COMMONWEALTH OF PENNSYLVANIA
HOUSE OF REPRESENTATIVES

JOINT PUBLIC HEARING
OF THE
HOUSE CONSUMER AFFAIRS COMMITTEE
AND
SENATE COMMUNICATIONS AND
TECHNOLOGY COMMITTEE

STATE CAPITOL
HARRISBURG, PA
MAIN CAPITOL
ROOM 140

WEDNESDAY, NOVEMBER 10, 2021
9:00 A.M.

BEFORE:

HONORABLE JIM MARSHALL, MAJORITY CHAIRMAN
HONORABLE ROBERT F. MATZIE, MINORITY CHAIRMAN
HONORABLE KRISTIN PHILLIPS-HILL, MAJORITY CHAIRWOMAN
HONORABLE JOHN KANE, MINORITY CHAIRMAN
HONORABLE SHERYL DELOZIER
HONORABLE THOMAS MEHAFFIE
HONORABLE CARL WALKER METZGAR
HONORABLE BRETT R. MILLER
HONORABLE ERIC NELSON
HONORABLE TINA PICKETT
HONORABLE CHRIS QUINN
HONORABLE THOMAS R. SANKEY
HONORABLE TODD STEPHENS
HONORABLE DONNA BULLOCK
HONORABLE AUSTIN DAVIS
HONORABLE STEVEN MALAGARI
HONORABLE BRANDON MARKOSEK
HONORABLE KYLE MULLINS
HONORABLE DARISHA PARKER
HONORABLE PETER SCHWEYER
HONORABLE PAM SNYDER
HONORABLE NIKIL SAVAL

Pennsylvania House of Representatives
Commonwealth of Pennsylvania

I N D E X

TESTIFIERS

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SUBMITTED WRITTEN TESTIMONY

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(See submitted written testimony
and handouts online.)

P R O C E E D I N G S

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MAJORITY CHAIRMAN MARSHALL: Good morning. If everyone could please take their seats and silence their phones and other devices.

Welcome to this joint public hearing with Consumer -- the House Consumer Affairs Committee and the Senate Technology Committee. This hearing is on rural broadband. It's not on any other technologies, and it does not deal with any issues of safety, which are regulated by the FCC. We will have testimony from three groups of individuals from different areas of expertise. And questions will be asked by members only.

And if we could begin with bringing up Darrin Youker from Pennsylvania Farm Bureau, Jeremy Jurick from Michael Baker International, and Lance Grable from Beaver County Office of Planning and Development to the front table.

I'm Chairman Jim Marshall from Beaver and Butler Counties. And we will have members introduce themselves.

MINORITY CHAIRMAN MATZIE: Thank you, Mr. Chairman.

Representative Rob Matzie, the Democratic

House Consumer Affairs Chairman, also from Beaver County and a small portion of Allegheny County.

SENATOR KANE: First time here, so excuse me. Senator John Kane, 9th Senatorial District, encompasses parts of Delaware County and Chester County.

SENATOR PHILLIPS-HILL: Good morning, everyone.

State Senator Kristin Phillips-Hill, York County. And I want to thank Chairman Marshall and Chairman Matzie for extending the invitation for the Senate Communications and Technology Committee to join you for this important hearing this morning on the issue of rural broadband.

As so many of you in this room know, it has been a top priority for me and for our Committee. And although we have held a series of hearings on the topics and have worked on the significant pieces of legislation, there is still so much work to be done to improve access to broadband, especially in the most rural areas of our Commonwealth. So I am looking forward to hearing from our testifiers today and to also continue this important conversation.

And again, thank you to Chairman Marshall

and Chairman Matzie.

REPRESENTATIVE NELSON: Hello. My name is Representative Eric Nelson, 57th District, Westmoreland County.

REPRESENTATIVE STEPHENS: Todd Stephens, 151st District in Montgomery County.

