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"Rural Broadband: Connecting Our Communities to the Digital Economy"
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Chairman Welch, Ranking Member Tuberville, and Members of this Subcommittee, thank you for inviting me to testify today. My name is Jesse Shekleton, and I serve as Director of Broadband Operations for Jo-Carroll Energy (JCE), a rural electric, natural gas and broadband cooperative headquartered in Elizabeth, Illinois.

JCE formed in 1939 as a nonprofit corporation, leveraging a Rural Electrification Administration loan to build its first 20 miles of electric line, bringing service to 60 rural members in May of 1940. Since then, Jo-Carroll Energy has grown to include more than 2,400 miles of electric distribution lines and over 300 miles of natural gas pipelines, bringing reliable and affordable electric and natural gas service to more than 26,000 families, farms, and small businesses in northwestern Illinois.

More than 80 years later, Jo-Carroll is continuing to work with what is now known as the Rural Utilities Service at the U.S. Department of Agriculture, though today that partnership has expanded to include broadband. USDA's ReConnect program and Community Connect program have provided funding for JCE to bring fiber broadband service to numerous communities and families across Jo Daviess, Carroll, and Whiteside counties.

For many electric cooperatives, the story of rural broadband today mirrors the story of rural electrification nearly 100 years ago. The cost of building and maintaining networks in sparsely populated areas with difficult terrain is prohibitive for many providers. Today, more than 200 rural electric cooperatives across the country have recognized the impact that a reliable internet connection can have on their communities and understand the challenge of deploying this infrastructure in low density, rural, and remote areas. Rural electric cooperatives have a longstanding commitment to improving the communities in which they serve, and are actively engaged in rural economic development efforts across and beyond their service territories.

Evolution of Broadband Service at Jo-Carroll Energy

In 2008, JCE launched its broadband arm, Sand Prairie Internet, as a business division of the co-op to provide reliable, high-speed internet to Jo-Carroll's consumer-members. Sand Prairie was initially intended to provide a fixed wireless system to support utility operations, such as enabling communications with the utility's substations. With this infrastructure, JCE was able to also offer retail fixed wireless service to line-of-sight members. However, as demand from

cooperative members grew for rural connectivity, JCE began to experience limitations with the fixed wireless system. Much of Jo-Carroll's service territory includes densely forested rolling hills and bluffs, which made the fixed wireless network unreliable, intermittent, and unable to meet capacity needs.

Since then, Jo-Carroll Energy has pivoted to building a fiber-only network. Fiber enables JCE's members to bring rural economic development and prosperity to their communities, and enable robust opportunities for education, healthcare, and agriculture in northwestern Illinois. For example, in Elizabeth, Illinois, where Jo-Carroll is headquartered, a fiber broadband connection has helped by providing reliable, high-bandwidth services to recently opened businesses including a local pharmacy and convenience store that offers the only grocery sales option to the small community.It also is a draw for younger families, especially as many have transitioned to hybrid work or are considering the educational needs of their children. Other communities within Jo-Carroll's service territory, such as Galena, Illinois, have seen the impacts that a fiber broadband offering can have on economic development. It provides opportunities for economic growth and business development that allow these small, rural communities to compete with their larger counterparts.

A fiber backbone enables Jo-Carroll Energy to best manage electric and natural gas operations, such as smart grid applications, which require a high bandwidth and low latency connection. It also allowed JCE to implement a supervisory control and data acquisition (SCADA) system, enabling real-time monitoring of electric and natural gas infrastructure from a central control center and improving efficiency across the network. Both SCADA and advanced metering infrastructure require a communications network with a very high reliability, which was challenging to achieve on fixed wireless. Other smart grid offerings, such as smart home, distributed energy resources, and expanded electric vehicle infrastructure, as well as enhanced middle mile capacity, have lasting benefits to the cooperative and surrounding communities. A fiber backbone along the electric network better enables providers, whether JCE or otherwise, to reach additional unserved and underserved areas while also creating redundancy, improving reliability, and lowering costs across utility systems.

