

**NWX-DOC-NTIA-OTIA (US**

**Moderator: Laura Spining  
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1:00 pm CT**

Coordinator: Welcome and thank you for standing by. At this time, all participants are in a listen only mode for the duration of today's conference. This call is being recorded. If you have any objections, you may disconnect at this time. I would now like to turn the call over to Laura Finning. Ma'am, you may begin.

Laura Spining: Great, thanks. Hi, I'm Laura Spining with Broadband USA and I'm going to be your facilitator on this call today. I'm looking at the folks on the line and seeing a number of names I recognize and appreciate seeing some of the folks that we've been working with over the years participating today, as well as a number of names I don't recognize.

And so if you're new to Broadband USA, welcome and thanks for joining today. I do want to point out, because it looks like we've got a few more people on the webinar than we do on the phone lines, and I guess if you're not on the phone line you don't know this. But the audio line for this webinar is on the cover page that you should see right now. And so hopefully we'll give folks just a couple more minutes, if they're dialing in, to join us.

As the conference facilitator indicated, the lines will be in a listen only mode. If you do have questions during the conference, you can enter them on the box to your right in the webinar and we will address questions at the end of the presentations today. We often get questions about whether the slides will be available and yes, they will. We'll post them on the Broadband USA website sometime within the next week. So you'll have them available. And this afternoons webinar topic is infrastructure and next generation technology deployment.

We have three fantastic speakers that are going to address that topic with you today and they have a little bit different perspectives on the issues that they're addressing either through their company or in their locality specifically. So we've got Vernon Brown from SDN. He's the Vice President of Marketing and Community Relations at SDN, which is in Sioux Falls, South Dakota. He's been with SDN for 15 years and was previously a television journalist, and we also learned that Vernon was on the City Council at Sioux Falls in his earlier life.

We also have Jackie McCarthy, who is the Assistant Vice President for Regulatory Affairs at CTIA, the Wireless Association. Jackie deals with policy issues for emerging technology in the mobile space and she handles the outreach to stakeholders and entrepreneurs for CTIA. She's also active in the industry through the Communications Bar Association, at the New England Chapter. And before joining CTIA, she worked with PTIA. And then we also have David Young, who is the Right of Way Manager and manages the fiber infrastructure for the city of Lincoln, Nebraska. It sounds like he will share with you the variety of projects that he's overseeing for the city of Nebraska -- I'm sorry, the city of Lincoln in Nebraska.

So we'll start again. It looks like there are a few folks that are new to Broadband USA so I'll quickly update you on what NTIA does and then our Broadband USA program within NTIA. NTIA was formed to be the policy advisor to the President and the White House on telecommunications and information technology policy. And really focuses on three areas. One is expanding the use of spectrum for other users, expanding broadband access and adoption of broadband, and then ensuring that the internet is an engine for economic growth and innovation in the global economy.

So that's who NTIA is. Myself, I work with our Broadband USA program, which primarily works to educate communities and facilitate relationships that are focused on expanding broadband access and digital inclusion, and digital skills. So we work with stakeholders to bring them together and arming them with information to make decisions that are right for their locality. We do bring together folks from industry, nonprofit, and local and state government to facilitate the right kinds of conversations to build on best practices.

And then we also develop online guides and resources that are available for the general public to use. So that's who Broadband USA is and what brings us all together today. And with that, I think I'll kick it off to Vernon Brown.

Vernon Brown: Thanks, Laura. Appreciate it. Well, let's go to the next slide where it gives you kind of a picture of what SDN communications is. We are located in South Dakota, the blue state there, and we were established in 1989. We are essentially a fiber optic company with over 30,000 miles of fiber, largely in the state of South Dakota but also in the surrounding states near us. What we do, we connect businesses. We haul information, take care of the back haul for wireless industry, which we'll spend some time on today.

We also do managed cybersecurity for businesses and then help South Dakota telephone companies. In fact, in the next slide, you can see that we are owned by the independent telephone companies of South Dakota. There are 17 of them across the state. They cover 80% of South Dakota's Geography. They are largely co-ops but also municipal, tribal, and family owned telephone companies.

So who do we serve? We serve the healthcare industry, education, first responders, manufacturing, banking, government, agriculture, and of course, the wireless industry. And there's still a perception out there by consumers that wireless is just wireless, but wireless is to the nearest tower under the fiber network, in this case SDNs, to the tower nearest the other wireless user, and that connection is provided by that fiber connectivity.

