement experience of their pole plant (or to seek other means of increasing depreciation reserves) related to pole replacements (including those in connection with projected increases in broadband attachments). Regulated electric utilities may experience some regulatory lag in obtaining approval for their revised depreciation rates (or other allowances); however, regulatory lag operates in both directions, and utilities benefit from revenue growth during the lag period, including from increased pole attachment rentals.

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[92] *See, e.g.*, Ameren Illinois FERC Form No. 1 (2018), p. 337, pdf page 228, Account No. 364 (reporting Net Salvage Percentage of (150)); SDGE FERC Form No. 1 (2021), p. 337, Account No. 364 (reporting Net Salvage Percentage of (100)).

[93] For example, as explained earlier, the utility's pole group retirement accounting adjustments include both a debit (reversal) entry to the original gross pole plant investment (for the original cost on placing the plant in service) and a debit (reversal) entry to the contra asset ADR account for historical cost on retirement from service. The latter would include any remaining undepreciated amounts of gross pole investment. If, as is not uncommon, a utility is using a statistical vintage-based retirement analysis that assumes the oldest vintage plant with the lowest original installed costs is the cohort of poles being replaced earliest and it is that lower cost basis that is debited against the gross investment plant account, the utility's analysis and accounting entries may not be reflective of the poles being replaced in the field if a mix of poles of varying ages are being replaced (such as due to hardening requirements). This mismatch can cause an understatement of net retirement-related adjustments to the plant account and an overstatement of the remaining depreciable plant balance used in recurring rates.

This paper has focused on electric utilities given their primary ownership and control of the pole networks to which most new broadband attachments take place, and given their need and mandate to upgrade and harden their pole plant to meet separate regulatory and operational requirements related to resiliency. That said, a few comments are worth noting in regard to telephone utility pole owners.

Telephone pole owners were historically subject to similar regulatory oversight of their regulatory depreciation under rate-of-return regulation, but are today mostly deregulated, and hence afforded even greater discretion than electric distributors to set depreciation accrual rates and write downs pertaining to retired plant as they see fit. Telephone pole owners engaged in substantial write downs of their ADR relative to gross pole plant investment following the Commission's 2017 decision allowing price cap carriers to switch from USoA to GAAP accounting.[94] These accounting changes further enhance telephone pole owners' recovery through the recurring rate formula of capital costs associated with early pole replacement.

F. Recurring Rates, Through Depreciation Allowances and Other Capital Recovery Mechanisms and Points of Leverage for the Utility, Provide Substantial Recovery for Pole Replacement Costs.

The recurring rate formula multiplies three major components: (1) a utility's average embedded net bare cost of a pole; (2) a "carrying charge" factor used to annualize the carrying costs associated with each unit of net bare pole investment, consisting of five cost elements covering both operating (administrative and general maintenance) and capital-related expenses (depreciation, tax, and return); and (3) a space allocator factor used to allocate to each attacher an appropriate share of the fully allocated annual cost derived by the first two factors.[95]

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[94] *See Part 32 USoA Order*, 32 FCC Rcd 1735, ¶ 12.

[95] These three basic components apply to both the Commission's cable and telecom formula, the only difference being the formulation of the space allocation factor, *i.e.*, the cable formula's usable space factor ("USF") allocation approach is derived on the basis of usable space, whereas the telecom formula' USF is

Sources of capital recovery for the utility are interwoven through each of these three components and have been increasing over time. *See* Appendix 1. Given the forces at play as described in Appendix 1, the trend toward higher recurring rates will continue as utilities continue to invest increased capital in pole hardening and resiliency programs that are still in their early stages.

Appendix 1, using an illustrative recurring rate formula calculation, maps utilities' various capital recovery mechanisms and points of leverage to the pertinent component of the formula. While the example is illustrative, the figures shown are within the range of values underlying recurring rates being charged to third-party attachers across the country today. Several elements within the recurring rate provide utilities with enhanced opportunities to recover pole replacement costs. These include (1) the utility group depreciation accounting practices described earlier; (2) the underlying mechanics of the fully allocated formula methodology; and (3) the formula's reliance on historic presumptions about pole height, usable space, and the relationship between pole and non-pole investment booked to Pole Account 364.

While the capital recovery vehicles are multiple and interwoven through each of the three major components of the formula, the first component—the net bare cost of a pole—lies at the core of the formula's capital recovery of pole replacements, and its growth over time has been steadily driving up recurring rates.

As shown in Figure VIII.D.1 in the following section, which looks at a representative set of utilities across each major region of the country, there has been a tremendous growth in Account 364, in both absolute terms and as compared to the growth in the standard utility cost indices for

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derived on the basis of usable space, unusable space, and the number of attachers. Following changes to the Commission's rules in 2011 and 2015, the formulaic differences in the USF converge to the same rate.

new pole construction. At the same time Account 364 pole investment has been growing, the associated accumulated depreciation reserve ("ADR") for poles has been growing at a much slower rate, if not declining. The major reason that utilities consistently cite for this phenomenon is the growing rate of utility-driven pole replacement programs.

Historically, utilities' ADR for poles largely kept pace with their Gross Pole Investment, leading to a relatively stable net book investment in poles and stable recurring rates in the vicinity of an average $7 nationwide.[96] With the growing incidence of pole replacement and the associated early retirement of poles vis-à-vis expected service lives, that stable relationship has disappeared, leading to growth in utilities' gross pole investment far outstripping the growth in their ADR. The resultant decline in the ADR as a percentage of Gross Pole investment, along with flat to declining pole counts, has produced ever-increasing net book values and commensurately higher recurring rates, for the various reasons described in Appendix 1.

The magnitude of capital cost recovery afforded to the pole owner in the recurring rate has accordingly been increasing in recent years, in large measure precisely because of and in connection with utility-driven pole replacement programs. These programs are the direct outgrowth of efforts underway nationwide to harden and modernize electric distribution networks for better resiliency in the face of environmental disasters, customer demand for network reliability, and to support utility smart-grid applications. These programs, fully sanctioned (if not encouraged) by state regulatory commissions as prudent rate base investments,[97] are among the

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[96] *See* FCC, *Connecting America: The National Broadband Plan* at 110-11 (Mar. 17, 2010) (Recommendation 6.1 & Exhibit 6-A), https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf ("FCC National Broadband Plan").

[97] *See, e.g., In re: Review of 2019-2021 Storm Hardening Plan*, Fla. Power & Light Co., No. 20180144-EI, 2019 WL 3431140, at *11–13 (Fla. Pub. Serv. Comm'n July 29, 2019) (approving FP&L pole hardening plan, including feeder hardening efforts to install intermediate poles and replace existing poles with higher class poles in order to increase pole wind rating).

key forces driving up capital costs for poles recoverable in recurring rates, both as part of the "net bare cost per pole" and in the capital carrying charge component of the rate formula, as explained below.