REPRESENTATIVE MEHAFFIE: Representative Tom Mehaffie, 106th District, Dauphin County.

REPRESENTATIVE MILLER: Brett Miller, 41st District, Lancaster County.

REPRESENTATIVE QUINN: Good morning. State Representative Chris Quinn, 168th District, Delaware County.

REPRESENTATIVE METZGAR: Carl Metzgar, Somerset and Bedford Counties.

REPRESENTATIVE SANKEY: Tommy Sankey, Clearfield, Cambria.

REPRESENTATIVE DAVIS: Representative Austin Davis, Allegheny County.

SENATOR SAVAL: Senator Nikil Saval, Philadelphia County.

REPRESENTATIVE BULLOCK: Representative Donna Bullock, Philadelphia County.

MINORITY CHAIRMAN MATZIE: We're also being joined virtually by Representative Pam

Snyder from Greene County. Pam will be joining and will be prepared to ask questions, as well. She's been our champion on the House Democratic side for rural broadband, and we're appreciative that she was able to join us virtually.

Thank you.

MAJORITY CHAIRMAN MARSHALL: The Committee has written testimony from the testifiers that are here in person and from other groups. I would ask that those with us today, if instead of reading verbatim your written testimony, if you could, highlight some issues.

And we will begin with Darrin Youker from the Pennsylvania Farm Bureau.

MR. YOUKER: Good morning. And thank you for giving us the opportunity to present just a few thoughts on the issue of rural broadband. And I also want to thank you for the spirit of bipartisan that this issue has had over the years. We greatly appreciate it.

So this issue has been at the forefront of our legislative agenda long since before the pandemic started. And the State has taken important steps to address the need for better deployment, but clearly, there is much more that

needs to be done. And we are faced with an absolute critical moment of time. Right now, we fully understand the struggles created by inadequate broadband service and a source of funding to address this problem. So our message to lawmakers is very simple. Please do not let this opportunity pass us by.

Our goals for rural broadband are straightforward and can be summed up in three key points. Number one, develop a plan. Number two, find the appropriate agency to award grant funding. And three, dedicate current American Rescue Plan dollars to broadband, regardless of what we might receive in new Federal infrastructure spending.

Our role in the broadband conversation is to be an advocate for last mile users. We are not a service provider. We don't have engineers and expertise on staff, but we are in an excellent position to convey the problems that the lack of service creates and the growth that is being stifled by the lack of adequate service. So thankfully, we are at a moment in time where we can address this digital divide.

First, we need to create a plan that

identifies the areas of greatest need and creates a roadmap to clear out the legislative and regulatory hurdles that stand in the way. Thankfully, Penn State has already developed mapping software that provides a picture of current service, existing infrastructure, and current speeds. And that data is an excellent starting point for determining the communities that should be prioritized for service.

We need to be technology neutral in our deployment and provider neutral in who provides that service, whether it's startup companies, established providers, cooperatives, or municipalities, we must embrace an all-of-the-above solution. And a robust broadband plan should explore that issue in depth.

With an established plan, Pennsylvania then must equip an agency to implement and award funding, and we absolutely support the creation of a broadband authority to allocate grant dollars to providers who want to expand that last mile service. And lastly, we support proposals that are currently before this House Committee that call for either using $100 million or $500

million of American Rescue Plan dollars on broadband. And we need this funding along with the dollars that we are going to receive from the recently-enacted infrastructure plan. The need is simply that great out there, and all of those dollars could go to establishing better service in rural communities.

So again, we're at a unique point in time when it comes to broadband and investing in our rural communities. We understand the scope of the problem, the inadequacies that exist out there, and finally have some resources to address the problem. And we encourage the General Assembly to move swiftly on these three critical areas: planning, deployment, and funding.

Time is of the essence, and every window in time eventually closes. We do not want to see this moment pass us by without our State making substantial progress on the issue of rural broadband. And I'd be happy to answer any questions that you might have.

MAJORITY CHAIRMAN MARSHALL: Thank you.

