



## Attachment E – Technical Capability Statement

### Experience

Inventive Wireless of Nebraska, LLC dba Vistabeam, provides broadband access to more than 8,000 subscribers with networks spanning 40,000 square miles that cover at least 100 towns. Though it has relied primarily on fixed wireless as its last mile technology since it began deploying network infrastructure in 2004, Vistabeam is in the process of transitioning its network to fiber-to-the-premises (FTTP) infrastructure where feasible. Interconnections (middle-mile) are divided between lit fiber, dark fiber, and microwave backhauls with higher capacity connections in the core and lower capacity at the edges of the network.

Vistabeam is currently providing symmetrical 1 Gbps (1000/1000) broadband connections using FTTP in the Nebraska towns of Chappell, Mitchell, and Morrill, and will begin construction in Oshkosh early this year. The company provides 100/100 broadband connections using a combination of fiber and dedicated fixed wireless connections in Alliance, Bridgeport, Gering, Imperial, Mitchell, Ogallala, Scottsbluff, and Sidney.

Vistabeam currently offers voice services across the entirety of its network and will offer voice services in the project area as well.

### Longevity

The proposed fiber network is designed to serve Nebraskans for decades.

Fiber networks are designed to last longer than copper or fixed wireless networks. Fiber optic cable—deployment of which is the costliest component of a FTTP network—has an expected service life of 40 years and a “safe harbor” recovery period for federal tax purposes of 24 years.<sup>1</sup> Most other fiber network equipment (e.g., optical line terminals) has an expected service life of 20 years. The equipment most likely to experience an unexpected failure, such as the optical network terminals on subscribers’ premises, are relatively inexpensive to replace.

The primary source of disruption to fiber optic networks is not equipment failure, it is “backhoe fade,” i.e., accidental damage to the network by third-party construction activity.

### Sustainability

Not all fiber networks are equal. The long-term sustainability of Vistabeam’s network will be enhanced by its deployment of 10 Gigabit Symmetrical Passive Optical Network (XGS-PON) technology. XGS-PON is future ready for at least the next 15 years because:

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<sup>1</sup> See Rev. Proc. 2015-12, p. 23.

- It is symmetrical-only, which means that Vistabeam’s fiber packages will *always* be offered on a symmetrical basis;
- It has an extremely low average latency of 1 to 2 milliseconds when lightly loaded and 2 to 3.5 milliseconds under heavily loaded conditions;<sup>2</sup>
- It can support up to 256 customers on a single fiber (compared to only 64 customers with EPON and 128 customers with 10G-EPON); and
- It has a maximum physical transmission distance of 100 kilometers (compared to 20 km for EPON and 60 km for GPON).

We do not expect that our fiber network will require substantial capacity upgrades over the next 15 years.

## Resiliency

Vistabeam has demonstrated the resiliency of its existing fixed wireless and fiber networks, which have yielded a Net Promoter Score of 50, well above the telecommunications industry’s average of 31.<sup>3</sup> Vistabeam’s network operations center and primary maintenance facility are both in Scotts Bluff.

Maintenance, repair, and replacement is built into Vistabeam’s business plan. As noted above, fiber infrastructure has a long service life and the equipment provided by our Tier-1 vendors is known for its dependability.

In Vistabeam’s experience, the primary source of fiber outages—third-party construction—is relatively uncommon in Western Nebraska as compared to more densely populated areas. When outages do occur, we have the necessary technical staff to restore service rapidly from our primary maintenance facility in Scotts Bluff.

The company is already serving areas near the project area and will continue to use the same staff to serve the project area when the fiber project is complete. With 52 employees, we have a large and very capable staff for our company’s size. We currently have an infrastructure staff of 35 people working out of locations in Mitchell, Scottsbluff, Gering in Nebraska, Laramie in Wyoming, and Yuma in Colorado. Vistabeam is committed to adding more staff as the number of customers increases.

We will proactively maintain our network using Adtran’s Mosaic One software-as-a-service solution. This platform equips network engineering and maintenance teams with AI-driven insights to preemptively identify at-risk connections and alarms, reduce truck rolls, and minimize network downtime. Additional information regarding the resiliency benefits of this solution is provided in Attachment M\_2.

Physical maintenance of the proposed network will occur through regular visits to add, remove, and

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<sup>2</sup> See Karthik Sundaresan and Evariste Some, *Understanding Latency across PON Systems*, technical paper prepared for SCTE (2022).

<sup>3</sup> Net Promoter Score is a customer loyalty and satisfaction measurement derived from surveys asking customers how likely they are to recommend a product or service to others on a scale of 0-10. A score of 50 is considered “excellent.”



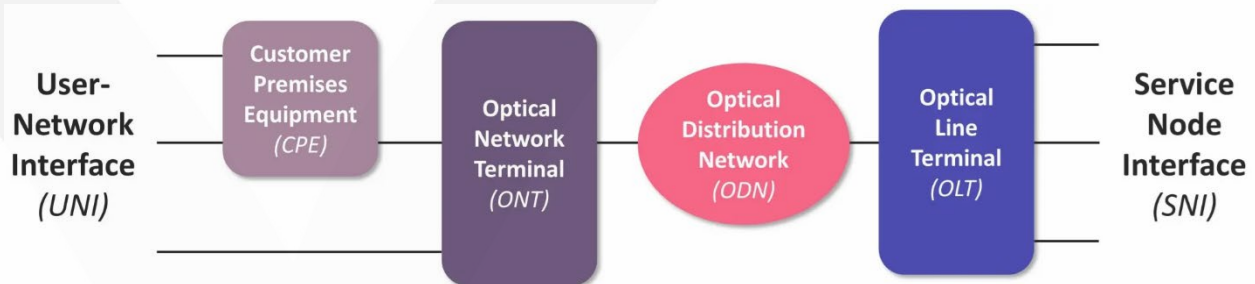
upgrade equipment as needed, scheduled inspections of the plant, and routine maintenance of electronics and backup equipment.

Vistabeam’s repair policy requires that technicians be dispatched within 12 hours to correct critical service outages. Customers are provided with regular updates on the status of repair requests. If an extended repair interval occurs, customers are informed of the reasons and provided with estimated resolution timelines.

To the extent outages occur on Vistabeam’s fiber network, it uses redundant microwave infrastructure to ensure its network remains operational.

### Network Architecture

Vistabeam will deploy a 10 Gigabit Symmetrical Passive Optical Network (XGS-PON) that is capable of offering 100/100 broadband internet to all locations in the project area, and Vistabeam commits to maintaining for at least 15 years a minimum speed capability of 100Mbps/100Mbps in all identified locations for which the company receives support. The network will be capable of providing symmetrical speeds up to 8 Gbps (8000/8000) when completed and will be upgradable to offer greater speeds in the future. Below is an illustration of a typical XGS-PON architecture.



### Network Coverage

The network will pass 167 unserved locations using ~75.6 miles of access fiber.

### Equipment

All equipment in the network will use next generation technology provided by Tier 1 vendors, including Corning, Adtran, and CommScope.<sup>4</sup> For example, Vistabeam will use Adtran’s SDX 610 series optical network terminals (ONT) on subscriber premises. These ONT can support speeds of up to 2.5 Gbps, are designed to be maintenance free, and will the latest Wi-Fi standards for years to come. These gateways are also environmentally responsible, with recyclable enclosures, cloud-hosted documentation, low power

<sup>4</sup> Vistabeam is an approved CommScope distributor.

requirements, and zero-touch provisioning (i.e., not truck roll, with its attendant carbon emissions, is required). Additional information on this equipment is provided in Attachment M\_3.