



# How to Overcome Bandwidth Issues in the Permian

## Executive Summary:

Twin Eagle Consulting partners with licensed microwave radio manufacturers that have developed equipment to allow the oil and gas companies to backhaul 100 Mbps up to 1 Gbps of data without any interference. With these private backhaul networks, along with the right last mile solution, TEC can provide turnkey solutions that meet any companies immediate and future needs.

## Introduction:

Twin Eagle Consulting, TEC, opened an office in Midland Texas in early 2018. We specialize in telecommunications in the oil field and there are several issues to overcome concerning telecommunications in west Texas and eastern New Mexico. Vehicle Traffic is ALMOST as bad as the telecommunications networks. If you've been anywhere west of Midland you know what I'm talking about. Traffic Jams on I-20 around Odessa are common and depending on an accident or a break down, slow and stopped traffic all the way to Pecos Texas is the norm, not the exception. That doesn't include the most dangerous highway in the country right now, which is HW 285 between Pecos and Carlsbad NM. Avoid HW 285 at all costs. I've even heard from a manager in the Orla Texas area that said he will fire, on the spot, any of his employees and even contractors that use that road due to the accidents on 285 each day.

So why would I say that public communications are worse in west Texas than the traffic? Because public LTE, (Verizon and ATT) service is so over used, (oversubscribed is what they like to call it) that using it for any data communications for SCADA is almost impossible. You can observe this just by trying to make a cell phone call anywhere outside of any town in the area. Private communications aren't much better. TEC has been working with our customers from Big Spring to Pecos and up to Carlsbad. Many areas have what is called a "high noise floor" to overcome. So, you might ask, what's a noise floor? To make it simple, think about how we communicate in a crowded room. Let's say that you're going into a popular establishment at 4:00 pm to talk with some friends and maybe have an adult beverage or two. There's only a few of you in the room, so you can easily carry on a conversation. The noise floor, audible noise in the room, is low and clear. Now let's say you decided to stay for several hours, and the later it gets, the more groups of people come in, also wanting to share a beverage to two. The noise floor will rise with each person coming into the room. So, you naturally raise your voices to communicate to each other, and before you know it, your screaming to hear each other, and barely communicating.

Now you know what it is like to use public and private Radio Frequency networks in places like Pecos Texas. The first company to use the frequencies available don't have many problems communicating radio to radio. The SCADA manager says, "This is the best radio system I've ever seen." The experience changes quickly as the Oil boom grows and more companies move into the area using the same frequency, and the RF noise floor starts to rise. Now the SCADA manager asks what happened to my network that used to work so well. What do we need to do to fix it? Companies start to use larger higher gain antennas, turn power up, and other creative ways to increase signal to overcome the noise, but really what is happening is they are contributing to the problem. The next thing you know, the public LTE networks are saturated with over subscriptions and barely working, and the private and unlicensed networks that are free for anyone to use at any time, and used to be so easy to deploy, (900 MHz, 2.4 GHz and 5 GHZ) now have noise floors in the -60 DBM levels or higher. (-90 DBM is quiet and like the 4:00 pm experience above) The performance of the radios is degraded by 30 DBM or more making them almost useless while they try to talk over the noise. The only good communication networks are private licensed networks that utilize controlled frequencies. This can be a longer time to deploy and sometimes more expensive but may be the only choice depending on what the company is trying to accomplish.

## Conclusion:

TEC is the expert telecom consulting company in the Permian basin that can help in evaluating and mitigating the communication issues that all companies are experiencing today. Yes, we do work with Public and Private LTE when that makes sense, and we do have unlicensed Mesh, Point to Point and Point to Multi-Point offerings. And yes, we can alleviate many of the telecom issues with good engineering and sound field installation practices. TEC partners with licensed microwave radio manufacturers that have developed equipment to allow the oil and gas companies to backhaul 100 Mbps up to 1 Gbps of data without any interference. With these private backhaul networks, along with the right last mile solution, TEC can provide turnkey solutions that meet any companies immediate and future needs.