

# POLE ATTACHMENT POLICIES AND BROADBAND EXPANSION IN THE STATE OF KENTUCKY

Edward J. Lopez and  
Patricia D. Kravtin



**CONNECT  
THE FUTURE**

## ABOUT THE AUTHORS

Edward Lopez | [ejlopez@wcu.edu](mailto:ejlopez@wcu.edu)

Professor of Economics, BB&T Distinguished Professor of Capitalism, and Director of the Center for the Study of Free Enterprise at Western Carolina University. He has taught university economics for over two decades and has authored over 60 scholarly publications and two books. He holds a Ph.D. in economics from George Mason University, where his fields of concentration were public economics and industrial organization.

Patricia Kravtin | [pdkravtin@comcast.net](mailto:pdkravtin@comcast.net)

Owner and Principal of Patricia D. Kravtin Economic Consulting, a private consultancy specializing in telecommunications, energy, cable regulation and broadband markets. She is frequently called upon as an expert witness on pole attachment related matters before state, federal, and international regulatory bodies. Ms. Kravtin studied in the Ph.D. program in economics at MIT, with concentrations in Government Regulation of Industry, Industrial Organization, and Urban and Regional Economics.

*This report has been underwritten by Connect The Future. The opinions and viewpoints expressed are those of the authors alone.*

## EXECUTIVE SUMMARY

Between 257,000 and 832,791 Kentuckians currently lack access to high-speed broadband. In this study, we estimate that expanding broadband access to this unserved population would create anywhere from \$1.57 billion up to \$6.28 billion of new economic gains to Kentucky's homes and small businesses (the amount varying based on the database of unserved locations used to quantify). This estimated economic gain represents the social return on new public and private sector investments, namely the productive, commercial, educational, health, and other benefits that stand to be realized by achieving full broadband expansion in Kentucky.

Today, that broadband deployment is being inhibited due to utility pole infrastructure access issues and problematic behavior of certain utility pole owners. Specifically, pole owners frequently deny or delay broadband providers pole attachment access, or impose economically unfeasible rates, terms, and conditions that impose excessive costs on broadband providers associated with pole replacement and upkeep. In the study of economics, this is known as the **hold up problem**,<sup>1</sup> an inefficient concentration of market power that harms the public interest.

When pole owners hold up the process, the result is foregone economic gains to Kentuckians. In this study, we estimate that every month of delayed expansion due to pole

owner hold up costs Kentucky between \$9.29 and \$37.15 million.

Utility poles represent a critical input in broadband deployment, as attachment to existing pole networks is the most efficient means to expand high-speed broadband access to currently unserved areas of the country. Policymakers should initiate measures to recapture this economic value by revising and modifying pole policies and pole owner behavior to facilitate broadband deployment.

Pole Owner  
Hold Up  
Costs Kentucky  
**\$9.29M – \$37.15M**  
*every month*  
it delays expansion.

## CURRENT BROADBAND INITIATIVES IN KENTUCKY

Depending on the basis of measurement, the total number of Kentuckians lacking access to high-speed broadband is reported in the range of 257,000 to 832,791.<sup>2</sup> We estimate that expanding broadband access to this unserved population would create new economic gains between \$1.57 billion up to \$6.28 billion (calculated as net present value over 25 years at 5% discount rate). The pandemic has vividly highlighted the problems associated with unequal broadband access and the heightened need for broadband services. To address the digital divide, policymakers in Kentucky have initiated action over the past year to pass legislation aimed “... to push Kentucky to the forefront of broadband expansion nationwide.”<sup>3</sup>

In April 2021, the Kentucky House of Representatives passed two bills, House Bills 320 and 382, which allocated \$300 million of federal American Rescue Plan Act (“ARPA”) funding for building broadband internet in underserved communities of the Commonwealth. The \$300 million in funding authorized in the 2021 legislation expanded upon 2020 legislation that enacted a state broadband deployment fund to provide grants to public and private entities to promote deployment into underserved and unserved communities throughout the state under the administration of the Kentucky Infrastructure Authority.

