

BUSINESS

HOUSTON CHRONICLE • SUNDAY, JANUARY 5, 2020 • SECTION B



Mark Mulligan / Staff photographer
Infrastructure Networks CTO Stanley Hughey, left, and CEO Mark Slaughter

WIRELESS DATA

Connectivity in the Permian oil patch

Houston firm looks to build first 5G-enabled oil drilling site

By Sergio Chapa
STAFF WRITER

Telecommunication companies will spend the next 12 months rolling out 5G service for cellphone users across the United States while a Houston company seeks to become the first to provide the ultra high-speed technology to oil and gas in-

dustry customers in the Permian Basin, the nation's largest and busiest oil field.

Headquartered in Houston's Galleria district, Infrastructure Networks provides wireless data service to drilling rig operators, fracking crews and production sites in oil fields across the United States. The company provides those services over vast distances using the last iteration of mobile phone technology known as LTE, or

Long Term Evolution, technology.

In its bid to develop what could become the first 5G-enabled drilling site, Infrastructure Networks has spent the last year installing equipment to make its private cell phone network 5G ready. Stan Hughey, the company's chief technology officer, said the strategy is not to light up its entire network at once with the technology but rather to focus on areas with the highest

Cellular continues on B6

BUSINESS

CELLULAR

From page B1

levels of oil and gas activity.

"You've really got to look at islands where you want it and where you have concentration of assets," Hughey said.

Promising to deliver 1 gigabit per second speeds, fifth generation, or 5G, cellphone networks will allow users to send larger and more complex data such as video in the blink of an eye. As oil and natural gas operations become more digitized and automated, the benefits to the industry are clear. But there's a catch — 5G's frequencies can only travel less than a mile before degrading.

As a result, telecommunication companies such as Verizon, AT&T and T-Mobile are concentrating their nationwide 5G deployment in densely populated cities and along interstate highways. Mass adoption of the gigabit-speed technology in the oil fields of the 86,000-square-mile Permian Basin would require the construction of tens of thousands of cell towers in West Texas and southeastern New Mexico.

Infrastructure Networks, Hughey said, is bidding on providing data services to two large-scale oil drilling projects in the Permian Basin, which could potentially become the first commercial use of 5G in the oil field. Those operators remain confidential for now, but Hughey said they are already installing fiber optic cable to bring ultra-high speed internet to their sites.

Using equipment made by the Finnish telecommunications firm Nokia, Infrastructure Networks is bidding to install transmitters and receivers that would allow wireless sensors and handheld devices to tap into that ultra-high-speed bandwidth. Although transmitted over public spectrum, the 5G service would be private, secure and only visible to those with the proper radio equipment or authorized cellphone SIM cards.

The deployment of 5G in the oil field comes as crude oil prices breached the \$60 a barrel mark after spending nearly a year stuck in the \$50 and \$60 per barrel range, leaving many companies struggling to stay profitable. With the modest oil prices, oil and gas com-



Infrastructure Networks

Infrastructure Networks provides wireless data service to drilling rig operators, completion crews and production sites in oil fields.

panies are driving to become more efficient and turning to technology to lower labor and other costs.

Part of that drive includes lowering the number of workers needed in the field and transmitting data to centralized control rooms in Houston or other locations where highly-paid engineers, geologists or other specialists can monitor several projects at once and make important decisions remotely.

"When you talk about smart rigs using less people, you're going to have more and more of your expertise away from the well site and they're going to need to be connected in real time with the voluminous data that needs to be visualized," Infrastructure Networks CEO Mark Slaughter said. "We're enabling that digitalization."

Founded in 2011, Infrastructure Networks began by providing wireless internet service to oil producers near Bakersfield, Calif. It now employs 80 people who provide mobile data services to 110 customers in the Permian Basin, Eagle Ford Shale of South Texas, Bakken Shale of North

Dakota and the SCOOP/STACK play in Oklahoma — a combined 130,000-square mile area that's roughly the size of Japan.

In the Permian Basin, Infrastructure Networks provides data services to 94 rigs. The company plans to use financial commitments from the Denver venture capital funding firm Altira Group and New York private equity firm Apollo Global Management to expand its share of the shale play's growing data market. The companies declined to disclose the amount of the investments.

The Houston company hardwired half of its Permian Basin cellphone towers to ultra high-speed fiber optic networks, allowing the company to transmit data received at its towers faster. The company also commissioned a fleet of nearly 20 trailers with portable cellphone towers and trailers known as cellular on wheels, or COWS, that can bring private cellphone service to areas beyond the reach of towers.

Although drilling rigs can generate more than a terabyte of data per day, not all of it needs to be transmitted. Infrastructure

What is high-speed internet?

The Federal Communications Commission, or FCC, defines high-speed internet as having at least 25 megabits per second for downloads and 3 megabits per second for uploads. Here's a look at what activities people can do online at varying internet speeds.

SPEED	ONLINE ACTIVITY
200 Mbps to 1 Gbps	Stream 4K content, play online games and download very large files
40 to 100 Mbps	Stream 4K content and play competitive online games
15 to 25 Mbps	Stream HD content
1 to 5 Mbps	Check email and browse the web

Source: Texas Comptroller of Public Accounts

Networks reports that its average drilling rig customer transmits just under a terabyte of data per month. With roughly 400 drilling rigs in the Permian Basin, the company estimates that they need to transmit a combined 346 terabytes of data per month. A terabyte of data is roughly the equivalent of streaming around 400 hours of high-definition video.

Infrastructure Networks is not alone. Other telecommunications companies are adding towers and services to improve coverage for oil and gas industry customers. With extensive, established networks and deep pockets, Verizon,

AT&T, Sprint and T-Mobile are adding 5G service in cities and along highways in the Permian Basin, which would potentially cover many oil and natural gas production areas.

T-Mobile began providing high-speed network coverage in a 60,000 square mile area of Gulf of Mexico, where oil rigs serve as their primary customers. The company, which plans to roll out a nationwide 5G network this year, is eyeing similar opportunities in the Permian Basin.

But Hughey believes the big telecoms are more focused on the consumer market and evolving into

media and content companies rather than providing data services to industrial customers. AT&T bought satellite television provider DirecTV in a \$67 billion deal in July 2015 while Verizon bought internet search engine Yahoo in a deal worth \$4.5 billion in June 2017. In October, Verizon announced its users would get a free year of the premium streaming service Disney Plus, which features content from the iconic entertainment company as well as National Geographic and science fiction franchises such as the Avengers and Star Wars.

Infrastructure Networks estimates that the shale play data services market is worth \$200 million in the lower 48 states with a projected annual growth rate in the high single digits. Although small for the big telecoms, it represents a valuable niche market for specialty providers.

"For a company like us, it's a huge market opportunity," Hughey said. "You just have to be willing to get in a pickup truck and get dirty at the very edge of the network."

sergio.chapa@chron.com
twitter.com/SergioChapa