We'll go right into Jeremy Jurick from Michael Baker.

MR. JURICK: Thank you, Chairman.

Lance Grable and I would like to give a dual testimony if that's okay. I'll hand it over to you, Lance.

MR. GRABLE: First of all, thank you to the House Consumer Affairs Committee, the Representatives, State officials, everybody here. Obviously, we know this is an important matter. We appreciate being here.

MAJORITY CHAIRMAN MARSHALL: Lance, need you up closer to the microphone, please.

MR. GRABLE: I'll move closer.

MAJORITY CHAIRMAN MARSHALL: Thank you.

MR. GRABLE: I'm sorry.

MAJORITY CHAIRMAN MARSHALL: Right on it.

MR. GRABLE: I'm not used to that.

My name is Lance Grable. I'm here with Jeremy Jurick. We're going to submit a combined testimony to talk about the importance of the broadband access for all, specifically related to our rural areas.

I'm the Director of the Office of Planning and Redevelopment for Beaver County.

MR. JURICK: My name is Jeremy Jurick. I'm with Michael Baker International. We specialize in architecture engineering, broadband

planning, and have 900 employees in Pennsylvania.

MR. GRABLE: So we started a study, a process about two-and-a-half, three years ago. It started as looking at infrastructure in general: gas, water, sewer, telecommunications, everything. And quickly, broadband came to the forefront as what was going to be a top priority for us.

It happened -- we started doing this prior to the pandemic and prior to COVID. And when that came about, it made it even more of a priority. Fortunately for us, we had set it as a priority ahead of that time and started doing some work and started doing some needs assessment on exactly what needed to be done and how we needed to go about it.

We'd like to go over just some of those results. There's a ton of information and we try to break it down to the results that we think could best apply to you guys here this morning and make sure that hopefully we can help with any additional planning efforts that you all might be making. Our goal is to take -- to make sure we knew what we needed where we needed it and where we needed it the most, as it related to rural

broadband, and to make sure that any of the funding that we got, that we received, we wanted to make sure that we spent that as responsible as possible.

We wanted to make sure that we weren't overbuilding, that we weren't putting money into areas that didn't need it, and that we used -- we used all of that funding the proper way. So we'll go over here to Jeremy to kind of walk through some of that process.

MR. JURICK: Thank you, Lance.

So the first thing we did is we took a look at the FCC Form 477 mapping, just to get a general idea of the landscape of broadband in Beaver County. And with the inherent issues in that data, you know, it's mapped at the census block level. So if there's one location served in that census block, the entire census block is considered served.

As Lance and I reviewed this, we decided, as Mr. Youker has said, to come up with a data collection plan to truly identify the actual number of locations that need broadband access in Beaver County. So as Lance mentioned, this is extremely important because we want to make sure

we use funding mechanisms to implement broadband solutions where it's most needed.

With ARPA funding coming out, this kind of sets the stage for Beaver County. And with ARPA funding, similar to what Mr. Youker said, we truly want to spend as much money as possible on broadband right now. So the data collection methodology that we used, this started in May of 2021. And we -- the first thing we did was we took a hands-on approach. We looked at the 477 mapping in relation to GIS and other data sets to come up with potential areas, where might broadband be lacking.

We took these potential gap areas, and we validated via a boots-on-the-ground approach. We sent field staff out with door hangers in hand and placed door hangers on over 2,000 locations that we believed to be lacking broadband access. While we were there, we did utility pole inventories to understand the actual physical broadband architecture on site. We knocked on doors and spoke to residents to get their feedback. Stakeholder engagement, we met them where they were.

And then we also, on that door hanger,

provided them with a URL to go to a website, submit additional feedback, run speed tests, and perform a broadband survey to give us feedback. While that was occurring, we candidly spoke with over a dozen internet service providers in Beaver County. The telecom landscape in Beaver County is very complex. There's a lot of providers. Actually, a lot of them are in this room now.