The per foot rental rate paid by cable/broadband operators has increased substantially over the past decade, both in absolute terms and in comparison to standard utility cost indices for new construction. In its 2011 Broadband Report, the Commission reported an average recurring pole rental of approximately $7 per foot per year for cable operators and $10 per foot per year for competitive telecommunications providers.[98] Today, recurring rates between two and three times those levels are not uncommon.[99]

The same phenomenon holds true for telephone pole owners. Largely due to accounting artifacts that arise in connection with historic joint pole cost-sharing agreements between electric and telephone utilities, combined with telephone carriers' shift from USoA to GAAP accounting pursuant to a 2017 Commission ruling,[100] described above, rental rates computed under the Commission's recurring rate formula for telephone utilities are also increasing dramatically, in large measure as a result of utility-driven pole replacement programs at levels likely in excess of the telephone utility's actual cost burden.

Notably, the marked rise in average recurring rental rates paid by communications companies nationwide is inextricably related to the questions raised in paragraph 31 of the

[98] *See* FCC National Broadband Plan, at 110, Exhibit 6-A.
[99] *See e.g.*, *Petition of Niagara Mohawk Power Corporation d/b/a National Grid to Modify Pole Attachment Rates*, P.S.C. No 220, Case No.: 22-E-0125, Revised Tariff Leaf: 195, Attachment 1, filed Feb. 28, 2022; *In re the Application of Duke Energy Ohio, Inc. to Amend Its Pole Attachment Tariff*, Pub. Util. Comm'n of Ohio Case No. 22-164-EL-ATA, filed Mar. 4, 2022. These tariff filings show utility calculated recurring rates of $16.75 and $17.05, respectively. Based on issues identified in a Public Utility Commission of Ohio staff report, Duke modified its pole rate to $12.42. *See id.*, Modification of Pole Attachment Rate Calculation by Duke Energy Ohio, Inc., filed May 3, 2022.
[100] *See Part 32 USoA Order*, 32 FCC Rcd 1735, ¶ 12.

FNPRM. As described in Appendix 1, much if not most of the upward pressures on the recurring rate can be tied—directly or indirectly—to capital recovery in some way related to utility-driven pole replacement programs in combination with a host of other interrelated factors.

Utilities have argued that the Commission's recurring rate formula, by allowing utilities to recover from each individual attacher that attacher's respective proportionate allocation portion of the utility's total utility pole investment costs,[101] would be insufficient to fully compensate utilities for the cost of pole replacements because utilities can ultimately only recover a portion of those costs from attachers, with the remaining costs of replacement ultimately falling on utility ratepayers. This argument reflects a common misunderstanding of how the recurring rate formula operates. The argument presupposes incorrectly that the formula either does not assign, or that it under assigns, the costs of unusable (*i.e.*, common) space to the attacher. Such a misunderstanding confuses the type of allocator used to assign total facility costs (*i.e.*, an occupancy-based one) with the underlying facility costs being assigned (*i.e.*, the total costs of the facility). By allocating the attacher's fully allocated share of the costs of *the entire* pole in proportion to a reasonable allocation of usable space occupied, the recurring rate formula assures that the pole owner is fully compensated for the costs directly and indirectly attributable to the communications attacher. It simply does so in a manner most closely aligned in the true economic sense with how the costs of pole attachments are actually incurred, in proportion to the direct occupancy of the attachment.

The recurring rate formula also applies to all attachers, in cumulative fashion, *i.e.*, each attacher pays its proportionate share of the entire costs of the pole. Additionally, to avoid a subsidy from attachers to the utility, the utility is imputed, at a minimum, a share of costs based on its *own*

[101] *I.e.*, a share of total utility pole costs assigned based on the attacher's relative occupancy of the pole (in the case of the cable formula), or (in the case of the telecom formula) indirectly through application of cost factors aligning that rate with the cable rate.

direct occupancy; given the utility's superior rights of access to the pole, under economic principles, it should be allocated costs based on a ratio somewhat higher than direct. Taking into account the totality of attachments on a given pole (from 3 at the low end up to 5 at the upper under FCC presumptive values), with one of the attachers typically being a joint telephone utility, the recurring rate affords the utility recovery opportunities consistent with, if not *more* than, its appropriate pro rata share of the pole cost given its own relatively high use of the pole, which is approximately twelvefold that of a communications attacher.[102]

VII. NCTA'S PROPOSAL TO HAVE NEW ATTACHERS BE RESPONSIBLE FOR THE REMAINING NET BOOK VALUE OF REPLACED POLES WOULD PROVIDE SUFFICIENT CAPITAL RECOVERY.

The preceding section also demonstrates, from an objective economic standpoint, why the proposal for attachers to reimburse pole owners for pole replacements through a non-recurring charge, equal to the NBV of a replaced pole, would provide assurance the utility will be made whole for the early retirement and lost time value of money. This approach would align the cost recovery from attacher to the same set of depreciation parameters reported by the utility and used in the setting of depreciation allowances for poles as a group. Indeed, this approach results in a surplus to the utility above and beyond recovery of its costs, because it adds this non-recurring charge on top of the capital recovery for pole replacement that is already built into recurring

[102] This includes the separations space which the Commission has described as "usable and is used by the electric utilities." *In re Amendment of Rules and Policies Governing Pole Attachments*, Report and Order, 15 FCC Rcd 6453, 6467-68 ¶ 22 (2000), *aff'd sub nom. Southern Co. Servs., Inc. v. FCC*, 313 F.3d 574 (D.C. Cir. 2002). Indeed, the utility is the only entity which can place attachments in this space, and the utility's own direct use is about 12 feet, compared to cable's one foot. Applying the same FCC space factor used to allocate costs to cable, the utility should be allocating to itself a minimum of roughly 70-80% of the cost of a standard 40-foot joint-use pole. Similarly, because under their joint ownership agreements, joint telephone owners are generally allowed to occupy two to four feet, there would be another roughly 20% allocated to the telephone utility.

rates.[103] Given the opportunities for recovery of pole replacement costs afforded utilities under the Commission's two-part pricing structure, this approach would leave no "additional costs [that] would need to be allocated to the new and/or existing attachers to ensure that utilities are compensated for the costs of attachments to their poles."[104]

The *FNPRM* understandably focuses on whether the utility would be made whole for early replacement, given utilities' previous objections to the NBV proposal put forward by NCTA in 2020. Utilities' counter to the use of average NBV was that the actual service lives of poles generally exceed their depreciation lives, such that utilities would be "prevented from fully realizing the value of their infrastructure asset when a new attachment request requires the early retirement of an otherwise serviceable pole [such that] there is little incentive for them to approve the request." This objection does not pass economic muster.

This objection to the NBV approach, taken to its logical conclusion, would suggest that utilities are over-recovering their investment in pole plant by continuing to depreciate older plant in service that has already been fully depreciated.[105] Assuming utilities are acting rationally, they should not have to "over recover" in order to be properly incentivized to approve a pole replacement request. Rather, it should be sufficient incentive to be made somewhat more than whole—as occurs today, as discussed in the preceding section, through a combination of depreciation allowances (in both recurring rates and ratepayer rates) and other avenues for

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[103] In addition to providing opportunities for utilities to recover both a non-recurring pole replacement charge and the regular recovery of their pole replacement costs through the recurring rate, the NCTA proposal would also allow the utility additional avenue of recovery for replacement-specific idiosyncratic costs, such as added pole height or strength.

