Pole Attachments 101

A UTC Briefing Paper

The most visible piece of electricity infrastructure is the utility pole that likely carries electricity to your home and/or place of business. Often referred to as "light poles," because they also frequently have street lights on top of the pole, for the most part these poles carry electricity to nearly every home and business in the U.S.

Without the humble utility pole, most of us could not watch television, charge our smartphones, heat our homes, refrigerate our food, and so much more. In other words, the utility pole, and more specifically the electricity it carries, powers our lives.

Because utility poles are almost everywhere, they are often used to deliver more than electricity. In addition to street lighting, utility owned poles often carry telecommunications equipment that brings cable, internet, and voice services throughout the country.

Therefore, not only is the utility pole vital for bringing electricity across the country, it is also critical for connecting Americans to broadband. In more ways than one, electric utilities empower broadband deployment across the U.S.

Yet we often take for granted just how essential these wooden or sometimes steel or concrete poles are to our economy. We probably only notice them after a major storm or when a speeding car knocks a few down, taking out electricity to several nearby homes as well. But without the utility pole, not only would our electricity be less accessible and reliable, so would nearly everything we use for our increasingly digital lives.

This document provides a brief overview of utility poles, how they are regulated, and how this infrastructure enables innovation. It also describes how utility infrastructure empowers broadband connectivity and enables the latest "5G" telecommunications services.

Why Utility Poles Are Important

The reason why utility poles can be found all across the U.S. is because of their first and most critical purpose—to safely and reliably deliver electricity to homes and businesses, no matter where they are located. Because electricity is typically generated by power plants located in remote areas, power lines bring the electricity to customers. Once generated, electricity is transmitted through high-voltage electricity transmission lines in order to send the power across long distances from the power plants to substations. Transmission lines are placed on hulking steel transmission towers that can often be viewed along major highways, farm land, and other rights-of-way.

The electricity moves via these long-distance transmission lines to substations, where it is transferred to lower-power local distribution lines, which are carried by the utility poles described in this brief. Finally, transformers mounted on utility poles reduce the electricity to the local service delivery voltages, in the U.S. either 120 volts or 240 volts, depending on each building's requirements. In many newer neighborhoods, the last mile delivery of energy occurs via underground circuits.

Utility Poles

Approximately 180 million utility poles dot the U.S. landscape, the overwhelming majority of which are wooden, with the rest being steel or concrete. These poles are built and designed to support the wires and other devices that safely deliver electricity throughout in the U.S. Utilities determine whether to use steel, wood, or concrete for their poles based on numerous factors, most important location and risk. For example, utilities in Florida have embarked on a multi-year process to harden their electric infrastructure due to the number of hurricanes their systems face each year. Therefore

many are installing new steel or concrete poles in the coastal areas that face the brunt of the strong winds that can bring down power lines. In other instances, utilities are burying power lines as well, in order to reduce weather and other risks.

The resilience of the pole itself is so important because electricity can be extremely dangerous. Utilities, therefore, build their poles to withstand specific hazards such as high winds, snow, and ice. In addition, poles are outfitted with numerous devices to reduce the voltage of electricity to make it safe for residential and business use. This is why electricity devices are typically placed on the upper portion/top of each utility pole to prevent, as much as possible, inadvertent contact. Contact with live electricity is life-threatening, so the placement of electrical wires and equipment at the top of the poles is critical to public safety.

As described in more detail below, the process of attaching other services to utility poles must be done with safety foremost in mind. Everything on a utility pole is carefully and properly constructed to ensure public safety and the integrity of the pole itself.

Pole Attachments—How it Works

Because utility poles can be found almost everywhere, poles are often used to deliver other critical services as well—voice, data, and internet services, for example. For most of the last century, utility poles were owned or controlled largely by two entities: electric utilities and telephone companies. This was done to reduce the number of poles used to deliver both electricity and voice services to the same homes and businesses. By using one pole, electricity and telephone services, and later video, cable, and broadband, could be delivered much more efficiently.