So let's talk about how we do that. SDN for many years now, as we've grown our network, have made sure that we connected to tower facilities throughout our region and within our footprint. So in South Dakota, Minnesota, Iowa, Nebraska. In South Dakota, we connect to about 440 towers; Minnesota, 75; Iowa, nearly 50; and Nebraska, 3. And that provides us that connectivity to serve the wireless industry.

And in the next slide, you can see we all know this story that we have to be doing that because more than half of U.S. homes don't have hand lines and rely on cellphones only anymore. And especially with the younger generation there, you can see that penetration is even deeper. So on the next slide, you can see we have been fortunate in our market getting attention for this and how we as a fiber company are deploying wireless solutions in conjunction with the wireless industry.

One week ago today this article was in our local Sioux Falls Business Journal talking about the promise of 5G, and what that means, and how small cells play into that. I'm going to read you two quick lines from that story that the reporter wrote. He said, "Mobile data is increasingly how we live. Increasingly, it's how business is done." And then in regards specifically to small cells, he talks about the denser network adds capacity to Verizon's 4G LTE service and is a key stepping stone for 5G, which will require a fiber connected small cell backbone.

So even in the media level, we're starting to see this awareness that wireless is not simply wireless, that it does take a fiber backbone to make it all work. So it's been good media attention for us. So in the next slide, back to consumer level, this is just a demonstration of the time that we spend on smart devices and 45 million Americans are using their mobile phones as their primary internet access device.

So this chart reflects that driver of time spent on smart devices. And you can see phone calls are number five, so deep down the list, halfway down. So let's now talk about the citizen benefits of that partnership between fiber and wireless, really the improved public safety. In our state soon, text notifications to 911, including photos and video, will be capable of doing that. Extending coverage to hard reach areas and then the Internet of Things. There are examples out there of IoT medical devices where if someone is having symptoms, we heard specifically about a young woman in our community who was having stroke like symptoms. She has a device implanted in her chest and one on her wrist, and when she feels the symptoms, she's to put those devices together and that data transmit over the wireless network to her clinic so they can capture what's going on in our body.

That's just one example of some of the benefits. But really, it's about fulfilling consumer demand and expectations. Everyone values those wireless devices. They take them wherever they go and they expect improved speed, reliability, and good coverage. So the layers that SDN takes care of would be those two middle ones that are labeled in this design as suburban macro cell or urban micro cell, or what we call small cell. Those are the two areas where we're connecting with the wireless carriers with our fiber. To take it to the Street level view, you can see that the macro tower in the background, those small cells offload that data from the macro tower, freeing it up for more calls.

But those small cells are going to be prolific in our communities because the area of coverage is really about one block. And more importantly, those small cells are sort of the precursor to what will happen with 5G. That's how 5G will get delivered over those small cell units covering about a block each. So what does that look like? We have some examples of pictures here. This is just one out at our datacenter. This one is actually not hooked up yet but we put it up so our communities could see what it would look like. In our case, right now, many of them are going up as monopoles about the height of any light pole with that round antenna on the top.

So in the next photo you can see this would be in front of one of our medical or hospitals in Sioux Falls. And what we're doing, in the next slide, you can see that those are tall enough that we can put two providers on there. So we don't have to proliferate the right of way with numerous monopoles to serve different providers. In this case, SDN is the owner of the pole and will lease that to the wireless providers and help take care of that infrastructure.

In my community, Sioux Falls is about 180,000 people and they estimate we'll have about 400 small cells in our community for good coverage. These pictures are actually from the Twin Cities areas where they are attached to

light poles as infrastructure, and of course, the next one is in downtown Minneapolis, where small cells are a huge deal because the Super Bowl is going to be there in 2018. And so there's a huge effort to get those small cells deployed all over downtown Minneapolis.

And then finally, through this process, SDN has had to really do a big education effort in the local communities. And so we've created a landing page. You can find the address there and put elements on there such as a Verizon small cell video, SDNs, video about Right of Way and why we put some in the Right of Way. A first net video to give people a vision for what that is and how that's going to rely on wireless, and then some infographics and blog content, frequently asked questions.

So that's how we're deploying in South Dakota.