[104] *See FNPRM* ¶ 30.

[105] The Commission is well familiar with this phenomenon in connection with ILECs, whose net book value for poles as a group (under USOA accounting) were often negative. The Commission responded with an alternative rate formula methodology that did not allow the ILEC to earn any further return on its over-depreciated plant.

enhanced recovery built into the recurring rate, and in addition to receive the immediate betterment value of the upgraded plant. Indeed, given the rise in recurring rates over the past decade, there is much less potential risk that the Commission's adoption of policies promoting cost-sharing for pole replacements will create structural disincentives for pole owners to invest in their pole networks. (Provided, of course, that utilities respond rationally to economic incentives, and do not face external incentives to exert anti-competitive, holdup leverage over broadband attachers, such as in the case of pole owners who are themselves competitors in the broadband market).

The arguments raised by Xcel Energy in response to the NBV proposal cited by the *FNPRM*, which take issue with any rule change that involves assumptions about the relationship between depreciation lives and actual service lives,[106] are a red herring. Nothing in the NBV proposal—or in the alternative recurring rate proposal on which the *FNPRM* seeks comment—is inconsistent with the economic realities that may exist at the level of the *individual* pole, such as the ones asserted by Xcel Energy as fact, *i.e.*, that "the actual service life of a pole is based entirely on the pole's *condition*—regardless of its age or its depreciated value."[107]

This argument improperly conflates the life expectancy of any given individual pole, or with a particular vintage cohort of poles, with those for the utility's pole assets as a group. It is the latter that is relevant, as it is used in determining depreciation allowances affording the capital recovery of utility poles in service for ratemaking purposes. Accordingly, it is the latter that is relevant to the key economic and legal concerns regarding wholeness to the pole owner.[108]

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[106] *See FNPRM* ¶ 28 & n.78; *id.* ¶ 31 & n.97.

[107] *FNPRM* ¶ 28 n.78 (quoting Comments of Xcel Energy Services Inc. at 5, WC Docket No. 17-84 (Sept. 2, 2020)).

[108] In fact, given today's aggressive distribution plant hardening and modernization programs underway nationwide, the actual service life of any given individual pole, even absent an attachment request that drives a pole replacement, is less likely to be "based entirely on the pole's *condition*." *Id.* (emphasis in original). Factors that drive utility-driven pole replacements, such as location within a high wildfire or flood zone, also come into play along with the condition of the pole.

Concerns about variation in individual pole longevity, at best, raise questions concerning the distributional equity of the non-recurring pole attachment fees as it relates to the recovery of any given individual pole or cohort of poles. But those questions are distinct from the matter of whether utilities are adequately compensated for pole replacements under either the NBV approach originally proposed by NCTA or the recurring rate approach on which the *FNPRM* seeks comment.

The fact that studies and surveys may show actual pole service lives exceeding their depreciation service lives, as cited in the comments of some utilities opposed to the 2020 NCTA Petition,[109] also does not impact the ability of the utility to be made whole using group accounting methods for poles. To the contrary, it demonstrates that (if actual pole service lives exceeding depreciation service lives cited by Xcel are in fact occurring) utilities have the opportunity to enjoy depreciation allowances that allow them to recover more than 100% of their pole investment, to the extent depreciation accrual rates apply on a group basis equally to all surviving plant in service. At a minimum, utilities' ability to utilize depreciation lives shorter than total service lives for tax purposes (under accelerated depreciation provisions of the tax code) and regulatory depreciation purposes (under the SL-RL method) allows them to recover the cost of their average pole plant in service more quickly. And since depreciation is a non-cash expense, this gives utilities the ability to build up cash reserves to fund the replacement of their pole plant on a more accelerated basis as well. Use of depreciation lives shorter than the average total service lives of poles accelerate and increase the utility's capital recovery of its pole asset group as a whole, and do not take into consideration any additional value to the utility of the use of individual pole assets that extend beyond the average group life for depreciation purposes. It is logically inconsistent for utilities to then take the position that, for purposes of pole replacements, the NBV approach provides

[109] *See id*. ¶ 28 n.77; *see also id.* ¶ 30 n.96.

insufficient recovery because it fails to recognize the value to the utility of individual poles that remain in place "well beyond average service life."[110] For the reasons explained in this paper and in Kravtin 2020, the NCTA proposal to allow utilities to recover the remaining NBV of replaced poles from new attachers in nonrecurring make-ready charges, while also paying recurring rates, provides the utility with much more than sufficient capital recovery.

VIII. UTILITY CLAIMS OF NEGATIVE IMPACT OF THE NCTA PROPOSAL ON THEIR CUSTOMERS ARE NOT SUPPORTED, AND FAIL TO CONSIDER THE MORE THAN OFFSETTING GAINS OF MORE EFFICIENT DELIVERY OF BROADBAND THEIR CUSTOMERS WOULD ENJOY.

A key line of objection that utilities have raised to potential rule changes that would implement cost-sharing for pole replacements (in particular, the NCTA proposal put forward in 2020) has been that such proposals will require the pole owner's ratepayers to bear additional costs. Utilities advanced similar objections in connection with the Commission's reforms to its recurring telecommunications rate formula in 2011, as well as similar reform proposals in states that regulate pole attachment costs.

The objection that the NCTA proposal would have a harmful impact to ratepayers is not one that is supported. In the first instance, the objection itself does not align with publicly available information regarding utilities' investments and costs. But even if there were evidence that cost-sharing proposals for pole replacements would affect a significant, measurable impact on ratepayers, an appropriate economic social welfare analysis would weigh any such impact on the average ratepayer (usually a retail electric customer) against the positive impacts on broadband customers, understanding that these populations are largely overlapping.

[110] *See id.* ¶ 28 n.80 (Initial Comments of the Electric Utilities in Opposition to NCTA's Petition for Expedited Declaratory Ruling at 22, WC Docket No. 17-84 (Sept. 2, 2020)).