Because access to utility poles provided access to customers, utility poles are valuable real estate for telecommunications companies. The process of adding or "attaching" other services to a utility pole is called "pole attachments."

For most of the 1900s, the process of adding (or "attaching") other wires and devices to these poles initially took place between negotiations with utilities and telephone companies through so-called "joint-use agreements." These agreements covered the costs of attaching communications equipment and timeframes for allowing these new devices to be safely added to the poles. As part of the joint-use agreement, the pole owner would first ensure its pole could safely handle the new devices, wires, and equipment being added to its pole, and then agree on the rates, terms, and conditions for doing so.

In the late 1970s, as Congress began deregulating telecommunications and other industries, lawmakers also created new pole-attachment rules for competitive telecommunications providers and newer technologies such as cable television. Specifically, Congress directed the Federal Communications Commission (FCC) or state utility regulators to establish strict, low rates for pole attachments as an effort to lower the cost of entry for these new services. Congress specifically exempted public-power and cooperative utilities from these requirements. As internet service spread throughout the country in the late 1990s, policymakers continued revising these rules under the premise that lowering the costs of, and reducing some of the regulatory requirements for, attaching internet equipment to utility poles would reduce the overall costs of providing internet service.

In theory, by setting cheap pole-attachment rates and reducing timeframes to review applications to add new devices to utility poles would both incentivize new business entrants and encourage big internet providers to use those savings to invest in bringing internet service to all Americans, including those located in rural and remote areas.

Utility poles, therefore, are critical to ensuring every American has access to broadband. Like electricity in the early to mid-1900s, broadband/ internet services are quickly becoming essential to modern life. Ensuring that everyone in the U.S., whether they live in densely, populated urban areas or remote, rural locations, has access to broadband is a goal shared, and often enhanced, by electric utilities across the country.

Utility Pole Attachments—What Goes on a Pole

So just what kinds of equipment are being attached onto utility poles? Let's first start the electricity services the poles are initially designed to carry. The top portion of the pole is

typically reserved for electricity equipment for safety reasons, as specialized pieces of equipment are necessary to lower the voltage of the electricity being delivered on the distribution lines into homes and businesses. These devices include insulators, fuse cutouts, lightning arresters to protect the poles and equipment from lightning strikes, stepdown transformers, and the wires which send the electricity into buildings. Some utility poles include street lights attached near the top of the pole.

Equipment needed for voice, data, cable, and wireless telecommunications services are found underneath the electrical equipment. Up until the development of small-cellular devices, most voice, data, and cable services are carried through another round of wires attached to the pole.

For more graphical descriptions of utility poles, please visit the following:

- American Electric Power
- Dominion Energy
- Florida Public Service Commission

Anytime a telecommunications, cable, or internet-service provider wishes to attach a new device to a pole, a careful review of the new devices is necessary in order to preserve the integrity of the pole itself. Pole integrity is critical to public safety, so any new additions to an existing utility pole must be viewed through this lens. An overloaded pole could collapse under certain conditions (an ice storm, for example).

5G and Small Cells

As new wireless technologies become available, wireless providers are seeking to attach new "small -cell" devices to utility poles. Currently, most cellular phone services are provided by big, tall towers located in specific areas to send wireless signals to customers. This kind of service is what powers most of the smart-phones in the U.S. But as technologies evolve and the need for greater connectivity grows, wireless companies are looking to attach so-called "small cell" devices as quickly and densely as possible.

As the name implies, many small cell devices are quite small, certainly much smaller than the large towers carrying most of today's wireless traffic. The wireless industry commonly describes small-cells as "the size of a pizza box" or backpack, and for some of these devices, this is true. However, many so-called "small cell" devices are in fact quite large and cumbersome. Some of these devices actually weigh as much as a full-size refrigerator—21 cubic feet, along with a 6 c.f. antenna. Adding anything that weighs as much as a refrigerator to a utility pole—or any other infrastructure—must be done with great care to ensure the new attachment does not harm the existing infrastructure.