And during this process, we identified more issues, entered into some nondisclosure agreements with some of the entities to get more refined mapping. And during that time, we also were calling and receiving feedback from residents, you know, as the study progressed through the summer.

So some of that feedback, Lance is going to walk through, and then also some of the high level statistics that we've just recently found.

MR. GRABLE: Yeah, through the -- through this process, this great process that Michael Baker walked through, they did a wonderful job going through this and engaging residents and having a really concrete plan of what we needed to do so we could accomplish what we needed to. We were able to figure out that

there were 2,359 unserved locations in Beaver County. Had we just utilized the Form 477 data, we would have been looking at 1,042.

So there was a large -- a much larger number of unserved locations than what we had originally thought, based off of the 477 data. And it kind of validated our concerns and our desire to take that data and refine it as much as we could.

If it's okay, I'd just like to walk through a few of the quotes that we've got from some of our residents regarding the study that was being conducted. The first one was a resident from Potter Township. They said we almost moved out of State due to poor internet and other job opportunities. Internet access in our area is terrible, and I have to leave home daily to access better internet.

Another resident in -- or a future resident, a business owner in Chippewa Township said I'm thrilled to be moving back to Beaver County where I grew up, however, it's been a shock to find out how difficult it is to secure high speed internet service that will serve our family and my business needs.

Another resident from South Beaver Township, we really dislike only having satellite as our only option. It's slow. It doesn't work well and is expensive for the level of service provided.

Independence Township resident, two different internet service providers quoted us $20,000.00 to extend their service to our area. We have no fixed broadband. We use our smart phones and mobile devices.

And lastly, a resident from Greene Township, we currently have to stagger our internet usage, as only one or two family members can become on the Internet at a time. This makes working from home and school work very difficult.

MR. JURICK: Some general statistics from the study, as well. Lance already mentioned one of them, 2,359 actual locations have been identified, which is 125 percent more than identified through existing mapping. Through the broadband public survey, the top two barriers to broadband access for residents in Beaver County, 49 percent said I cannot get faster service; 20 percent said I cannot afford faster service.

We asked residents about how often did

you work from home before COVID and after COVID? Pre-pandemic, only 16 percent of residents worked or learned from home 40 hours per week. That has more than doubled to be 35 percent now.

Of 560 fixed broadband speed tests taken, 89 percent of these being in rural areas, 46 percent of those speed tests had download speeds that fell below the threshold of 25 megabits per second, the FCC definition of broadband; and 42 percent of the upload speeds fell below 3 megabits per second. We do understand that folks may subscribe to a lesser tier, but this also helps us understand adoption of higher speed in these areas.

Through our boots-on-the-ground approach, we identified 124 structures that are raised or no longer exist that were identified as being unserved, which could save the County potentially upwards of a million dollars. And last, we've performed over 5,500 mobile broadband speed tests at every location we visited for AT&T, T-Mobile, and Verizon, the top three carriers in Beaver County. Fifty-eight percent of these speed tests fell below the FCC definition of broadband. Eighty-five percent of these speed tests were

performed in rural areas.

So Lance, I'll turn it back over to you.

MR. GRABLE: What we feel like we've done is provided ourselves an exact roadmap of where we need to go, what we need to do, how we need to deploy. We actually believe this was potentially a blueprint for the Commonwealth to be able to use going forward to resolve the digital divide issue that seems to be prevalent right now in the Commonwealth.

In addition to this, we do believe that there's some -- potentially some inherent challenges that are going to come from it. One of those is digital literacy. We realize that some of these areas, they have -- they have very little or no mobile, no broadband. And we know even in some of our more urban areas, there's some digital literacy issues. That's going to continue and potentially expand as we expand coverage.