A. High Pole Replacement Charges Are an Inefficient Means to Defray Electricity Costs.

One might consider high charges for pole replacements a useful method to defray the rising costs of delivering electric distribution services, particularly in jurisdictions where the cost of electric service is increasing as a result of pole hardening programs (many of which are underway throughout the nation based upon state regulators' determinations that increased investments in this area are in the public interest). However, treating broadband attachments as a source of funding for such investments invites the very cost reallocation problems that lead to economic inefficiency. Efficient prices promote the highest and best use of resources. A market participant with the power to charge prices significantly in excess of marginal costs is not entitled to recover "losses" when regulatory changes cut off or mitigate its opportunities to charge monopoly rent.[111] As articulated in Kravtin 2020, "[e]fficient pricing properly balances the goal of promoting investment in broadband infrastructure 'with the historical role that pole rental rates have played in supporting … pole infrastructure,' and allows broadband deployment to occur" where there is an economic business case to do so.[112]

Efficient pricing (and the gains from such pricing) preclude third-parties, such as broadband providers, underwriting costs that are properly borne by the electric ratepayer (or the greater public at large through general taxation) in the course of providing a reliable, resilient pole network for purposes of the utility's core electric distribution service, and that would still occur in the third-party's absence. Shorter, older and/or non-compliant poles that fail to meet current utility service guidelines are candidates for replacement irrespective of a new attacher's request, and the cost of those replacements (except for the temporal cost of shifting the timing to an earlier date) is

[111] *See Ala. Power Co. v. FCC*, 311 F.3d 1357, 1369-70 (11th Cir. 2002).
[112] *See* Kravtin 2020 at 41 (quoting *2015 Order on Reconsideration*, 30 FCC Rcd at 13734-35 ¶ 9).

rightly borne by the electric ratepayer for whom the network was built and is being maintained to serve. Since its inception, the utility's core electric service has been, and necessarily remains, the principal driver of its capital budgeting decisions and investment in its pole network infrastructure. Utilities' planning for the appropriate amount of pole plant of the height, type and class they deem appropriate is ultimately based on their own operational needs (and private liability risk) and in response to regulatory mandates for service quality and network resiliency.

B. Assigning the Primary Responsibility for Pole Replacement Costs to Utility Ratepayers Enhances Societal Economic Gains; Conversely, the Assignment to Attachers Causes Deadweight Losses Akin to an Inefficient Tax.

From an economic and policy perspective, the bulk of pole replacement cost responsibility appropriately rests with its primary cost driver—the provision of the utility's core electric distribution service. The shifting of that responsibility beyond the costs caused by the attacher (for which the NCTA Net Book Value approach already proposes a recovery mechanism) onto broadband attachers operates just like an inefficient tax on broadband service, suppressing the large positive externalities of increased broadband adoption by the consuming public (which includes the utility's ratepayers). The public interest is decidedly harmed in this instance by the distorting effects of the pricing inefficiencies imposed by excessive pole replacement costs.

As explained in Kravtin 2020, the only difference between high pole replacement charges and an inefficient tax imposed on an industry is that the utility, and not the government, reaps the resulting cash levy.[113] This can have particularly troublesome effects on competition given that many utilities are themselves potential entrants into the broadband market (either directly or through affiliates or partners) and therefore have the ability to levy 'taxes' on a potential competitor. Following fundamental principles of economics well-recognized in the public

[113] *See* Kravtin 2020 at 40.

regulatory and economic literature, the ultimate or inevitable market outcome of inefficient tax-like effects from excessive charges levied by utilities on broadband providers is less investment by those broadband providers, and less availability and affordability of the service to consumers. This is because inefficient taxes levied on a vital input introduce market distortions into both the supply and demand sides of both the intermediate (pole) input and final downstream (broadband) product market that reduce consumer welfare and create deadweight losses.[114] Such an outcome decidedly harms consumers including the utility's own ratepayers and must be taken into account in a proper economic assessment of ratepayer harm.

In addition, further compounding the situation, the tax-like burden of high pole replacement charges is highly discriminatory in nature as it does not impact the utility's own or affiliate broadband operations in the same manner as it does third-party attachers, since the flow of monies are kept internal within the broader operations of the utility. Pole owners with combined utility/broadband operations have both opportunity and incentive to adopt a strategy of excessive pole charges that erects and compounds barriers to entry facing third-party broadband competitors so as to afford their own current or future broadband operations a competitive advantage. While such a strategy may provide a source of cash for the utility side of the ledger, this is not in the best interests of competition, which inures to the direct benefit of the utility's ratepayers who, as consumers of broadband, are among the key stakeholders to benefit from adoption of cost-sharing arrangements for pole replacements. These include several important multiplier effects of broadband on economic and social wellbeing that would likely materialize as suggested by the strong empirical evidence cited in Kravtin 2020.[115] So even if ratepayers were to face non-trivial

[114] *See* Walter Nicholson & Christopher M. Snyder, *Microeconomic Theory: Basic Principles and Extensions* at 442-46 (11th ed., Cengage Learning 2012) (explaining deadweight loss effects of taxes); *id.* at 508 (explaining deadweight loss, and allocational and distributional effects of monopoly).
[115] *See* Kravtin 2020 at 25-26 nn.39-43.

impacts from reforms to the Commission's rules around cost-sharing for pole replacements, that impact would need to be weighed against those corresponding benefits to competition and to retail subscribers.

Social welfare analysis takes into account both gains and losses associated with any particular action. In the context of pole replacement costs, that analysis would examine any claimed negative impact on the average electric customer in comparison to the positive impacts on the broadband customer side—an analysis that is particularly appropriate given that the two populations are largely overlapping.

C. Negative Impacts on Utility Ratepayers Are Neither Conceptually nor Factually Supported.

While publicly reported data on pole attachment charges paid by third-party attachers is limited, as shown below, the available reported data shows that any potential impact on utility ratepayers from adopting cost-sharing proposals for pole replacement costs would be minimal in relation to the potential positive gains to broadband customers. FERC accounting rules do not require utilities to report pole attachment charges paid by third-party attachers—either in the aggregate or as broken down into non-recurring or recurring charges. Nor are there specific FERC accounting guidelines directing how the various components of nonrecurring charges are to be treated. Notwithstanding the lack of FERC reporting guidelines, data provided in the FERC Form 1 on total rental income received from others for use of utility property more generally can be used to assess the validity of utility claims there would be significant negative impacts on utility ratepayers from the proposed rule change regarding pole replacement costs.

As shown in Table VIII.C.1 below for a representative set of utilities from different regions across the country, total payments received by utilities from others pertaining to the latter's use of electric property *in their entirety* (as publicly reported in the FERC Form 1 in Account 454,[116] and of which pole charges paid by third-party attachers are just one component) represent, on a per-electric-customer-dollar-hour basis, an exceedingly small portion of electric utility service revenues (of the order of magnitude of ½ of one percent).[117] The category of revenues reported in FERC Account 454 thus provides a reasonable, if not high, proxy for third-party pole charges. As shown in Table VIII.C.1, a one-third reduction of total Account 454 revenues potentially leads to an increase of only around $0.25 per customer per month. This means that conforming replacement cost charges to the Commission's cost-causation framework as contemplated in the NCTA NBV proposal would have little noticeable impact on ratepayers with respect to the availability or affordability for electricity.

[116] *See* 18 C.F.R. pt. 101, Account 454 "Rent from electric property" (noting Account 454 "shall include rents received for the use by others of land, building, and other property devoted to electric operations by the utility," and including "any … interest or return or in reimbursement of taxes, or depreciation on the property.").