Beyond the benefits that a broadband connection can provide in town or to the co-op, improved connectivity also provides a massive benefit to one of the largest economic sectors in Illinois: agriculture. Precision agriculture has grown in recent years, with farmers and ranchers leveraging a wide range of connected devices, from connected combines to drones, to reduce input costs and improve yields. Some technologies require low bandwidth but a wide range of field coverage, such as sensors on various farm vehicles, making them difficult to connect. Other applications, such as the use of drones to spray fertilizer or herbicides, require a lot of bandwidth and very low latency. As precision and smart ag technologies expand to include autonomous tractor navigation, soil sampling or field mapping, or simple tools to monitor livestock, demands for bandwidth on the farm will continue to grow, underscoring why a robust and scalable connection is essential.

As a not-for-profit, member-owned cooperative, Jo-Carroll Energy is locally controlled and strives to keep rates affordable for our consumer-members. With that in mind, JCE has determined that fiber is the most effective and economic technology to provide robust broadband to our rural communities, farms, and families. Fiber allows us to ensure that the investments we make in this network today will be able to meet existing and future utility needs, as well as improve the economic outlook and quality of life in the rural communities we serve.

Expanding Broadband Access in Northwestern Illinois

Affordable and reliable broadband access is critical for the economic growth and development of rural communities. Robust internet access allows students to access the educational resources they need, improves access to medical care in rural communities, and enables farmers to better leverage new technologies to improve crop yields. This connectivity is critical to fully participate in today's internet-based economy, and many families and businesses to locate elsewhere if robust internet access is unavailable in rural areas.

For many rural communities, the U.S. Department of Agriculture has been a longtime trusted partner in rural economic development efforts. Jo-Carroll Energy got its start in 1939 through a loan from USDA, then known as the Rural Electrification Administration. Today, JCE seeks to leverage numerous USDA programs to assist not only in providing reliable and affordable electric service, but also to support broadband expansion as well as other rural economic development projects.

In October 2020, Jo-Carroll Energy was awareded a $14 million ReConnect grant to connect approximately 250 square miles across 4 counties in northwestern Illinois. Once completed, this project will serve more than 7,600 people, 8 public school districts, 3 fire stations, and numerous farms and businesses with fiber broadband. While there is strong demand for broadband service via this grant, there are numerous federal grant requirements that have slowed progress of the fiber build. Participation in federal infrastructure programs require additional environmental reviews as part of the permitting process, and easement acquisition at the local level can be costly and cumbersome. Similarly, increased demand for materials coupled with delivery delays have slowed the project timelines. Despite this, Jo-Carroll Energy plans to complete the proposed project within the five-year build timeframe as required by ReConnect.

In addition to the ReConnect program, Jo-Carroll Energy has seen success with USDA's Community Connect program. JCE received a $2.05 million Community Connect grant in 2019, which enabled JCE members to contribute directly to the economic growth and development of rural Galena, Illinois. Upon completion of this grant, over 88% of the rural households involved have taken fiber service, a true testament to the growing need and strong demand of this value add rural service.Additionally, the project area and adjacent rural areas have seen a 20% increase in permanent residents moving into available homes. Consequently, this helps ensure two primary employers in the area remain viable and continue to provide over 150 full time and

350 seasonal jobs to rural residents who depend on this work. In 2021, Jo-Carroll received another $2.3 million Community Connect award to bring fiber connections to Schapville and rural Scales Mound, and hope to see similar economic growth as a result.

Beyond providing these robust internet connections, JCE is also pursuing opportunities to grow and support the skilled workforce needed to deploy and maintain this valuable infrastructure. Demands for a skilled and qualified workforce continue to grow as more broadband funding from federal programs come online, which is why Jo-Carroll is exploring opportunities for partnership in northwest Illinois to create career pathways and apprenticeship opportunities that focus on fiber construction, network technicians and cybersecurity specialists. This will not only ensure that JCE and other providers in the region have access to a skilled workforce, but will continue to create economic development and retention opportunities across these rural counties.

