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"THE 5G WORKFORCE AND OBSTACLES TO BROADBAND DEPLOYMENT"

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Chairman Wicker, Ranking Member Cantwell, and distinguished Members of the Committee, thank you for the invitation to testify. It is a privilege to appear before you again.

I want to begin by commending the Committee for its focus on expanding America's 5G workforce. This effort is just as important to securing U.S. leadership in 5G as our work to free up more spectrum and modernize our infrastructure rules. And that is why I announced a 5G jobs initiative last year to help address a shortage of tower climbers and telecom crews—the men and women who put on hard hats and harnesses and build out America's Internet infrastructure.

Since I joined the Commission in 2017, 5G jobs have been a leading priority for me. In fact, my first trip as a Commissioner was to a manufacturing plant in Claremont, North Carolina, where I met with workers producing fiber—the physical backbone of our wired and wireless networks. Officials across government are rightly focused on revitalizing our manufacturing base, providing middle-class jobs, and career pathways for those with technical training. And so it was inspiring to see vibrant manufacturing in western North Carolina that fit well with—and, in fact, is vital to—the new information economy. The humming of the plant and the miles of fiber optic cable it produces could be put to all sorts of end uses. But that plant has a special role in advancing our country's leadership position as an innovator. That North Carolina plant quite literally creates the high-speed platform that will power our economy for the next decade and provide so many other benefits to everyday Americans.

Getting the right policies in place here in Washington can make all the difference for America's broadband builders. And the good news is that our work to free up more spectrum and modernize our country's infrastructure rules is enabling the private sector to deliver remarkable results.

Internet speeds in the U.S. are now up 70 percent compared to just two years ago. The FCC's most recent Broadband Progress Report shows that the digital divide—the percentage of Americans that lack access to high-speed Internet services—narrowed by nearly 20 percent over the prior year alone. Telecom crews are building out more miles of high-speed fiber than ever before—over 450,000 route miles in 2019 alone, which is enough to wrap around the Earth over 18 times. Internet providers also set a record for the number of new homes passed with high-speed fiber at 6.5 million, which represents a 16 percent increase since 2018.

The 5G results are especially exciting. Americans should be proud that we now have the world's leading 5G platform. The very first commercial 5G service launched here in the U.S. over a year ago. By the end of 2018, the private sector extended 5G to 14 communities. Halfway through 2019, that figure expanded to more than 30, and one provider alone has now committed to building 5G to 99 percent of the U.S. population.

Many of these 5G builds are powered by small cells. These are the backpack-sized antennas that provide the fiber-like capacity and millisecond latency that are key for many 5G applications. Because of FCC reforms to small cell infrastructure rules, investment in small cells has boomed. The private sector deployed 13,000 small cells in 2017, 60,000 in 2018, and now has a total estimated base of 200,000.

These figures quantify the momentum America now has for 5G. But numbers don't tell the full story of what these infrastructure builds mean for everyday Americans. After all, if 5G builds were limited to the wealthiest neighborhoods of America's biggest cities, we could not claim that our policies are working. We can claim success only when every community has a fair shot at next-generation connectivity.

That is why I have spent a lot of my time on the Commission outside of D.C. I have visited the communities and neighborhoods that we cannot leave behind as the country transitions to 5G. And while there is much more work to do, I am proud of the progress that our common sense infrastructure policies are already delivering in many of these communities.

Take Houston's Second Ward. This is a part of the city that hasn't always shared in the prosperity or investments that its neighboring communities have seen. In September, I spent time there with Mayor Sylvester Turner and a few of the broadband builders working to connect Houstonians. I talked to workers who were trenching fiber and powering up small cells to boost capacity there. Why is there so much private sector investment in that lower-income neighborhood? It's because many households use a wireless connection as their only onramp to the Internet, and the infrastructure rules that the FCC and local officials put in place allow wireless providers to respond to this demand. Providing more capacity to the Second Ward helps its residents enjoy the benefits of fast broadband like the rest of Houston.