[117] *See also, e.g.*, Southern California Edison ("SCE"), *2021 General Rate Case before the Public Service Commission of the State of California*, SCE-02 Volume 7 at 35 (June 12, 2020), https://www.sce.com/regulatory/CPUC-Open-Proceedings (showing 2018 pole attachment rental revenues of $6,206,000). When compared to SCE's 2018 total electric revenues of $12,796,966,537, as reported in SCE's FERC Form 1, pole attachment revenues are less than half of one percent: $6,206,000/$12,796,966,537 = 0.00485. *See* SCE FERC Form No. 1 for year ending 2018 at p. 300, line 27, column b (filed Apr. 17, 2019). *See also* Docket No. DT 12-084, Response to TW-COMCAST-01, Q-TW-COMCAST 006 (N.H. Pub. Serv. Comm'n Sept. 28, 2012) (showing 2008 pole attachment revenues of $1,899,000). When compared to 2008 total electric revenues of $1,173,647,888 as reported in SCE's 2008 FERC Form 1, pole attachment revenues are less than one-fifth of one percent: $1,899,000/$1,173,647,888 = 0.00162.

Table VIII.C.1.

Estimated Impacts of Reductions in Pole Attachment Charges on the Average Utility Customer Based on Publicly Reported FERC Form 1 Data - Year Ending 2021						
FERC Form 1	**Acct 400, Total Revenues p. 300, line 14b**	**Acct 454, "Rent from Electric Property," p. 300, line 19b**	**Avg. Number of Customers p. 301, line 14f**	**Total Acct 454 Rent as % of Total Utility Revenues**	**Total Acct 454 "Rent"/Per Customer/ Per Month**	**One-third Acct 454 Rent/ Per Customer/ Per Month**
Row	**(a)**	**(b)**	**(c)**	**(b) / (a)**	**(b) / (c) / 12**	**((b)x.33) / ((c)/12)**
Utility						
Georgia Power	$8,679,885,017	$23,852,963	2,657,945	0.27%	$0.75	$0.25
PSEG	$4,195,020,234	$11,821,955	2,323,747	0.28%	$0.42	$0.14
APS	$3,714,375,216	$1,430,408	1,317,311	0.04%	$0.09	$0.03
SDG&E	$3,536,222,141	$4,820,177	1,387,773	0.14%	$0.29	$0.10
FPL	$11,919,471,915	$93,098,915	5,214,263	0.78%	$1.49	$0.49
Energy LA	$4,816,014,064	$23,745,343	1,106,519	0.49%	$1.79	$0.60
Oncor	$3,762,691,671	$25,830,088	3,802,319	0.69%	$0.57	$0.19
Ameren IL	$1,641,792,223	$14,990,418	1,228,564	0.91%	$1.02	$0.34
Average				0.45%		$0.27
Median				0.39%		$0.22

Not only is the impact on electric rates very small, the demand for electric distribution service is not price sensitive—it is what economists refer to as 'inelastic' demand. This means that even if the impact of pole attachment revenues per electric subscriber were significant, subscriber demand for electricity would not be negatively impacted. If anything, subscriber demand for electricity could actually increase in connection with greater access to high quality broadband, and an increase in their overall economic welfare.

Utilities' common assertion that cost-sharing for pole replacements will lead to electric rate increases is also unlikely due to other offsetting factors, including (a) the growth in pole attachments and other recurring and non-recurring fees paid by attachers; and (b) the likely growth in customer demand for electricity (including that from increased broadband) allowing fixed costs of the utility to be spread across a larger base.

D. Aggressive Growth Trends in FERC Account 364 for Poles Are Inconsistent with Potential Claims of Negative Impact on Utility Investment in Pole Infrastructure from Reduced Pole Attachment Charges.

Similarly, there is no evidence to suggest that the cable rate, during the more than four decades that it has been in effect (or the Commission's decision to conform the telecommunications rate to the cable rate a decade ago), has led to any dampening of investment in distribution plant by electric utilities.[118]

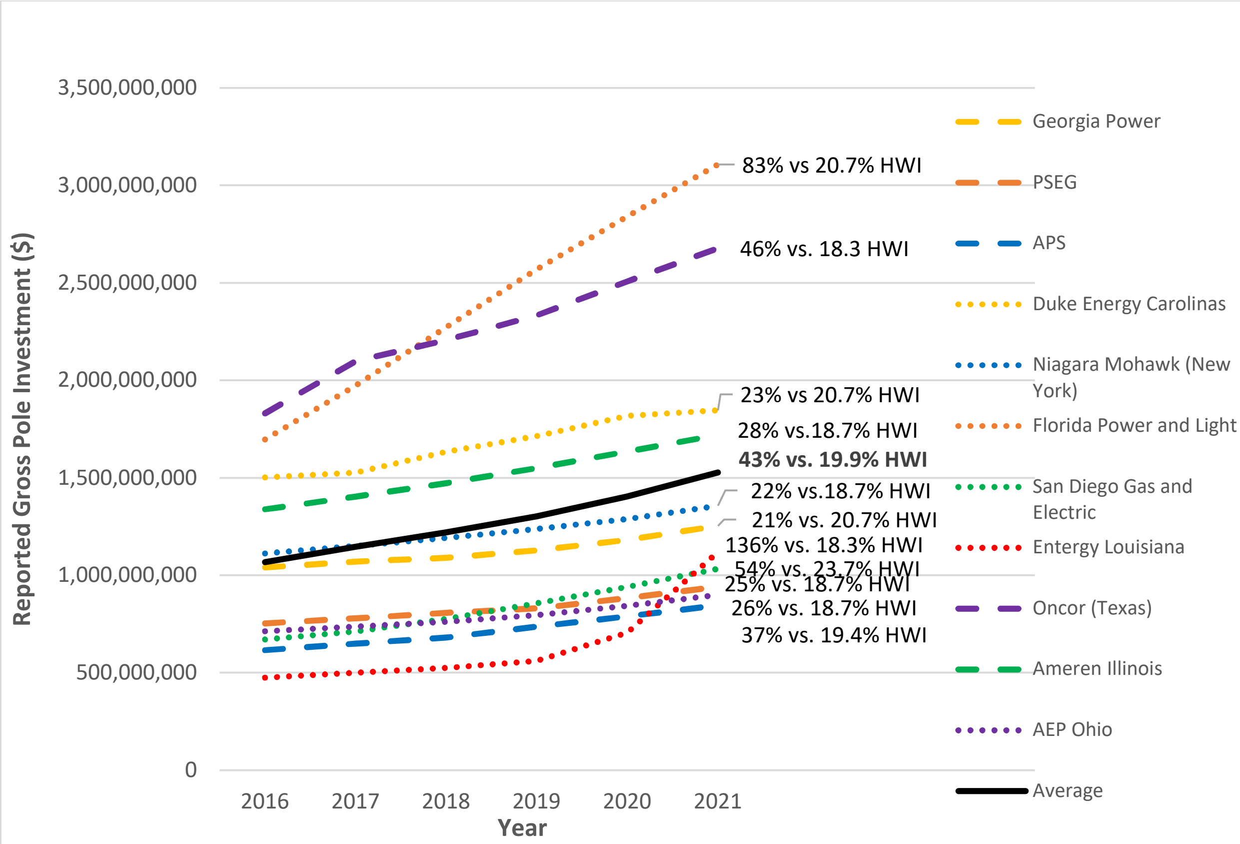
To the contrary, increases in utilities' investment in their pole plant—as reflected in their reported Account 364 gross investment—has been steadily increasing over time, and for some utilities with known aggressive hardening programs, has increased dramatically (*see, e.g.*, Florida Power and Light, Entergy Louisiana, and San Diego Gas and Electric). The advent of utility network hardening programs, with resultant increases in utility Account 364 gross investment, is a growing nationwide trend.