Laura Finning: Great. Thank you so much, Vernon, for sharing what SDN is doing across not just South Dakota but that region of our country. Next up, we have Jackie McCarthy, from CTIA. Jackie?

Jackie McCarthy: Hi, thank you so much for including us. I'm here today to talk a little bit about the wireless industry, specifically about our evolution to 5G wireless broadband networks, a little bit about some of the applications and features of those networks, and then I'll end with some public policy points related to infrastructure deployment.

As the slide indicates, we represent the U.S. wireless industry. Our members include the carriers, the device manufacturers, suppliers of everything from smartphone components to antenna and physical infrastructure components, and app developers. And on the next slide, there's a little bit about the current state of the wireless industry and wireless coverage. There are now more

wireless connections in the U.S. than there are people. And for many of us, you have multiple wireless devices, I think this is a fairly familiar statistic. And at this point, over 99% of Americans have access to 4G LTE mobile broadband networks.

The next slide shows a little bit of the context of the growth areas in our industry. You can see in the chart on the left, the blue is indicated or the minutes of use or MOUs, which is essentially VoIP service, is indicated in blue. And as you can see, over the past eight years ago that's remained fairly steady. Same with text messages, SMS, as indicated in green. But if you look at the data usage in pink, that's been skyrocketing and primarily the growth in our industry and our ecosystem, as Vernon mentioned, is I think in large part due to the tremendous growth of mobile data usage across really all aspects of our lives.

And the next slide provides a little bit more about 5G and some of the attributes of 5G that make it such a game changer for a number of different use cases. And 5G really has kind of three distinguishing features in terms of these applications and use cases. First, 5G is five times as responsive as current 4G networks. And by that, I mean the responsiveness between when a mobile data or mobile traffic message is sent and when it's received is five times as fast.

And this, as you can imagine, is especially important for kind of mission critical applications and communications for sectors like public safety and clinical healthcare. 5G will also be ten times as fast as current 4G LTE networks and that is especially impactful when we think about some of the data intensive applications and uses, things like augmented or virtual reality, things like high bandwidth video streaming and all of those applications. And then finally, 5G will be able to supply a network connectivity for up to 100

times more devices as is the capacity for 4G networks. And that's especially important because now, we're seeing with the advent of the Internet of Things, not only are we connecting via smartphones and tablets, but now through all kinds of centers and devices across a number of different economic sectors.

The next slide gets into a little bit about this specific to kind of municipal and community applications of 5G wireless technology. As communities both big cities and small towns, are thinking about how to digitize their infrastructure, make their city services or community services more efficient, 5G and its capacity, and its speed will play a big role in this, with everything from kind of traffic monitoring to facility use and utility monitoring, to public safety and clinical healthcare.

The next slide shows an application that's (unintelligible) a lot of interest that you may have read about quite a bit recently and that's the use of high speed wireless networks for connected and autonomous vehicles. So these vehicles will use a combination of sensors and connectivity features across the systems of the vehicle to stay in lanes, to navigate from point A to point B and to essentially replace the human driver with a series of kind of data centric intelligence.

The federal DOT recently issued a proposal for vehicle to vehicle communications, which has a really significant potential to reduce or eliminate many crashes and kind of thinking beyond the vehicle to vehicle communications, 5G is going to play a big role in connecting vehicles to infrastructure, everything from traffic signals, to toll plazas, to facilities like parking garages, to kind of congestion management systems.

So the next slide, we'll just kind of transition here into some of the policy issues surrounding our current focus on 5G deployment. And we really have

there big policy priorities. First, to modernize and make infrastructure (unintelligible) processes more efficient. Second, to make a licensed spectrum available for 5G deployment, and third, kind of in general, adopting regulatory policies that promote innovation especially in areas that are relatively new for wireless technology areas like healthcare, transportation, public safety, some of the areas that we've mentioned.

And so now, in the next slide, just a little bit more to amplify Vernon's discussion about kind of small cells. These small cell facilities can be placed on existing structures and they use kind of the vertical real estate in the environment. We estimate that the U.S. wireless providers will need approximately 300,000 of these pizza box sized small cells in the next three to four years to deploy 5G wireless networks.