Affordability is another one of those. Under the same guidelines, it has -- it's going to expand as we expand coverage. We're going to need to make sure that we continue to address that. Sorry. There's potential -- as we change

the definition of broadband and what those served speeds are, it's actually potentially going to create more unserved in our area. So we're kind of working on making sure we have an idea of what that roadmap is going to be, as well, so we know what those pockets are potentially going to be. So we have to be careful with that.

In addition to that, mobile connectivity is another area that's going to -- it's going to hit -- and it can continue to be able to hit. So we can use some of the funding that we have now to do some studies and have some understanding, as Jeremy mentioned, we were able to do 5,600 tests in our area. We need too do many, many more. There is some potential funding to do some of that work, but the deployment and fixing that issue, the funding isn't as prevalent as what it is right now for some of the rural fixed broadbands.

So we need to make sure that we continue to work on that funding.

MR. JURICK: Sure. And related to ARPA funding, as we read the interim final rule, it appears to become difficult to rule out deployment for mobile wireless connectivity in

areas. And also, another gigantic feedback we received in Beaver County is only having access to one internet service provider. I personally fall into that category, as well. Per the ARPA interim final rule, it becomes difficult to address that comprehensively, as well. So we're hopeful that, you know, moving forward with future funding, that these issues can be addressed as well.

MR. GRABLE: And just one last thing on the funding portion, you know. We would ask that consideration be made -- we have -- there are some funding capabilities out there, like the Rural Digital Opportunity Fund. That funding goes to the providers.

And if that money would be able to go to entities like the counties that have gone through this process and have a really good roadmap of what they need to do and where we need to spend that, it opens up those lines of communication. It makes it a little easier for us to be able to negotiate and do what we need to do for the actual deployment. So that would be one of the things that we would ask everyone to consider as we move forward.

I think that about wraps it up for what we have. I really appreciate the time. This can't be more important to us in Beaver County. And I really -- and I mean this -- I can't thank you all enough for making this such an important issue for all of you. And we're happy to answer any questions you may have.

MAJORITY CHAIRMAN MARSHALL: Thank you, gentlemen. We will get to that briefly.

I would like to note that there will be members of the Senate and House coming and going from -- to and from different meetings, and that we've been joined by Representatives Mullins, Mackenzie, Parker, Pickett, Malagari, Delozier, Markosek, and Schweyer.

Any others, Mr. Chairman?

And our first question will be from Senator Phillips-Hill.

SENATOR PHILLIPS-HILL: Thank you, Chairman Matzie.

Gentlemen, thank you for being here today. If I could, to the fine folks from Beaver County, I've been saying for years that in order to effectively bring high speed broadband Internet to the most rural areas of the State

that we need better and more up-to-date mapping.

I sit on the FCC's Intergovernmental Advisory committee. And I will tell you that at our last meeting, I questioned Chairwoman Rosenworcel, the commissioners, as to when that new and improved mapping will be available. They are, I have been told, currently reworking it and hope to have it to us soon, but would not commit to a date.

We also know and have had -- heard testimony that Penn State is working on their mapping, as well. So I think it's really encouraging to hear that Beaver County began to do their own mapping. Who knows better than the people right there on the ground, right.

So have any other counties approached you to start doing something similar?

Have you assisted any other municipal entities on this mapping issue?

MR. GRABLE: Well, first of all, thank you for your interest and for working with FCC to update that mapping. It's hugely important, and I really appreciate that.

We've been -- we've had a few -- we had Washington County reach out to us. We responded

back, but have yet to be able to communicate with them. And through our efforts, I brought in some members of SBC to see what it was that we were doing and see how far along in the process that we were. And they haves since engaged Michael Baker to do a very similar project to what we're doing to, to do it for the 10-county region that SBC covers.

So there's some great work that's being done there. And having -- we just completed our study here in October, the end of September. And the amount of data and what we know, I'm sure that the 10-county region is -- they're going to really know what they have if they follow the same guidelines as what we did. It's remarkable.

SENATOR PHILLIPS-HILL: Fantastic. Can you quantify the cost of what your effort to improve your mapping entailed?