As shown in Figure VIII.D.1 below, the steady increases in the Account 364 gross pole investment for all utilities equals or far exceeds the increase in standard utility cost indices for new pole plant construction, suggesting that investment is far outpacing increases in construction costs. This fact is quite remarkable given that utilities' reported Account 364 gross pole plant balances represent not only new construction, but comprise the entire historic embedded base of all utility pole plant in service, including poles of all vintages including older poles with a very low original cost basis.

[118] Similar ratepayer impact arguments were raised at that time. *See 2011 Pole Attachment Order*, 26 FCC Rcd at 5303 ¶ 146 & n.438.

Figure VIII.D.1

Growth in FERC Account 364 - Gross Pole Investment vs. Utility Cost Index for New Pole Construction for the Period 2016 - 2021

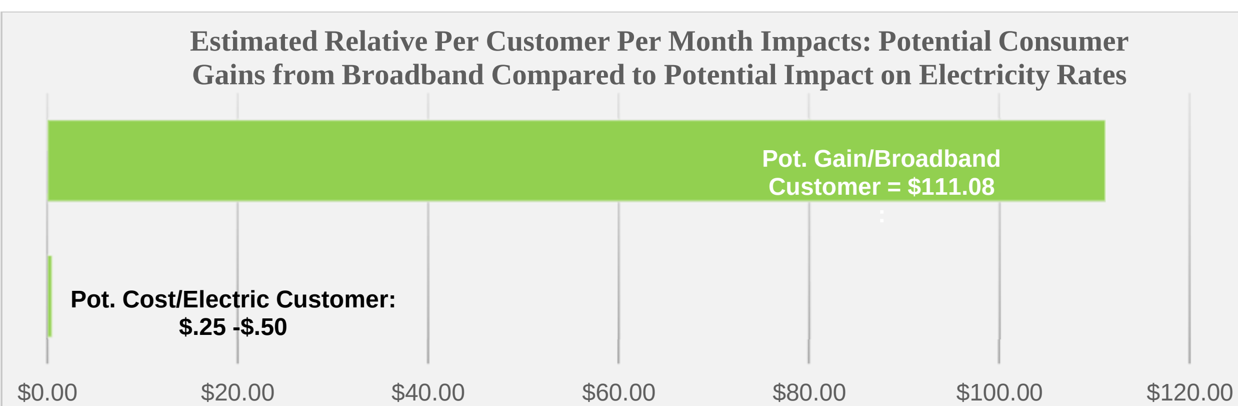


This data further undercuts claims that cost-sharing reforms for pole replacements would lead to increased electric service rates. First, given the extremely modest ratio of pole replacement charges relative to total electricity revenues shown in Table VIII.D.1 above, there is no logical reason why a reduction in those charges would have a significant if even noticeable impact on the utility's cost of service. Second, as explained above, the immediate revenue reduction to pole owners from reduced non-recurring charges for pole replacements could be offset by increases in recurring pole attachment fees. But assuming for sake of argument that reductions in the revenues that pole owners realize from pole replacement charges were made up dollar for dollar in higher electric bills, as shown in Table VIII.D.1 above, a reduction in those pole revenues would place minimal, if any, upward pressure on utility rates.

E. Any Very Small Potential Negative Impacts from the Proposed Pole Replacement Reforms on the Electric Side Are Counterbalanced by Quite Substantial Gains to be Realized on the Broadband Side.

While any potential increase on the electric side from reforms to the Commission's pole replacement cost allocation rules would be extremely small, the potential gain in consumer value that would inure on the broadband side of the equation from lower pole rates, on an average per subscriber basis, would be substantial. As identified by Lopez and Kravtin in 2021, per-consumer gains associated with expanded access to high quality broadband as measured by consumer willingness-to-pay is estimated at $111.08 per customer (for current high grades of service).[119] In order of magnitude, this is roughly 300 to 400 times the potential per customer increase on the electric side as shown in Table VIII.D.1 above. The clear beneficial gains to net social welfare that could accrue from a reduction of pole attachment charges expressed on an average per customer basis (broadband vs. electric) is depicted below.

Figure VIII.E.1



[119] *See* Lopez & Kravtin, *Advancing Pole Attachment Policies* at 6, 19.

In sum and as a general economic proposition, there is no good purpose to be served by the current practice of make-ready charges for replacement poles well in excess of efficient levels. Allowing pole owners to recover costs from attachers in excess of economically efficient, just and reasonable levels produces detrimental impacts on broadband deployment and affordability, with little to no real offsetting benefit to the utility or its ratepayers. Utilities' ratepayers stand to benefit much more as customers of broadband than they may face in terms of a very small potential increase in what they pay for electricity.

Appendix 1

RECURRING RATE CALCULATION WITH NARRATIVE EXPLANATION OF CAPITAL RECOVERY MECHANISMS					
Line	**Formula Input/ Calculation**	**Illustrative Formula Input Value**	**Depreciation Allowances and Other Sources of Capital Recovery of Pole Replacements**	**Utility Leverage Opportunities for Additional/ Excess Capital Recovery of Pole Replacements**	**Source/Notes:**
1	**Gross Investment in Pole Plant**	$675,000,000	The costs of all poles replaced by the utility, which are booked to Account 364 and included in the Gross Investment formula value.	Utility may include "non-unitized" investment not yet classified into units (i.e., pole counts), which can cause an overstatement of the per unit Net Book Value of Bare Pole Investment to which carry charges (incl. depreciation and rate of return (ROR)) apply. Make-ready payments from attachers should be credited against this account, but utilities may not maintain records at the level of detail to confirm credits.	Gross Investment is total amount reported in FERC Form 1 for Acct. 364 (Poles, Towers, and Fixtures).
2	**- Accumulated depreciation reserve (ADR) for poles**	$275,000,000	The ADR is a contra fixed asset account to which the annual depreciation accruals for poles are booked. It is an offset to gross pole investment to determine the NBV for poles. In addition to the accumulated accretions from each year's crediting to the provision, the ADR also reflects the running total of any reversals or effective write-downs the utility is allowed to make to fully account for costs pertaining to pole retirements (and hence highly correlated with pole replacement). The ADR is debited (reduced) for both estimated future costs of removal and the full historical cost of the retired poles, inclusive of any remaining undepreciated book amounts associated with poles retired earlier than the estimated life for depreciation purposes.	Utilities can increase write-downs of the ADR for poles in conjunction with pole replacement by assigning larger negative future net salvage ratios (FSS%) to Account 364. Utilities enjoy substantial leeway in setting their FSS% and write-downs to ADR. As reversals to ADR for poles have grown in connection with pole replacement programs, more utilities have been using ADR balances from their Fixed Asset Accounting Records for Account 364 instead of the proration method, but are not routinely required to share the underlying accounting data with attachers.	From Internal Utility Fixed Asset Accounting Records for Acct 364 or Prorated from Distribution Plant. Internal Records will reflect reversals (write downs) of ADR to reflect current and future estimates of negative net salvage costs for replaced poles.

