

CASE STUDY

with *OPEN Broadband*

How Baicells is Helping Open Broadband Connect North Carolina to the Rest of the World

open
broadband

Overview

For most of us, the days of dial-up Internet are gone. Access to consistent, reliable, high-speed Internet generates significant economic growth, enables innovative access to quality medical care, and enhances education on every level. In our overwhelmingly digital age, the Internet has become essential in all walks of life. However, an estimated 21 million Americans still don't have access to quality broadband internet, and that number could be much higher. In rural areas of the country, broadband access is typically unavailable because the required infrastructure isn't in place.

Such is the case in North Carolina. Although it is only the 28th largest state in the country in terms of area, North Carolina has a high population density ranking (15th in the country). Its geography is diverse, including vast marshlands, coastal plains, plateaus, and the beautiful Blue Ridge Mountains. More than half of the population lives in urban areas, leaving a sizeable amount residing in rural areas. In those rural areas, access to high-speed Internet is sparse, creating what some call a digital divide (the gulf between those who have ready access to computers and the Internet and those who don't).



The Problem

In Waxhaw, North Carolina, Open Broadband has dedicated itself to providing fiber and fixed-wireless solutions to bring fast, reliable broadband to underserved businesses and homes. Kent Winrich, CTO at Open Broadband, and Glenn Knox, a technical consultant for the North Carolina Broadband Infrastructure Office, explain the challenges the diverse terrain and lack of infrastructure create for wireless service providers.

Mr. Knox says that one challenge was finding structures, buildings, towers, or geographical features suitable for installing wireless transmission equipment or "vertical assets." Another is the diverse terrain with little to no location on which wireless equipment can be installed. Tall pine trees, rolling hills, mountains, and valleys create a landscape that negatively impacts wireless transmission. "It's a vast range of terrain that we have to deal with and an extensive range of clutter that we have as well," explains Mr. Winrich, and adds, "...needless to say...a lot of the valleys have no vertical assets to speak of."

In addition to the challenging terrain, K-12 schools, colleges, libraries, healthcare organizations, and local governments across the state rely on fiber infrastructure as the backbone of their network. However, fiber cabling is typically limited to densely populated areas due to the high installation cost, thus excluding those who reside in rural areas.

Knox explains:

"...if you don't have connectivity at home, then well, that's not going to help. So, many families that don't have connectivity end up going to hotspots at McDonald's. Some of the schools have extended their Wi-Fi out into their parking lots so that a family can pull in, grab a laptop, you know, do their schoolwork as they need, and then go home. I mean, that's what people have to do."



The Solution

Atom OD06 CPE

To circumvent the cost of installing fiber optic cables and building towers for equipment, Open Broadband chose a fixed-wireless solution. With the help of the Baicells Long Term Evolution (LTE) product line, Open Broadband is now helping to close the digital divide by providing fixed-wireless internet service to underserved communities. The Atom OD06 CPE wireless gateway router transmits data through wireless waves from a nearby tower base station instead of traditional fiber cables. The compact design of the Atom OD06 makes it easy to install on existing tall structures, such as grain elevators, silos, and water towers. It offers incredible Non-Line-of-Sight (NLOS) penetration. The Atom OD06 is designed explicitly for hard-to-reach customers, offering faster wireless speeds than DSL, satellite, or cellular hotspots. The Baicells Atom OD06 has enabled Open Broadband to provide faster Internet to more communities with less cost.



Winrich explains:

"We are reaching far more people than we ever could have with just line-of-sight [products]. The ability to direct the signal through trees like that is a total game-changer and is reaching people we never could have even dreamt of before. I mean, we're talking about communities that may not even have good cell phone [service] in the area, and we're talking about areas that are not so deeply rural. Some of these areas are very close to town [and] are still sub-TMG with DSL. If they don't get service, people will move out...[and] businesses will move.

We've heard of many times where businesses are moving because there is no broadband. Or people will not move into an area because there is no broadband. So, we're trying to help these areas out by giving them the ability to have broadband...to maintain their population...keep them educated...keep them healthy...keep them connected to the rest of the world."



The Solution - Atom OD06 CPE

The Atom OD06 CPE is designed exclusively for the fixed-wireless market and provides superior wireless access performance and routing capabilities to bring broadband data and voice services to hard-to-reach subscribers. Wireless and wired devices, including mobile phones, laptops, tablets, and other smart devices, can simultaneously access the User Equipment (UE).

Winrich describes how opening Citizens Broadband Radio Service (CBRS) coupled with the capabilities of the **Atom OD06 became Open Broadband's game-changer:**

"We have been deploying Baicells OD06s and setting up our antennas to be four ports so that we're pretty much carrier aggregation ready. And to have more frequencies available to us, more bandwidth available to us, is just going to keep us on the edge of providing better service. With the limitation at 3.65GHz...we're limited to how many channels we could use, and therefore we're limited to how many sectors we can provide. Channel reuse and moving over to CBRS have much more bandwidth, in addition to [having] carrier aggregation, which is going to help some of these areas because we'll be able to, you know, turn up the speed a bit for them. Many of these people are still 1MG or less, [or] on DSL if they even have DSL. So, opening CBRS will be a huge deal for the people in strong need: students, elderly residents, and the like. And the people that work from home. They're going to need this bandwidth to be able to do business, to do school, to take care of themselves." - **Kent Winrich**

Atom OD06 CPE



With the increased need for broadband connectivity to homes, Winrich and Kent agree that coupled with products like the Atom OD06 CPE, fixed-wireless technology is closing the digital divide.

For more information about the Atom OD06 CPE and other Baicells products, visit baicells.com.