Next-generation builds in Houston and other high-density locations are not enough for the U.S. to claim a leadership role in 5G. We cannot let 5G opportunity be a unique privilege of living in a big city. That is why this Commission has focused on making sure that rural America is not left out of the jobs, education, and healthcare innovations built on 5G. There, too, we are seeing results.

In Sioux Falls, South Dakota, a few months ago, I saw small cells being installed that are now live, providing 5G service. Most people would not have picked Sioux Falls to be among the first places to get 5G, and yet thanks to the common sense infrastructure rules that Mayor Paul TenHaken put in place there—policies that the FCC used as the model for our own infrastructure reforms—Sioux Falls is at the vanguard of 5G. Our rules are designed to remove barriers at all levels of government, and speed deployment to all communities in America.

In South Carolina, a company built a 100,000 square foot manufacturing plant less than a year ago to meet the increase in demand for small cells. At the facility, Jake and his crew told me that they got jobs at the plant less than six months ago. They had been employed in general steel and construction work before. They now have 5G jobs. And the company says they are expanding their workforce by nearly 10 percent every month to keep up with demand.

In Elkmont, Alabama, a small-town manufacturing plant is already seeing a big boost from 5G. The facility makes the harnesses and other gear that America's tower climbers use to install new small cells. The plant has doubled production over the last year-and-a-half with new small cell builds underway.

We need to continue to build on the success we are seeing. We need to extend America's winning streak. That means continuing our work to free up more spectrum and streamline outdated infrastructure rules. The leadership this Committee is showing on these issues is providing a significant boost to U.S. leadership in 5G. I want to commend the Committee in particular for its work on the STREAMLINE Small Cell Deployment Act, which would update our infrastructure rules to account for new 5G technologies.

In fact, the successes we are seeing in accelerating infrastructure deployment have created a new challenge and opportunity. Industry estimates that it needs to fill another 20,000 job openings for tower climbers and telecom techs to complete this country's 5G build. That would nearly double the size of this group of skilled workers.

One of the highest privileges of this job has been spending time with America's tower climbers and telecom crews. Put simply, they are the best of the best. And seeing firsthand the work it takes to build out this country's Internet infrastructure has only reinforced in my mind the need for programs that can train more 5G workers.

In Cincinnati, Ohio, I met with a company that has doubled the number of small cells they are installing from 30 to 60 per month, and they recently hired four new crews just to keep up with demand. In San Jose, California, I met with a worker who has been climbing towers for seven years. He now wants to double the size of his crew but is struggling to find enough workers. Tower companies are routinely turning down jobs because they do not have the workforce in place to complete the work. Indeed, two years ago, when I joined Senator Wicker at Jackson State University for a jobs roundtable, we heard from industry leaders about the difficulty they have filling jobs.

These are good-paying jobs, too. They do not require an expensive four-year degree. And they are 5G jobs that can help lift thousands of American families up into the middle class. One tower company reports that a qualified worker can earn upwards of $70,000 in their first year of employment. And these are not one-off or short-term jobs, either. They are careers with a clear pathway for upward mobility. Tower companies tend to be small businesses. And I have met with women and men who started out as tower techs and have gone on to run their own companies.

Take Shama Ray. She started out her career as a firefighter and paramedic. Eight years ago, she transitioned into climbing towers and building out Internet infrastructure. In 2012, she decided to start her own tower company, and she is now the owner of Above All Tower Climbing, which is based in Missouri. In addition to her day job running the business, she is now working to expand opportunities for women in the tower industry.

Last year, I started a process to recognize America's tower climbers and tell their stories through a series of interviews and what I call "5G Ready Hard Hat Presentations." My first 5G Ready Hard Hat went to Shama Ray because her story exemplifies the best of America's tower techs.

Or take Mike Young. After earning an associate degree in wireless communications, he joined a tower company at age 18. He started out as an entry level tower tech. He moved up to become a crew chief, then a project manager, and then the Chief Operating Officer of the company. Just last year, he was promoted to President of that company—Vikor Teleconstruction, which is based in Sioux Falls, South Dakota. Even though Mike has climbed the corporate ladder, I can testify to the fact that he keeps his tower skills sharp. I had the chance to join him

on top of a 2,000-foot broadcast tower in Rowena, South Dakota. I can assure you that spending time in the air with Mike gave me a newfound appreciation for the work that America's tower crews do every day.