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Line	Formula Input/ Calculation	Illustrative Formula Input Value	Depreciation Allowances and Other Sources of Capital Recovery of Pole Replacements	Utility Leverage Opportunities for Additional/ Excess Capital Recovery of Pole Replacements	Source/Notes:
3	**- Accumulated deferred income taxes (ADIT) for poles**	$70,000,000	ADIT is a tax liability account to record timing-related differences between the tax basis of the utility's fixed assets and their respective regulatory book valuation. This arises from the utility's ability to claim higher depreciation expense for tax purposes (in the early years of a new asset's life) as compared with regulatory depreciation (which is applied consistently across the asset's life using a straight- line method of depreciation, based on average total service or remaining life of the pole group. Because ADIT provides a source of capital to the utility, it is subtracted from gross pole investment (unless a state regulatory authority includes ADIT as a zero-cost component of the utility's capital structure.) The ADIT reserve provides, through tax benefits, a source of zero cost capital to fund gross pole investment (including pole replacement). Because the tax benefits of accelerated depreciation accrue in the early years of utility asset lives, the earlier replacement of older pole plant reduces the average age of utility plant, thereby increasing the realized tax benefit to the utility..	Utility may opt to exclude "excess" ADIT created by the reduction in corporate tax from 35% to 21% under the TCJA 2017. These "excess" amounts (per GAAP) were moved out of designated ADIT accounts at year-end 2017 into Reg. Liability Acct. 254 awaiting their amortized return to ratepayers. Exclusion of EADIT amounts reduces the amount of the ADIT offset to gross pole investment, which increases the Net Book Value of Poles to which annual carry charges (incl. depreciation) apply. A handful of states (e.g., OH, CT) have formally directed utilities to include EADIT amounts created under TCJA 2017 carried in Acct. 254 in their recurring pole rate calculations in the same manner as required for utility ratemaking purposes. However, because the Commission has not required the inclusion of EADIT in recurring rate calculations, many utilities have not done so, the effect of which is an excess of capital recovery built into recurring rates.	Prorated from Total Utility or Electric Plant Accts 190, 218,282, 283. Per GAAP accounting, unamortized EADIT balances were moved out of the standard ADIT accounts and booked as a Regulatory Liability in FERC Acct. 254. EADIT balances booked to Acct. 254 are reduced in accordance with an amortization schedule based on the average life of total utility assets "protected" under the normalization rules to which the ADIT derived using the "ARAM" method as provided in the TCJA 2017.
4	**= Net Book Value (NBV) of Poles**	330,000,000			Ln 1- Ln 2- Ln 3
5	**x [1- Appurtenance Factor (AF)%]**	.85		Utility is able to choose *the lower of* the two options afforded under Commission rules. Utilities may not provide underlying investment data, or claim the data is not maintained at the level of detail required to differentiate pole from non-pole investment booked to Acct. 364. Investment in non-pole investment booked to Acct. 364 is increasing relative to historic levels in conjunction with the hardening of cross arms as part of utility resiliency programs. Even where detailed CPR records are provided, newer composite/metal poles prevalent in hardening programs are commonly "fully dressed" with appurtenances, so that investment in appurtenances is not readily identified and understating the amount of appurtenance investment deducted from the NBV of Poles.	Actual Percentage. of Appurtenance Investment to Total Gross Plant Investment booked to Acct. 364 from Internal Utility CPR Records or FCC Rebuttable Presumption of 15%. .
6	**= Net Bare Pole Investment**	$280,500,000			Ln 4 x (1-AF%)

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Line	Formula Input/ Calculation	Illustrative Formula Input Value	Depreciation Allowances and Other Sources of Capital Recovery of Pole Replacements	Utility Leverage Opportunities for Additional/ Excess Capital Recovery of Pole Replacements	Source/Notes:
7	**/ Total Number of Sole Owned Equivalent Poles**	475,000	Because the pole formula derives cost on a per unit basis, replacement poles will have a larger impact on the net per unit pole cost than a pole addition because they increase gross pole investment without a corresponding increase in units. In a growing number of instances, utility pole counts show as declining, which utilities attribute to increased spans between hardened poles. Decreasing pole counts result in recurring rates that increase more than proportionately in connection with utility-driven pole replacements costs, since gross pole investment and depreciation allowances are spread over a smaller number of poles.	Utilities may opt to exclude from the pole count certain categories of poles from the count (e.g., stub, push brace, drop lift, non-wood, non-unitized, mixed use, SCADA, etc.) and/or undercount the number of sole pole equivalents for jointly owned poles or privately owned poles. Utilities are not routinely required to make detailed supporting data available to attachers, providing the utility discretion over the pole count, which can lead to an undercounting of poles, either by exclusion or under-proportionate inclusion in the case of joint or privately owned poles. Commission rules require the utility to include joint owned (JO) poles in their pole count. However, the method applied (using a sole owned pole equivalency ratio historically based on contractual cost sharing agreements with telephone utilities) may no longer reflect the utility's current cost burden. This is particularly prevalent as part of pole replacement programs driven by utility hardening needs, where the utility typically pays the full cost to replace the pole, regardless of whether the telephone utility provides reimbursement. Any resulting undercount of jointly owned poles relative to their actual cost burden creates an overstated NBV per Pole to which carrying charges (incl. depreciation and ROR) apply.	Per Utility Internal Records
8	**= Net Book Value/Pole**	**$590.53**			Ln 6 /Ln 7
9	**x Carrying Charge Factor (CCF)**	**37.28%**			Sum of 9a – 9e
9a	**Admin & General Expense**	7.10%			Sum of FERC Accounts 900-935, expressed as a percentage of total utility net plant in service
9b	**Maintenance Expense**	9.05%			FERC Account 593, expressed as a percentage of net plant investment in distribution accts 364+365+369