The next slide explains a little bit about some of the challenges from a policy making level that we face as an industry in terms of deploying these. In terms of access, many times -- sometimes Rights of Way processes do not contemplate wireless antennas and really have no or sometimes kind of a confusing or burdensome process for expediting those applications. Oftentimes, there's a process of two years or more to deploy -- to get approval to deploy a single small cell like the one that we showed in the previous slide.

And then we're oftentimes finding that some of the fees that are charged by Right of Way owners or managers are not related to or based on actual costs for addressing the applications and for all of other work that needs to be done to accommodate the attachment, but are kind of cost prohibitive, especially for this volume of small cells. And so the next slide explains a little bit about some of the efforts at really all levels of government for including expedited wireless infrastructure deployment in our larger conversations nationally about improving our infrastructure.

And we're seeing that local governments, states, the FCCN Congress all play a role I this and they're playing a role by providing for some more certainly with respect to access to these facilities and to this vertical real estate, for costs that are reasonable and that are based on, like I said, the actual cost of making the right of way or the facility ready for 5G small cell infrastructure. And then modernize procedures that provide some certainty and some guidance in terms of process for our members who are deploying this infrastructure and we're getting that kind of encouragingly from a number of different policymaking sources, including the FCC, the Federal Highway Administration, and to some extent, state DOTs as well.

The next slide explains a little bit about efforts at the state level to provide some certainty through state laws for a process for small cell siting, for access to that infrastructure and for fees that are cost based. As you can see from the map on the right hand side of the slide, there are seven states in which small cell legislation has been enacted. We've got another three states keyed up for either a governor's signature or -- excuse me -- four states when you count Florida, for either governor's signature or for potential or possible future introduction of that state legislation.

And next slide. And then as I mentioned, wireless service is radio based service and a radio frequency spectrum is kind of the basis of all wireless communications. And so we need as an industry a pipeline for licensed exclusive use of that spectrum, and the federal government and agencies like NTIA and the FCC allocate spectrum uses across numerous parties, and it's certainly complex job and it's a time consuming one to identify bands for reallocation or option. But making sure that we have and that our members have access to a mix of different kinds of bands of spectrum is really critical

for including the 5G network needs in our member's spectrum deployment plans.

That's all I have for now and I look forward to any questions. Thank you.

Laura Finning: Thank you, Jackie, for sharing the wireless industry's perspective and highlighting some of the policy issues that you're working through. And last, David Young, from Lincoln, Nebraska, is going to tell us a little bit about some of the innovative work that they're doing there. David? David, are you on mute possibly?

David Young: Yes, I was on mute. Thank you very much. Thank you again for the introduction and I really appreciate the perspective of Vernon and Jackie on this. Specifically, in Lincoln, Nebraska, Jackie's quote on the side of her 33rd slide was cities and towns, which are first to facilitate wireless infrastructure will see the greatest benefit. We believe that in Lincoln, Nebraska. And to give you a little background about Lincoln, we have about 280,000 people. We are the state capital and we have the original land grant university campus, the University of Nebraska, Lincoln, right in downtown. You are looking at the state capital picture here.

We have about 92 square miles of land in the city, 2.6% unemployment, and we've done several economic studies over the last few years, and the number one problem that Lincoln faces is attracting and retaining young people to move to our city. We educate them very well and we want to keep them. And that is why broadband has been a big initiative for Lincoln, Nebraska. A fun fact that many people don't know that Omaha, which is about 1.2 million people, was the original city capital, all the way until 1868. There were book robberies at night, all kinds of things that go into this story. It's very fun, but now Lincoln is the state capital.

So if we can go to the next slide, I'll talk to you a little about Lincoln's infrastructure project. Started in 2012. We, the city created the Lincoln Technology Improvement System. What you see is a map of conduit around the city. It's about 400 miles of conduit that we lease out to private providers.

I'm often asked what really was the impetus for starting this project. In 2011, the city of Lincoln experienced two 911 service outages. That was a big deal. One outage was for three days and also in 2011, both Yahoo and Gallup approached the city about locating in Lincoln, Nebraska and ultimately declined. In the after decision meetings, both companies cited lack of broadband choice and pricing for why they chose another location over Lincoln.

So local business leaders approached the mayor, he was in his second term, and asked him to address this problem or the perception of this problem in Lincoln. Why is that important? Well, Nebraska is one of the 20 or so states that bans municipal broadband. But yet, as you see on the map today, we have a rather robust program. We have, this year, we just signed our approximately 30th public private partnership agreement for broadband infrastructure. We have a \$150 million fiber to the home project that's 18 months in. All of that is private money and we have two small cell agreements with Verizon and Mobility, and we are working on a third and fourth actively.

