

# 'CAN YOU HEAR ME NOW?'

MIGHT BE HEARD A LOT IN SOME WYOMING AREAS



Limited cell tower numbers, vastness, mountains limit rural connectivity

*Scott Cotton*

Visitors to small, rural communities and the countryside are commonly frustrated when their phones, iPads, and other equipment won't connect.

If planning to relocate to an unfamiliar area, Wyoming connectivity is one of the things you should explore prior to making a move.

There are some spots in Wyoming where the "data hole" is 30 to 40 miles across. That has and may continue to limit connectivity in rural areas.

## **Economics at Work**

Many communication providers advertise wide coverage but in reality coverage is limited by line-of-sight from a carrier cell tower. Many providers evaluate the potential customer base and only invest in towers where they can eventually generate a profit. The other side of that reality is there are several smaller companies that cater to rural areas and are unfortunately often more expensive since their operational costs are similar, but their customer base is small.

Check coverage maps with carriers and ask detailed questions. Most coverage developments focus on large communities and interstate highways.

Even emergency radio communication is tougher in rural areas with low population and significant hills and mountains.

## **Rural Communication Push**

Federal and state efforts to enhance the communication grid are gradually overcoming the small

population and terrain challenges. University Extension has often facilitated some of these improvement efforts, such as in Harrison and Crawford, Nebraska, where a University of Nebraska Extension educator led the charge to fund and install two new digital communication towers and bring fiber optic lines into schools and libraries.

This enhancement increased options for students and citizens, although many agricultural producers still rely on satellite-based data transfer systems. Facebook really grabbed hold in the area when rural grandparents could get data for their computers and phones, but the width, size, and speed of transmissions are still limited.

Some carriers have spent considerable sums building cell/data towers across eastern Wyoming, Nebraska, and northeastern Colorado. The towers allow other carriers to purchase “co-location” rights so they can place their receivers and transmitters on the same towers without such a huge expense. This has allowed other carriers to reach farther into more rural areas and communities.

Many rural residents install “boosters” in their vehicles and homes to amplify cell signals (it should be noted that the signal must be there first to amplify. Amplifiers will not work when there is no signal). As a side note, many of the older “flip” phones actually had better antennas and worked better in the field than the current phones with integrated antennas.



*Modular cellular tower in Wyoming.*

### **How Locals Connect**

Most of my neighbors know the best connection spots. Ranchers and families will stop at these familiar points to make calls and check emails on smartphones. One of my funniest experiences is stopping by where a rancher on a horse was talking to a tourist and hearing the rancher say, “Well, your smartphone isn’t too intelligent and your GPS is about 3 miles off because this is my driveway, not Road 102” as he explained that the road in question was farther north and had a sign.

Communication and connectivity

improvements in rural areas are often related to satellite services and not expansion of cell towers. Even many of our rural community infrastructure systems for communications have a microwave or satellite link in them somewhere. The rougher the terrain, the more towers are required to carry the signals.

When in the country, ask the locals which carrier is best, watch your “bars” for signal strength, and be open to asking for information and directions if needed. And you can go retro – hard copy maps work well if they have county roads marked.

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# ON THE EDGE OF CONNECTION

**M**any rural household struggle with weak cell connections. You may find yourself habitually heading to a certain room of your house, poised by the window, or even heading outside to the yard to place your calls and hoping to complete them before they drop.

Signal amplifiers/boosters can help some situations like these. There must be some signal present for them to work (they capture and amplify signals). Amplifier systems often include an antenna (often outside) that needs aimed at a cell tower to receive a signal – this means the best location may be a house roof. Precautions for lightning strikes should be taken when installing antennae, as with all devices attached to roofs. The antenna is then aimed at the nearest tower of your carrier before securing it (you can search the Web for carrier maps that help locate a tower, then you aim, test, and adjust – two people are helpful for this).

The other usual components of these systems are wires that transmit the signal from the outside antenna to a smaller antenna unit in your house. You will have to decide how the wires will get from the roof (or wherever the receiver is) to the inside of your house. We decided to drill a hole through our outside wall when we installed the unit – avoiding existing wiring is critical to your safety and the integrity of your electrical system. Turn off the power to the house when drilling so you won't be electrocuted.

We then had to weatherproof the hole in the wall (and make sure the roof hasn't been compromised in any way that lets moisture in). The inside antenna is strategically placed in the house where it can be plugged into an electrical outlet and provide the best reception in the area you want to make calls.

## Out of cellular connection range

Some folks who are totally beyond the range of cell towers (and are located where a landline would be too expensive to install) choose to use VoIP (Voice over Internet Protocol) for home use, if they have satellite internet service. It works by using an adapter (ATA – analog telephone adapter) you attach to your router and can then plug a traditional landline phone into. There can be a slight delay (latency) in the how long it takes your voice data to transmit to the satellite and the reply returns. Many satellite internet services offer such packages. Or you can use VoIP through your computer. These systems tend to use less data than transmitting and receiving video (such as the video options of Skype, FaceTime, Google Hangouts, etc.), because video uses more data than voice alone transmissions.



*The outside amplifier is aimed at a cell tower to receive the signal.*



*Wires from the outside antennae transmit the signal to the indoor antenna.*

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