These state initiatives are in addition to the \$149 Million in broadband grant funding awarded to providers in the state through the FCC Rural Digital Opportunity Fund (“RDOF”)

auction program – a program that will expand broadband access to 98,909 currently unserved homes and small businesses across the state.<sup>4</sup> Moreover, the state’s broadband expansion funding effort also has access to \$182.8 million from the ARPA Coronavirus Capital Projects Fund, and while not specifically allocated to broadband, some \$2.2 billion in total ARPA state level fiscal funding was awarded to Kentucky.<sup>5</sup> The Infrastructure Investment and Jobs Act of 2021 (“IIJA”), recently enacted by Congress on a bipartisan basis, includes an additional \$42 billion commitment to broadband buildout across all 50 states. When combined with federal and state funding already in the pipeline as part of the recent COVID-19 relief packages, the government funding commitment to invest in the state’s broadband infrastructure, as across the other 49 states, is unprecedented.

Supplementing these state and federal supporting grant infrastructure funding initiatives, are new regulatory initiatives governing make-ready processes applicable to poles owned by investor-owned utilities (“IOUs”) and cooperatives in the state (excluding those under the jurisdiction of the Tennessee Valley Authority (“TVA”). Access and attachments to utility poles represent a vital part of any significant broadband deployment effort to serve unserved communities, especially in rural communities. Broadband providers need to attach broadband infrastructure to poles in order to efficiently and speedily get high speed broadband service deployed. Attaching to the existing utility pole network is the only practical,

economically feasible, and socially desirable option.

In Kentucky, the state Public Service Commission (“PSC”) has longstanding statutory authority to regulate the rates, terms, and conditions of third-party access to pole attachments of cooperatively owned utilities in the state (again, excluding those under TVA jurisdiction in addition to IOUs. While the number of state utility regulatory agencies joining ranks with Kentucky in regulating pole attachments of cooperatively and municipally owned utilities is growing, these types of utilities are historically unregulated, as remains the case with respect to TVA cooperatives and municipally owned utilities in Kentucky.

## EXISTING HOLD UP POWER OF MUNICIPALITY & COOPERATIVELY OWNED ELECTRIC UTILITIES OVER KENTUCKY BROADBAND EXPANSION

Despite existing regulations and substantial funding mechanisms from the state and federal government, the public’s return on current broadband investment in the Commonwealth remains substantially vulnerable to the leverage and market power that pole owners enjoy over broadband service providers seeking to attach broadband infrastructure to poles. This leverage has intensified in recent years due to a variety of factors: the increased urgency of policymakers to get broadband out to unserved areas of the state, the pole owner’s information advantage as to where unserved customers – the target recipients of broadband grant awards and build out commitments – are located thereby raising the currency of the pole owners’ gatekeeper status, the greater number of poles

Following an extensive pole rulemaking proceeding, 807 KAR 5015, the PSC adopted new set of rules designed to better even the playing field between pole owning utilities and broadband providers during the make-ready process. These rules also address a comprehensive set of issues identified by broadband providers regarding impediments to deployment, especially in unserved rural areas, ranging from apportionment of the costs of replacement poles, to pre and post construction requirements, overlashing, timetables, invoicing, and other aspects of the make-ready process.

needed to reach those customers in outlying hard to reach rural areas of the state, and the increasing desire among pole owners to enter and compete in the broadband market against broadband attachers.<sup>6</sup>

The power to impede others’ ongoing investment plans is classified in economics as a ***“hold up problem.”*** A hold up problem is an example of the inefficient concentration of market power that harms the public interest and results in market failure absent adoption of public policies to prevent the exercise of the hold up power at its source.

In the case of pole attachments needed for broadband deployment, hold up power emanates from the charging of inefficiently



high costs and imposing of delays on pole attachers at the upfront end of their planned broadband buildout as part of the make-ready process, although excessive recurring charges (rental rates for space on the pole) are not an insignificant factor. These high make-ready costs and delays are especially pronounced in connection with the change-out or replacement of existing poles. Absent effective regulation, pole owners routinely seek to push the entire cost of pole replacement on to attaching entities, including broadband providers, thereby sharply, unpredictably, and inequitably increasing the cost of attachment.