Line	Formula Input/ Calculation	Illustrative Formula Input Value	Depreciation Allowances and Other Sources of Capital Recovery of Pole Replacements	Utility Leverage Opportunities for Additional/ Excess Capital Recovery of Pole Replacements	Source/Notes:
9c	**Depreciation Expense**	5.41% x (675,000,000/ 400,000,000) = 9.13%	Depreciation expense is a tax deductible, non-cash expense to the utility for the express purpose of providing the utility a source of capital recovery amortized over the useful life of the asset of the full costs pertaining to the installation and retirement the fixed asset consisting of: the original cost (OC) of the asset (i.e., the "life" cost) plus the cost of removal (COR) net of gross salvage (GS). Under the mass group accounting applied to poles, the utility's depreciation expense is tied to the average service life of the utility's fixed pole asset as a group. As such, it is designed to provide full capital recovery for pole plant retired earlier than, equal to, or later than the estimated life. Under standard regulatory methods, the Depreciable Base (OC - ADR +COR- GS) for poles is recovered over the estimated total average service life (ASL) of the asset under the Straight-Line Total Life (SL-TL) Method, or more commonly, recovered over the estimated average remaining life of the asset under the Straight-Line Remaining Life (SL-RL) Method. See Section VI, Table 6.1 illustrating the SL-RL Method. The full return of the utility's capital occurs automatically and self-correcting under the commonly used SL-RL method where the annual accrual is based on the recovery of the depreciable base is over the remaining life of the asset group reflective of the utility's current retirement experience for poles such as an increase in poles retiring earlier. Under the Total Service Life method, the utility is able to use additional periodic amortizations to its regulatory depreciation expense accruals to correct any demonstrated significant imbalances as may arise over time as changes occur in the utility's pole retirement pattern.	Utilities have significant discretion in selecting and revising the depreciation parameters used to develop the depreciation rate for the pole fixed asset group including estimated average service life, estimated average remaining life, survivor/mortality curves, cost of removal (COR), and gross salvage (GS). Many utilities do not break down between COR and GS, but rather determine a single Net Salvage Rate: (COR- GS) as a % of Gross Investment (i.e., Original Cost). The Net Salvage Rate is based on expected future conditions, and is also referred to as Future Net Salvage (FNS%). Because of the uncertainty and subjectivity applied in the development of the FNS% component of the depreciation accrual rate, utilities have the incentive to overestimate future negative net salvage ratios. Doing so results in a higher NBV per Pole to which carrying charges (including depreciation and ROR apply). Similarly, for utilities using SL-RL method, the shorter the estimated remaining life parameter, the larger the calculated accrual rate used to calculate the depreciation expense.	Most current regulatory deprecation accrual rate for Acct. 364 as reported in most current state decision, or in FERC at p. 336-337. The depreciation rate applies to gross investment. So, in calculating the depreciation rate applicable to the NBV of a pole, the depreciation rate must be multiplied by the ratio of gross to net pole investment for Acct. 364.
9d	**Tax Expense**	2.25%			Sum of FERC Accts. 408.1, 409.1, 410.1,411.4 (411.1), expressed as a percentage of total utility net plant in service
9e	**Rate of Return (ROR)**	9.75%	The ROR provides a return on the utility's invested capital or rate base, including all plant in service, including replaced poles.	Under prevailing capital market conditions, the Commission's default ROR of 9.75% is often higher than current approved state RORs, typically in the 6.5% to 9% range; utilities are accordingly incentivized to apply the higher default rate. Where utilities are able to apply the higher default rate, an excess of capital recovery is built into recurring rates.	Most current state authorized rate of return as reported in most current state decision or surveillance report that calculate a required rate of return. Where there is no state prescribed return, the Commission's default rate of 9.75% is applied.

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Line	Formula Input/ Calculation	Illustrative Formula Input Value	Depreciation Allowances and Other Sources of Capital Recovery of Pole Replacements	Utility Leverage Opportunities for Additional/ Excess Capital Recovery of Pole Replacements	Source/Notes:
10	**X Space Allocation Factor (SAF)** =			Utilities able to choose between the FCC presumptive values or actual values based on their CPR records of pole height, and their own construction guidelines for above ground clearances and below grade support. Utilities are not routinely required to make detailed supporting data available to attachers, making it difficult for an attacher to validate a utility's choice of usable and non-usable space assumptions. Average utility pole heights have been increasing, and standard joint pole heights are now 40 to 45 feet, particularly for utilities with pole replacement programs. Pole replacements typically replace shorter poles with taller poles, such that for utilities with pole replacement programs, actual pole heights exceed the 37.5 foot presumption. By using the presumptive pole height rather than the actual taller average pole height, the utility allocates a higher percentage of costs to the attacher. Even where a utility agrees its current average pole height is greater than 37.5 ft, it may attribute the added height to idiosyncratic clearance requirements (in excess of national standards) and not make the corresponding upward adjustment to the usable space used in the recurring rate calculation.	Rebuttable Presumptions: Total Pole Height (TPH): 37.5 feet Usable Space (US): 13.5 feet Unusable Space (UNS): 24 feet, consisting of: 18 ft above grade clearance 6 ft below ground support
10a	**Cable**	7.4%			1/US
10b	**Telecom SAF: x Cost Factor (CF)**	7.4%			(1+(UNS/AE x 2/3))/TH x CF For Urban: A.E. = 5, CF = .66 For Rural: A.E. = 3, CF = 44 CF Interpolated in between so that SAF x CF equilibrates to the cable SAF for any number of A.E. The base telecom formula includes carry charges for all five carry charge elements.

Line	Formula Input/ Calculation	Illustrative Formula Input Value	Depreciation Allowances and Other Sources of Capital Recovery of Pole Replacements	Utility Leverage Opportunities for Additional/ Excess Capital Recovery of Pole Replacements	Source/Notes:
10c	**Alternative Lower Bound Telecom SAF: Urban – 5 A.E.**	11.2%			1+(UNS/A.E. x 2/3))/TH The alternative telecom formula includes carry charges for only the two operating CC elements.
10d	**Alternative Lower Bound Telecom SAF: Rural – 3 A.E.**	16.89%			1+(UNS/A.E. x .67))/TH
11	**Maximum Annual Pole Attachment Rate ($/ Foot)**				Ln 8 x Ln 9 x Ln 10
11a	**Cable**	**$16.29** = $590.53 x 37.28% x 7.4%			Ln 8 x Ln 9 x Ln 10a
11b	**Telecom**	**$16.29 =** $590.53 x 37.28% x 7.4%		Under Commission rules, the utility chooses the higher of the two Telecom formulas, in this example, the "full" Telecom formula since it produces a higher recurring rate as compared to the cost causative alternative formula which excludes the capital expense carry charges found by the Commission in its 2011 Order as costs the utility would incur in the absence of attachers. The higher rate in the "full' Telecom rate affords the utility capital cost recovery in excess of the incremental "but for" costs of pole attachment.	Ln 8 x Ln 9 x Ln 10b
11c	**Alternative Lower Bound Telecom: Urban – 5 A.E.**	**$10.68 =** $590.53 x 16.15% x 11.2%			Ln 8 x (Ln 9a + Ln 9b) x Ln 10c
11d	**Alternative Lower Bound Telecom: Rural – 3 A.E.**	**$16.11** $590.53 x 16.15% x 16.89%			Ln 8 x (Ln 9a + Ln 9b) x Ln 10d