It's very amazing what five years difference can make in a program and if any of you are wondering, Mayor Beutler did get elected to his third time. So on the next slide, I'll talk about what we're doing in small cells. So this is a Lincoln, Nebraska small cell poll. You've seen many examples in both Vernon and Jackie's slides what small cells can look like. At the top of the

pole picture on your left, you see our antenna, and then on the picture on the right you see the radio equipment that is hidden or camouflaged behind banners.

There is a front cover that goes on that banner. The Lincoln, Nebraska standard pole is designed to be placed roughly 90% to 95% of the locations in the city. It replaces an existing light pole that is there. Do all of the light poles look exactly like this? No, but the majority of them do. We have special areas like mini cities, our downtown core, our arts and entertainment district, capital district. Those get a slightly different pole and the carriers are allowed to suggest any pole they want in those areas.

But the fast track process is for a carrier to come in and say we would like to replace this pole -- replace an existing pole with this style of pole. And we like to say yes to those in about ten days from start to finish for the project. This is based on our existing pole designs, so this was not new. Really, the only thing we added was internal wiring chases, more power and fiber, and bracketry to mount the small cell directly to the pole. That's the only difference really in this pole.

Next slide please. What's exciting for us is by creating this expedited process, standardizing our agreements, and really being I guess a good partner to the carriers is what we get in return. So what you see on the left picture is a little round oval shaped plate and on the right kind of a blow up of the final design. This is the public access port. On every smart cell pole that we deploy, we will receive a public access port with public fiber and public power provided to the port location.

Well, what does that allow us to do? Traffic cameras, radars for advanced traffic monitoring, weather stations, public Wi-Fi, we have a lot of exciting

things we're going to do at each one of these locations. Right now, we have 118 locations cited to be constructed yet this year, we expect that to grow to 400 over the next five years.

This is a significant improvement. The way Lincoln looks at it is that we have several partners, roughly seven, that focus on fiber at the business. We have one partner that does fiber to the home and now, we're looking to multiple partners for advanced 4G and 5G deployments around our city utilizing smart permitting processes, agreements, and relying on industries and industry reflect CTIA to help us craft good policy to be friendly and to get agreements like this.

Next slide. I think many of us on the phone call work for local governments or state governments and a few of the things that I've learned over the last five years I'd like to share with you. Have a contract ready. These carriers are going to come to your community or aggregators such as American Tower or companies like that will come to you and ask if you are ready to do this. There are so many cities out there that have example contracts, template contracts. NTIA can point you to a lot of those resources. There really is no excuse not to have a contract ready when they walk in the door.

I would also say pick a standard pole and the standard pole will not fit 100% of the locations but 90% of the locations, honestly, we don't care about. What we want is a pole that can be deployed quickly. Streamlining your permit process will help your carriers and then ask for fiber and power in return for that streamlined process. I think it's important.

And so I think that a couple of other considerations that I've seen, some communities are looking at, as part of their ordinances, to have minimum spacing requirements between small cells. I actually think this is

counterproductive to the way the industry is going. If you look at technology and 5G specifically, higher bandwidth frequencies require shorter distances. So if you say there's only one small cell pole out every 500 or 1,000 feet, I think you're going to revisit that decision as a community in a couple years.

I've also seen several communities looking at colocation poles and those are very large poles when you see them and realize 24 inch diameter pole has a significant impact visually on your community, where, when it's right next to a six inch diameter light pole. And so I think that some people don't realize that. I would also advise people to think about backup power generators, large equipment footprints in the Right of Way. Many of these small cell poles are located right in front of business doors.

Generators in front of business doors generally don't go well and so I would just consider that when you're working with your partners to determine power for these locations. And lastly, I would suggest that you consider replacing existing poles instead of putting in new poles. There's a lot of reasons for this. Specifically, the pole site that has already been designed to handle the underground foundation and you can get in quickly. The engineering burden is lower than to say I want to put a new pole five foot away.