In Kentucky, the PSC's recently adopted rules to address the inefficient make-ready practices of IOUs and cooperatively owned utilities represent a positive step forward that buttresses the PSC's longstanding effective regulation of recurring annual pole attachment rental rates that IOUs and cooperatives in the state may charge third party broadband providers.<sup>7</sup> Although helpful, the new make-ready rules still fall short in leveling the playing field entirely, given the extent of the hold up power that cooperatively and municipally owned utilities hold over broadband providers in unserved, rural areas of the state, and the degree to which these utilities can thwart the realization of the Commonwealth's broadband expansion goals.

For example, while the PSC's new rules defining "red-tagged" poles, i.e., poles that would have needed replacement at the time of the attachment request even if the new attachment was not made, more clearly defines the cost-apportionment standard from

an economic perspective than existing FCC rules, the new PSC rules provide considerable discretion to pole owners in how red tagged poles are designated and how costs are to be shared. In particular, by not explicitly recognizing the betterment value of the new poles to the utility and/or limiting cost recovery to the economic efficient level, (the remaining net book value of the existing pole), the new rules still permit pole owners to shift a disproportionately high percentage of the true economic cost of pole replacement to the broadband provider.<sup>8</sup>

Moreover, as noted earlier, TVA cooperatives and municipally owned utilities in Kentucky are not subject to the PSC's new make-ready rules or to the regulated cost-based pole attachment rental rate formula methodology. The lack of effective pole regulation in restraining TVA cooperatives and municipal utility hold up power over attachers is borne out by the high pole rental rates they charge in comparison to similar rates charged by Kentucky's IOU and cooperatively owned pole owners that are currently subject to the PSC's rules. A 2019 study examining pole rates nationwide found rates charged by unregulated municipal utilities in Kentucky to exceed those charged by rate regulated IOUs and cooperatives in the Commonwealth by 2.5 to 2 times, respectively. Moreover, the study found the higher recurring pole rental rates charged by municipal pole owners in Kentucky exceeded the nationwide average by over 40%, indeed among the highest in the nation.<sup>9</sup> TVA rates trend even higher, with rates reported as averaging nearly 4 times the rates charged by PSC regulated utilities.<sup>10</sup>

## MEASURING THE ECONOMIC HARMS OF POLE OWNER HOLD UP POWER IN THE STATE OF KENTUCKY

Our analysis measures the economic harms to Kentucky residents and small businesses of the hold up power of pole owners. These harms are measured in the form of foregone consumer value, known in economics as **deadweight loss** (“DWL”).<sup>11</sup> The methodology employed applies well established metrics on consumer **willingness-to-pay** (“WTP”) from the economic literature (in lay terms, the highest price a household would pay for improved broadband).<sup>12</sup> We apply these WTP metrics to reported data on the number of unserved locations awarded grant funding in the state in the FCC’s RDOF auction program. Under the RDOF program alone, third-party providers have committed to expand high-quality broadband access to as many as 98,909 currently unserved homes and small businesses across over a hundred counties in the Commonwealth, the majority located in the Commonwealth’s rural areas.

We’ve expanded our prior analysis to include the total number of unserved locations in the state identified in the FCC’s most recent Broadband Deployment Report, as well as information on total unserved locations from an independent data base of unserved Kentuckians compiled by a data aggregation company, BroadbandNow.<sup>13</sup> Given the substantial private investment and government funding mechanisms being deployed to serve all unserved locations in the state, including the IJA’s massive commitment to broadband infrastructure, this broader analysis is appropriate. The FCC Broadband Report database of unserved population

indicates a total number of 103,213 unserved locations across the state based on the average 2.49 persons per household in Kentucky.<sup>14</sup> Similarly, according to the BroadbandNow data base, 832,791 Kentuckians are currently without access to broadband, translating into a total of 334,454 unserved locations in the state – nearly three and a quarter times the identified number of unserved locations identified by the FCC of 103,213.<sup>15</sup>