We need to expand this group of skilled workers. That is why, as noted above, I announced a jobs initiative to help address this opportunity. It looks to community colleges and technical schools as a pipeline for 5G jobs. It is modeled on a program developed by Aiken Technical College in Graniteville, South Carolina. In 12 weeks, the program can take someone with virtually no training, teach them the mix of classroom and physical skills necessary to build and install new cell sites, and enable them to land a good-paying job in the tower industry. Dr. Gemma Frock, who developed the program, says that 100 percent of her students have received job offers upon graduating from the program.

My 5G jobs initiative aims to stand up more community college programs like the one at Aiken. And I have been working with stakeholders, including the National Association of Tower Erectors (NATE), on doing just that—focusing on schools in different regions of the country. The good news is that we're already making progress. A few months back, in Sioux Falls, South Dakota, I visited Southeast Technical Institute, and talked with the trade school's administrators about the opportunities that a tower training program could bring to the community. I am pleased to report that the school is launching a tower tech certification program this year. And I am continuing to work with stakeholders to stand up more programs like these.

Of course, community college programs are not the only pathways to expanding our 5G workforce. Some companies are tackling the worker shortage head-on by expanding their in-house training opportunities. I saw one leading example of this last year in Lewisville, Texas. That is where Ericsson opened a new 26,000 square foot facility to train its own tower climbers. In 2019 alone, Ericsson reports that 847 trainees completed the program, which underscores the significant demand for tower techs. Other companies are following that model.

But training workers in-house can be expensive, particularly for many of the smaller tower companies that are building out 5G networks. Indeed, one tower company has reported that they spend about $12,000 per person on training within the first sixth months of employment. So I think we should continue to look for ways to support additional training opportunities while also highlighting the good work that businesses are doing through their in-house programs.

The Department of Labor is an important partner in this effort. DOL already has a registered apprenticeship program for tower techs called the Telecommunications Industry Registered Apprenticeship Program or TIRAP. The Wireless Industry Association has been working with DOL on this initiative, and TIRAP already supports 2,085 apprenticeships with 30 different employers. Apprenticeship programs like this hold great promise because they allow those with obligations or families to support a chance to earn while they learn. DOL's continued focus on support for 5G jobs can help address the workforce challenge.

In light of the various efforts that are underway—community college programs, in-house or third-party training efforts, and registered apprenticeship programs—the FCC has convened a working group that can bring all these different stakeholders together. In particular, the FCC's Broadband Deployment Advisory Committee now has a Broadband Infrastructure Deployment Job Skills and Training Opportunities Working Group that is focused on expanding our 5G workforce. I look forward to working with that group and reviewing their recommendations. And I should note that there is a bill in this Committee—the Telecommunications Opportunities for Workers Engaging in Real Infrastructure Deployment Act of 2019 or TOWER Act—that

would go a long way to addressing the need for more 5G workers through a coordinated, stakeholder-based effort.

At bottom, expanding our 5G workforce must remain a national priority. The federal government should provide the same support for technical workforce training as it does for non-technical education. Aiken Technical College, for example, has been able to get its students access to Pell grants as well as specialized aid for its students who are veterans by designing its program to be a credit degree pathway. However, that designation is not without its own costs and difficulties, and other schools, such as Southeast Tech, have chosen a non-credit approach, which leaves them with fewer funding sources. There is also bipartisan work ongoing in Congress—the JOBS Act of 2019 being one example—that aims to expand Pell grant eligibility to cover shorter-term certificate programs. While I defer to others on the specifics of any such reforms, there may be ways to streamline the approval process and ensure parity in opportunity between qualifying tower tech programs and more established or classroom-based learning.

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In closing, I want to thank you again Chairman Wicker, Ranking Member Cantwell, and distinguished Members of the Committee for holding this hearing. I welcome the chance to answer your questions.