

Attachment A, Project Description

1. A discussion of the area served including boundaries, number of households, businesses, and any community anchors (libraries, schools, police and fire stations, hospitals, etc.). This response shall also identify if the project area is located within an unincorporated area and provide information regarding how the area meets the definition of rural (US Census data).

The Grace Haven project falls within the following census block – 10950312002029. The project will encompass 29 passings. This area falls under the definition of rural by being within the City limits of Boaz which has a population of less than 25,000.

2. A discussion of the technology to be deployed (fiber, cable, DSL, etc.). Additionally, include a discussion of future usage projections and the ability to upgrade.

Charter Communications system is comprised of a full duplex, multi-gigabit capable hybrid fiber-coax for residential services, including WiFi capabilities – a technology that contributed to Charter’s Spectrum residential internet service earning the 2017 J.D. Power award for overall customer satisfaction in the South Region. On October 9, 2018, Charter Communications launched GIG service across the Alabama footprint. Any resident with Charter service area has the ability to purchase up to a gig of service and a minimum broadband speed of 100mbps/10mbps. DOCSIS 3.1 modems allowed Charter to increase internet speeds across the footprint and will lead to further speed increases up to 10 Gbps downstream and up to 1 Gbps upstream network capacity.

3. A discussion of internet speeds, service tier and pricing levels, data caps, etc.

Charter Communications does not have data caps, throttle speeds or have usage-based billing. The rates below are for residential customers and are the rate card prices at the submission of this grant application.

Spectrum Internet 100/10	\$64.99
Spectrum Internet 100/10 with Spectrum TV	\$54.99
Spectrum Internet 100/10 with WiFi	\$69.99
Spectrum Internet Ultra 300/20	\$89.99

Spectrum Internet Ultra 300/20 with Spectrum TV	\$79.99
Spectrum Internet GIG 940/35	\$124.99
Spectrum Internet GIG 940/35 with Spectrum TV	\$114.99
Spectrum Internet Assist 30/4 **	\$14.99
Spectrum Internet Assist 30/4 with WiFi **	\$19.99

4. A preliminary technical evaluation of the project certified by an engineer. The evaluation shall include a project cost estimate, project schedule and timeline to include a completion date of no more than two years, and maps showing the proposed project area. Maps should be in .shp, .kml, or .kmz formats.

Cost estimate – \$30,086.00

Project schedule/timeline – the project will be completed within 1 year of grant reward

Map of proposed project – .kmz file attached below



Grace Haven.kmz

In advance of this grant application submission, on-site walk-outs were performed in this area to review the current broadband infrastructure and service provider network availability. These walk-outs were followed by cross-checking the homes-passed with Charter’s marketing data to determine what, if any, level of broadband service is provided in the application area. As a result of these efforts, it was determined that no service provider offers broadband service at a 10/1 level.

Initial assessments (including construction costs analysis based on review of the physical plant) were completed in furtherance of providing substantive input for this application. Charter expects to begin construction quickly following approval of funding for this application. Charter will manage construction for this effort utilizing similar timelines,

processes and resources as all of our other projects in the state. The new network will be integrated into Charter's current network plant portfolio.

Additionally, maps shall clearly show area eligibility (unserved areas). Generally, applicants may establish that an area is eligible by using the ADECA Broadband map showing unserved areas (<http://adeca.alabama.gov/broadband>). Other methodology, such as household surveys, may be acceptable, but shall be pre-approved by ADECA.

5. A discussion of the operator's technical and managerial capabilities to complete the project within two years of the effective date of the grant award.

Charter's network includes three components: the national backbone, regional/metro networks and the "last-mile" network. Both Charter's national backbone and regional/metro network components utilize a redundant Internet Protocol ("IP") ring/mesh architecture with the capability to differentiate quality of service for each residential or commercial product offering.

Charter's last-mile network utilizes a traditional hybrid fiber coaxial cable (or "HFC") architecture, which combines the use of fiber optic cable with coaxial cable. In our Tennessee system, we deliver our signals via fiber optic cable from the head end to a group of nodes, and use coaxial cable to deliver the signal from individual nodes to the homes served by that node. For our fiber Internet, Ethernet, carrier wholesale, SIP and PRI commercial customers, fiber optic cable is extended from the individual nodes all the way to the customer's site. On average, our system design enables up to 400 homes passed to be served by a single node and provides for six strands of fiber to each node, with two strands activated and four strands reserved for spares and future services. We believe that this hybrid network design provides high capacity and excellent signal quality. The design also provides two-way signal capacity for the addition of further interactive services. HFC architecture benefits include: bandwidth capacity to enable traditional and two-way video and broadband services; dedicated bandwidth for two-way services, which avoids signal interference problems that can occur with two-way communication capability; and signal quality and high service reliability. Charter's network and broadband service is vastly superior in terms of quality of service, speed, reliability, scalability and sustainability to any provider's service that requires line-of-sight access to customers in these rural areas that have very challenging topography for such services.

Charter has rolled out DOCSIS 3.1, which will allow for significant increases with speeds as high as 1Gbps download and 1Gbps upload available at the residential level. DOCSIS 3.1 will also further improve network latency by mandating that "Active Queue Management" be included in the DOCSIS 3.1 upgrade. Active Queue Management is a technology that will allow networks like Charter's to reduce transient buffering latencies by hundreds or thousands of milliseconds, which translates into reductions of load times, delays, and glitches in network applications.

Charter completes projects within a year timeframe. In Alabama, Charter completed 89 project consisting of 81 new cable miles in 2017.