In Tables 1 and 2 below, we present our main findings applied to the Commonwealth of Kentucky. Table 1 reports aggregate economic gains for three speed and latency thresholds under three sets of assumptions. The selected speed (measured in megabits of data) and latency thresholds (measured in milliseconds) are comparable to existing broadband service plan offerings rolling out at the time of this writing. The estimates in Table 1 represent a range of possibilities. For example, if all currently unserved locations assigned for deployment under RDOF get connected at 1000/100 Mbps and <10 Ms, this would create \$1.85 billion of new economic gains statewide. But if all currently unserved persons estimated by the FCC to lack broadband get similarly connected, that gain would be \$1.94 billion. And connecting all unserved persons as estimated by BroadbandNow would yield \$6.28 billion. These calculations are net present value over 25 years, or the lower end of average pole life, at 5% discount rate.

**KY TABLE #1:  
ECONOMIC GAINS  
IF ALL  
CURRENTLY  
UNSERVED  
POPULATION  
GAINS  
BROADBAND  
ACCESS**

	All Assigned RDOF Locations Gain Access	All FCC Unserved Population Gains Access	All BroadbandNow Unserved Population Gains Access
150/25 Mbps at <10 Ms	<b>\$ 1.57B</b>	<b>\$1.64B</b>	<b>\$5.31B</b>
300/100 Mbps at <10 Ms	<b>\$1.74B</b>	<b>\$1.81B</b>	<b>\$5.89B</b>
1000/100 Mbps at <10 Ms	<b>\$1.85B</b>	<b>\$1.94B</b>	<b>\$6.28B</b>

*Note: Table entries equal net present value of annualized gains over 25 years at 5% discount rate. See Appendix D of the companion Federal paper for explanation of methodology and modeling assumptions.*

Moving to Table 2 below, this same computation methodology demonstrates the foregone economic gains, known in economics as **deadweight loss** (DWL), due to delayed or denied broadband expansion under the pole owner hold up problem. 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, we compute the magnitude of DWL to be in the range of \$10.98 million to \$37.15 million per month, at speed

thresholds of 1000/100 Mbps and <10Ms latency.

We emphasize that these Kentucky estimates, as with our nationwide estimates, are conservative in magnitude given that the underlying WTP estimates do not reflect higher broadband demand since COVID-19 or the high speeds being deployed in current expansion plans. For these reasons, the true economic gain to Kentucky of full broadband expansion likely exceeds the estimates shown in Table 1 above.

**KY TABLE #2:  
ESTIMATES OF  
FOREGONE  
ECONOMIC  
GAINS DUE  
TO POLE  
ATTACHMENT  
HOLD UP**

	Foregone Gains of Delayed Expansion to Currently Unserved RDOF Locations	Foregone Gains of Delayed Expansion to Currently Unserved FCC Estimated Population	Foregone Gains of Delayed Expansion to Currently Unserved BroadbandNow Estimated Population
150/25 Mbps at <10 Ms	<b>\$9.29M</b>	<b>\$16.05M</b>	<b>\$31.43M</b>
300/100 Mbps at <10 Ms	<b>\$10.29M</b>	<b>\$17.78M</b>	<b>\$34.81M</b>
1000/100 Mbps at <10 Ms	<b>\$10.98M</b>	<b>\$18.98M</b>	<b>\$37.15M</b>

*Note: Table entries are monthly aggregate foregone economic gains.*



## CONCLUSION: POLICY RECOMMENDATIONS TO PROMOTE FULL BROADBAND ACCESS IN KENTUCKY

The efforts undertaken in the Commonwealth of Kentucky to date including the new make-ready rules applicable to cooperatively owned utilities (outside the TVA jurisdiction)<sup>16</sup> represent an initial step towards addressing the hold up power that cooperative pole owners have and their ability to deter rapid deployment of broadband infrastructure throughout Kentucky's unserved areas. However, for the reasons described above, these measures do not go far enough in reducing the cost impediments facing broadband providers that have been imposed by pole owners. Rapid broadband expansion in the Commonwealth is particularly at risk given how unregulated municipal utilities and cooperative utilities under TVA jurisdiction are currently exempted from existing PSC pole rules governing both nonrecurring and recurring rates, terms, and conditions of third-party access to utility poles. The lack of an existing comprehensive regulatory framework enables these municipal and cooperative pole owners to potentially hold up broadband expansion that is in the public interest and instead advance their narrow interests, especially under circumstances where they seek to enter into the broadband market in competition with the entities over which they enjoy the hold up power.

