



Kansas Department of Commerce
2022 Capital Project Funds Grant
Technical Evaluation

Rainbow Communications- partnering with County of Doniphan & Iowa Tribe of Kansas and Nebraska

Project Summary:

Rainbow Communications is proposing to build buried fiber-to-the-premise (FTTP) to all locations within the proposed service area. This construction will consist of a fiber mainline and with extensions off the buried mainline fiber network and will utilize existing central office, backhaul facilities, and broadband uplinks to expedite deployment.

The proposed project includes construction of fiber optic outside plant (OSP) as well as placement of FTTP electronics. The OSP construction would consist of burying mainline fiber cable from existing fiber splice points past each premise within the proposed service area. Once all premises are passed with fiber optic mainline cable, fiber drops will be placed to connect those subscribers taking service to the mainline fiber cable. FTTP electronics would then be placed into the existing central office as well as at the customer premises to provide service to all subscribers.

Overview of Network Architecture:

Rainbow Communications is proposing to utilize a fiber network architecture to offer fiber broadband service to all locations within the proposed service area. Rainbow utilizes a 10G XGS-PON standard fiber to the premise for their last mile technology. The technology is capable to provide Gigabit services to all proposed locations without limitations due to loop lengths. All locations on the system will have equal access to the system bandwidth and quality of experience regardless of location. Optical Network Terminals (ONTs) deployed at the subscriber's premises will be equipped with Gigabit Ethernet service ports to support the Gigabit speed offering.

In addition to the last mile FTTP system, the applicant's existing backhaul and internet uplinks are also 100% fiber optic, ensuring that speed is maximized, and latency is minimized. Rainbow Communications uplink bandwidth is 40 Gbps with total redundancy.