I think that that really sums up what I would suggest to people. This is exciting stuff for us. Right now, Lincoln is competing for the power NSF grant to deploy advanced wireless around our city, largely based on the success of our partnerships with private entities like Vernon's specifically. And so this is exciting stuff and I really encourage people to think about what are they doing -- are they looking at broadband as an infrastructure like water, or sewer, or streets in their community. Thank you.

Laura Finning: Great. Thank you, David, and thank you Jackie and Vernon as well. Those were our three presentations for today. We have had a couple of questions in the chat box about availability of the presentation and just want to let you know, the presentation combined, all three presentations will be available on the Broadband USA website within the next seven days. And our website is [ww2.ntia.doc.gov](http://ww2.ntia.doc.gov). But if you just Google us, Broadband USA, you can get to us as well and have access to that.

And that really concludes the presentation part of our presentation today. And remember, this is a monthly webinar series. So June, the third Wednesday in June we'll have another webinar and our June webinar will focus on business models for deploying broadband infrastructure from the different models that have been successful in communities across the country.

So I'm seeing questions pop up on the screen as I am closing this out for you. So let me just go ahead and I'll toss this out for any of the three of you, but to start with, what's the biggest challenge in supporting the wireless industry? And I guess that would be for both Vernon and/or David.

Vernon Brown: This is Vernon. Jackie really spelled it out well. It's that siting process. It is very long typically, clearly not in Lincoln, Nebraska. But in every other city, it takes a long time and just the federal regulatory part that you have to go through, NIPA, it takes too long to get through the process to deploy these very quickly.

And then with that, I would also say in city government what we call NIMBY not in my backyard. We sometimes struggle with business people or even in residential areas where we're putting up small cells, they don't want that pole in their site. And sometimes, even if it's on existing infrastructure, they just don't want it. So those are kind of the biggest challenges that we see so far.

David Young: Echoing what Vernon just said, the approach that Lincoln took was we actually went with Verizon and Mobility to several of our local organizations, the Chamber of Commerce, the Downtown Business Association, the Independent Business Association, and made joint presentations to help address the NIMBY issues, and really to build community support towards getting this done, deploying at 118 sites around the city in one year, that's a big lift. It's going to cause impact. And so getting out there early and talking early was one of the ways that we felt we were supporting our partners in the wireless industry.

Laura Finning: Great. Thank you. So I have another question here from Heather who asks about how can we get local electric companies to work with small cell deployers? Do any of the three of you have any suggestions for you. I don't know if any of you have worked with an electric company.

David Young: Yes, Lincoln Electric is a locally owned company and it's a great group to work with. One of the main issues that Lincoln Electric asked for was they wanted the meter box to be located outside of the Right of Way. And they could do multiple sites to one meter, that was fine, but the meter box we located out of the right way. The reason why they wanted that was that puts the wireless provider in the responsibility seat for locating the drop to that small cell.

That was a request made by the electric company that was not warmly received by the providers, but in return, they got a very fast approach to answering questions from the provider by agreeing to that, and they're looking at long-term discussing bulk metering for all locations. So that's one thing I would consider talking through with your electric partners if that's a stumbling block or an issue for your community.

Jackie McCarthy: This is Jackie and I definitely agree that sometimes partnering with the electric utility and kind of talking through or encouraging the capture and the electric utility pole owner to kind of talk through some of the potential benefit for the utility in terms of increasing its own efficiency and deployment, especially now that so many electric utilities are modernizing the grid and adding kind of more consumer facing or rate payer facing smart grid applications, but I think it's certainly a great point that in many cases, the electric utility is a primary owner of that vertical real estate that's really important for wireless carriers to have access to.

Laura Finning: I think that concludes the questions from our question box, and anything, Jackie, Vernon, or David, you want to add before we wrap this webinar?

Jackie McCarthy: This is Jackie. Just to follow-up on the discussion on fees, we find that they definitely range -- they have a wide range and as an industry we realize that cost based fees will definitely vary depending on the environment and the cost to either move attachers or make a pole ready for a small cell attachment. But again, I think the cost based nature is what we're trying to encourage and encourage policy makers to adopt. Thanks.

Laura Finning: Great. Well, thanks everybody for joining. We appreciate your participation in our monthly webinar and hope you'll join again the second Wednesday in June as we talk about broadband business models -- I'm sorry, I said it again, it's the third Wednesday each month, so the third Wednesday in June we'll have a webinar on broadband business models. And thank you so much for joining. This concludes our webinar.

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