This study demonstrates that the economic stakes at risk are high. Necessary electric utility pole infrastructure investments and pole

reforms that address nonregulated municipal utilities and cooperatively owned electric utilities to help speed broadband infrastructure deployment should include: adoption of efficient pole replacement cost allocation standards based on the net book value of the poles to be replaced (taking into account the inevitable replacement of those poles and the betterment value to the pole owner from their earlier replacement), along with other economically fair, just and reasonable rates, terms, and conditions of access to utility poles for broadband providers. While a number of such legislative and regulatory initiatives are underway across the country, as in Kentucky, the ability of pole owning utilities to hold up broadband expansion is going largely unchecked. One of the first such legislative initiatives enacted to date is Texas HB 1505, passed by the Texas legislature this past spring. The Texas law incorporates a number of the key elements of a model pole policy (e.g., the creation of a utility pole replacement fund to facilitate the efficient use of available federal and state grant funding) presented in the national study (reproduced as Appendix A to this study).

Given the substantial demonstrated consumer gains of full broadband expansion in Kentucky, there is a compelling public interest case for policymakers to act now to adopt these key reforms.

## APPENDIX A: ELEMENTS OF A MODEL POLE POLICY

Two foundational principles necessary for the success of broadband deployment in unserved areas are: 1) changing the cost equation for the intermediate pole input in order to encourage infrastructure investment in hard-to-reach areas of the country; and 2) the removal of other regulatory or market impediments to the vital pole input that might jeopardize the cost-efficient nature of that infrastructure investment and deployment. These two principles are at the forefront of the effort to achieve full broadband access in unserved rural areas of our country. The first policy priority is being addressed by federal and state programs that seek to support the cost-efficient deployment of broadband in hard to serve areas of the country; however, the second priority requires additional policies, including policies to ensure an economically efficient and fair cost allocation of pole costs that would help to moderate a pole owners' ability to exercise anti-competitive, anti-consumer market power in an otherwise competitive ecosystem.

Key elements of urgently needed broadband deployment promoting policies include:

- Creation of a pole replacement fund or grant program to promote the efficient use of available state and federal infrastructure funding dollars in support of the buildout of utility pole infrastructure into unserved areas, and in conjunction, ensure pole owners provide nondiscriminatory, just and reasonable non-recurring and recurring rates, terms, and conditions of access to broadband providers (consistent with those detailed below);
- Definitions for make-ready related pole replacements that distinguish make-ready pole replacements from those related to the utility's own inevitable electric (or broadband related) infrastructure upgrade costs;
- Terms that require the pole owner to pay the entire cost of pole replacement when due to safety or reliability as a result of normal wear and tear or other natural causes; or the pole has recorded conditions or defects that would reasonably be expected to endanger human life or property and which should be promptly corrected (whether or not officially "red tagged for replacement");
- Terms that provide for the economically efficient and equitable sharing of costs of pole replacements tied to the age and/or net book value of the utility poles to be replaced that would preclude, as precondition of access, new attachers from having to bear the full cost of replacing aging poles the utility would have to replace at its own cost in the near future in the absence of the new attachment or overlash;
- Terms that prevent the utility from seeking any cost recovery from attachers associated with pole replacements unrelated to the need to accommodate a new attachment;
- Terms that facilitate the efficient use of federal and state grant funding;
- Detailed make-ready related invoices;

- Specify workable time frames for pole permit application, survey timeframes, pre and post construction requirements;
- Shorter timelines for make-ready work;
- Longer timelines for assessing new attacher One Touch Make-Ready ("OTMR") requests versus existing attachers whose facilities are slated for OTMR;
- Audit process and costs;
- Reasonable notice-only policy for overloading;
- Terms that preclude, as precondition of access prior to overloading, requirement for permitting or fixing of preexisting violations;
- Expedited dispute resolution under the auspices of the state utility commission or through the courts subject to applicable law;
- Charges for non-recurring charges, including pole replacement, must be based on actual, reasonable costs, objectively determined (i.e., based on accepted economic cost allocation criteria); and
- Recurring rental rates set based on the widely used FCC cable rate formula.