In addition, for small cells to work, they must be deployed in great numbers over dense areas. This means that 5G and small cells are more likely to be deployed in largely populated urban areas, such as city centers and sports arenas, rather than rural locations. In fact, news reports indicate that 5G technologies will take years to even reach suburban areas.

Because small cells must deployed in high numbers, wireless companies are looking to attach these devices to all kinds of infrastructure, including utility poles, as quickly and cheaply as possible. Doing so, these companies argue, will help the U.S. win the "Race to 5G." Therefore these companies have advocated—and federal policymakers have largely adopted—for the same kinds of highly regulated, subsidized pole-attachment rates for the cable and other nascent industries described earlier in this paper.

Utility Pole Attachments—The Reality

The intended goal of lowering the costs and streamlining the regulatory requirements for attaching communications equipment to utility poles is to help spread internet service to customers throughout the U.S. Numerous studies have shown that lower pole-attachment rates have had no impact—positively or negatively--on rural broadband deployment. Additionally, there are multiple examples of rural electric utilities offering discounted or even free access to their poles in order to entice internet-service providers to bring broadband to their communities, only to receive no responses.

Despite this lack of causation, policymakers in Washington continue to pursue overly prescriptive, Draconian rules that impose strict rates and time-limit important safety processes.

The impetus for regulating pole attachments generally began in the late 1970s, when Congress passed legislation requiring lower, regulated rates for the cable industry in an effort to boost the industry's competitiveness. In the mid-1990s, Congress, in a bid to reshape the telecommunications industry, required similarly regulated rates for new, competitive telecommunications companies so they could compete against existing firms. Over the next 20 years, the FCC adopted several rules on pole attachments that continued to lower the costs for the telecommunications industry as a whole.

More recently, the FCC issued two significant decisions on pole attachments in 2018:

- An order in August imposing new pole access requirements on attachments designed to provide broadband services to buildings;
- A September order reducing the amount of time that entities can review attachment applications and the fees they can charge for attachment of small cellular devices necessary for delivering 5G connectivity services.

The FCC claims that both orders will ease the process and costs for telecommunications companies to attach their equipment to infrastructure they do not own. Both of these orders are being challenged by a host of different entities, ranging from electric utilities to big cities and small municipalities who argue the FCC is overstepping its jurisdiction.

Additionally, the FCC is taking comments on a petition to greatly expand its authority on pole attachments by including utility owned streetlights as potential locations for small-cell devices. The petition asks for similarly restricted rates and compressed timelines for doing essential safety reviews for attaching devices to streetlights. Notwithstanding the notion that many utility streetlights are decorative and unsuited for attachments of any type, pursuing these restrictive, top-down regulatory regimes on street lights or other pole-attachment processes would actually set back the goal of expanding wireless services, as demonstrated below.

Market-Based Approaches Work

Rather than imposing policies that have historically proven ineffective at expanding broadband, federal policymakers should pursue holistic approaches that acknowledge the growing inter-dependencies between the energy and telecommunications sectors. Electric utilities are key players in winning the Race to 5G; our policies must empower and support the infrastructure that is fundamental to our national success.

Numerous electric utilities have entered into voluntary, market-based arrangements with telecommunications firms that have resulted in the deployment of small cellular devices on utility owned infrastructure, including streetlights. These voluntary programs are the key to accelerating small-cell deployment because they reward innovation and cooperation, rather than litigation. Additionally, these agreements come about after involving several stakeholders, including the utility, the telecommunications company, and local officials.

Forcing utilities and cities to attach small-cell devices to streetlights would slow, rather than expedite, wireless deployment because it would result in litigation, regulatory reviews, and expensive court processes.

Pole Attachments—A Holistic Approach

Taking a more holistic and cooperative view of pole-attachment policies will ensure the safety and reliability of our electricity system. Doing so will also accelerate the deployment of wireless and broadband services across the U.S.

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