Considerations for the 2023 Farm Bill

As Congress considers how to best support rural connectivity through the upcoming Farm Bill, I'd like to offer a few suggestions. First, Congress should prioritize scalable, future-proof networks in any future rounds of federal funding for broadband. The economics of deploying reliable, high-speed internet infrastructure in rural and remote areas is challenging for any provider, which is why we still have so many unserved and underserved areas across the country. Similarly, consumer demands and needs for increased internet speeds continue to grow[1], and are trending toward a need for multi-gigabit service by 2030[2]. Prioritizing symmetrical speeds and network technologies that are scalable will ensure that rural and remote areas are able to meet consumer needs both now and into the future, and will minimize or eliminate the need to fund incremental upgrades down the line. At a minimum, Congress should require a minimum build-to speed of 100/100 Mbps symmetrical in all future rounds of federal funding, though it also should be recognized that 100Mbps is currently well below the internet service most consumers demand or need.

In general, federal programs should be flexible. The challenges of building and maintaining a broadband network in low-density rural areas can vary from community to community, however many of those communities and providers are often seeking to leverage more than one federal or state program for assistance with their projects. Recent rounds of ReConnect have allowed grant funds to assist in areas already covered by programs like the FCC's Rural Digital Opportunity Fund program, as long as those funds are used for complementary, and not duplicative, purposes. Areas currently unserved by broadband are expensive, and Congress should provide the flexibility to leverage multiple programs to offset some of the high costs of deployment so that providers are able to best meet the needs of those rural and remote areas.

[1] https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-twelfth-report
[2] https://www.fiercetelecom.com/telecom/fba-tips-household-broadband-speed-need-to-surpass-2-gbps-by-2030

As Jo-Carroll has sought to implement Community Connect grants, one of the biggest challenges faced has been the requirement to facilitate a community center within the proposed funded service area (PFSA). Due to the inherent rurality of these grant areas, existing facilities conducive to hosting such a center do not typically exist, meaning a temporary facility is required. This adds an additional scope of work to the potential project, and often requires an extensive special use permit by the respective county to facilitate a temporary facility. As Congress seeks to modify the Community Connect program via the upcoming Farm Bill, one suggestion would be to allow the required community center to be facilitated in areas not immediately in but adjacent to and within a reasonable distance from the PFSA. For example, when building in a very rural PFSA, the flexibility to facilitate the community center at a nearby small town library or other existing public facility would provide both a benefit to that facility while reducing unnecessary expenditures and minimizing any environmental impact concerns of setting up a temporary site within the PFSA.

Federal programs, including those managed by USDA, do not move quickly, and there are long lags in deployment, and it is often months from the time an award is announced to the time a system is operational and providing service. Coupled with permitting issues, supply chain delays, challenges in finding a qualified workforce, and inflation, delays are commonplace and can be detrimental to the original feasibility of a project. Furthermore, permitting review timelines are often a major barrier to rapid infrastructure deployment. Federally supported projects often require NEPA or NHPA reviews, which can be costly, time consuming, and cumbersome, and in many instances those environmental reviews are required even when a co-op is leveraging existing electric infrastructure in existing rights of way for broadband deployment. While these federal programs exist to help offset the high costs of building in rural areas, the long lag times and permitting delays can be a barrier and sometimes even a deterrent to participation.

Conclusion

More than 80 years ago, not-for-profit electric cooperatives partnered with the U.S. Department of Agriculture to bring electric service to areas that were challenging or cost prohibitive for investor-owned utilities to serve. Today, electric cooperatives are once again partnering with USDA to bring vital broadband service to those same areas.

On behalf of Jo-Carroll Energy, I want to thank the Chair and Ranking Member for inviting me to testify today. Reliable, scalable internet access is critical to the growth and economic development of rural communities not only across northwest Illinois, but the country as a whole. As the Committee considers the upcoming Farm Bill, JCE and the rest of our nation's electric cooperatives look forward to working with you in our shared goal of connecting all Americans, no matter where they live, with a robust, reliable, and future-proof internet connection. I'm happy to answer any questions you may have.