## END NOTES

---

<sup>1</sup> The hold up problem is the power to impede others' ongoing investments. In general, hold up problems arise in scenarios where Entity A makes an initial investment that is called "relationship-specific" because its return depends on Entity A subsequently contracting with Entity B. In these scenarios, if Entity B has information about A's investment, then B has market power to extract rents from A's investment and thereby destroy economic value by requiring a high selling price (high, specifically, relative to what the selling price would be in absence of this market power). Hold up problems are classified in economics terms as one example of inefficient concentration of market power that harms the public interest.

<sup>2</sup> See FCC Fourteenth Broadband Deployment Report, rel. January 19, 2021, FCC 21-18, Appendix A, <https://broadbandnow.com/research/fcc-broadband-overreporting-by-state>.

<sup>3</sup> See <https://kentucky.gov/Pages/Activity-stream.aspx?n=GovernorBeshear&prId=702>.

<sup>4</sup> See FCC (Federal Communications Commission) 2020. "FCC Launches \$20 Billion Rural Digital Opportunity Fund to Expand Rural Broadband," Report and Order, FCC-20-5, February 7, 35 FCC Rcd 686 (1).

<sup>5</sup> <https://www.fiercetelecom.com/special-report/u-s-broadband-funding-state-by-state>.

<sup>6</sup> See, e.g., <http://www2.murray-ky.net/>, <https://omu.org/internet/>, <https://www.precc.com/residential-0/broadband-internet-service/>.

<sup>7</sup> The KPSC applies a cost-based formula methodology to IOUs and cooperatives that is closely aligned with the federal cable rate methodology, widely acknowledged as promoting broadband deployment.

<sup>8</sup> See "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 in Light of the Pressing Need to Close the Digital Divide," September 2, FCC WC Docket No. 17-84, in the Matter of Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment., September 2021.

<sup>9</sup> See Michelle Connelly, *The Economic Impact of Section 224 Exemption of Municipal and Cooperative Poles*, July 12, 2019, submitted before the FCC Broadband Deployment Advisory Committee, GN Docket No. 17-83, Wireline Infrastructure, WC Docket No. 17-84, Wireless Infrastructure, WT Docket No. 17-79, July 22, 2019, Tables A4.

<sup>10</sup> See <https://ustelecom.org/survey-shows-pole-attachment-improvements-remain-unrealized/>.

<sup>11</sup> Deadweight Loss (or, DWL) is a standard textbook measure of foregone economic gains created by end-users lacking access to goods and services, including broadband access. In Appendix D of the national study that accompanies this state study, we explain the economic methodology used to generate these estimates. See also Appendix B of the national study for a Glossary of Technical Terms used in this study.

<sup>12</sup> Willingness-to-Pay (or, WTP) is a standard textbook measure of economic gains created by end-users having access to goods and services, including broadband access. In Appendix A of the national study that accompanies this state study, we explain the economic methodology used to generate these estimates. See also Appendix C of the national study for a Glossary of Technical Terms used here.

<sup>13</sup> See <http://BroadbandNow.com>.

<sup>14</sup> See FCC Fourteenth Broadband Deployment Report, rel. January 19, 2021, FCC 21-18, Appendix A.

<sup>15</sup> More precisely, the BroadbandNow data base identifies unserved population to which state-specific ratios of the average number of persons to households can be applied to derive a number of locations comparable to those identified in the RDOF data base, 2.49 in the case of Kentucky. The discrepancy in unserved locations between the FCC and BroadbandNow databases is largely attributable to the FCC's methodology which only included unserved households in fully unserved census blocks, whereas the BroadbandNow drilled down below the census block level. See <https://broadbandnow.com/research/fcc-broadband-overreporting-by-state>.

<sup>16</sup> See KAR 807 KAR 5:015. *Access and attachments to utility poles and facilities*, adopted October 6, 2021.