MR. GRABLE: You know what, I'd have to get back to you to answer that correctly because there was a couple different things that we went through. And I wouldn't want to give you a number that wasn't completely accurate right now, but I'd be happy to get back to you with that.

SENATOR PHILLIPS-HILL: I would

appreciate that very much.

MR. GRABLE: Absolutely.

SENATOR PHILLIPS-HILL: Mr. Chairman, if I may, one question for the Farm Bureau.

Mr. Youker, you mentioned in your testimony the need for some legislative mechanism to assist in the handling of the Federal infrastructure money. Can you further explain how you envision that entity being established or arranged to best maximize the use of those Federal dollars?

MR. YOUKER: Yeah, absolutely. I mean, we harken back to the State Government Task Force recommendation on creating a broadband authority. So one that has, you know, bicameral, bipartisan support, but obviously one that takes in expertise from this industry that can say, you know, with, you know, objectivity, here is where we best can deploy, and here is where we are going to get the biggest bang for our buck.

You know, obviously, I think if we look at the existing State government agencies, no matter what, there would need to be some tweaking because we just have not dedicated the sort of substantial resources yet towards broadband. And

now that we have, you know, substantial Federal dollars coming in, I think it's in everybody's best interest that we have some sort of entity in place that can allocate that properly. So you know, we would support the creation of an authority that would, you know, be able to allocate those resources properly.

SENATOR PHILLIPS-HILL: Thank you so much.

Thank you, Mr. Chairman.

MAJORITY CHAIRMAN MARSHALL: Thank you, Senator.

Question from Chairman Matzie.

MINORITY CHAIRMAN MATZIE: Thank you, Mr. Chairman.

Darrin, you stated that neighboring states have well-defined and articulated broadband plans, Pennsylvania needs one to create a roadmap for deployment. Talk about what you've identified from some of our neighboring states. I know what West Virginia has done far exceeds what we have done, from the perspective of really identifying where there are pitfalls throughout the State. And they're like two years ahead of us, quite frankly.

Do you support legislation that would create grant programs that doesn't have a robust plan in place for deployment?

I mean, I think we need to -- we need to ensure that we really do it right. And I think, you know, having a stakeholder and advocate from the Farm Bureau who really advocates for the rural part of our Commonwealth is crucial.

MR. YOUKER: I mean, I would say the last thing that we would want to see is this service go to areas or, you know, new service go to areas that are currently served. We just have far too many underserved areas in this Commonwealth that we need to do this according to a plan and with an entity that is going to be able to follow that plan and execute it.

You know, I easily can Google West Virginia's broadband plan, Ohio's broadband plan, and look at the areas that they have identified. And I mean, you get even down into real minute detail of microtrenching along, you know, public roadways, and if that's an adequate way to, you know, lay fiber cable. I mean, that's something that, you know, I can't say whether or not PennDOT allows that kind of thing.

But that's the type of, you know, real detail that we need so that we can do deployment intelligently. But at the end of the day, it is a question of we want to make sure that the underserved areas are served first with this new investment. Otherwise, overbuild does nobody any good and we are back to the same problem that we were, you know, earlier in this century.

MINORITY CHAIRMAN MATZIE: Thank you.

And real quick, Jeremy or Lance, thank you for making the drive that Jim and I have to make when we come to Harrisburg. The -- we're grateful for your presence. And obviously, you've had a handle on what you've been doing.

But talk about mapping again though. I mean, I think let's get back to that because I've harped on mapping for the last couple of years with stakeholders as well as the administration and my colleagues about just how important that is. And I know, you know, Senator Phillips-Hill mentioned, you know, her role with the FCC now and her position, which we're grateful to have her voice there. But it's just been frustrating because, you know, the ZIP code way that they do it and ensuring that we do have adequate access

and what you've been able to do, I think we just need to reinforce that again, just how important it is to have good quality maps.

And we shouldn't reinvent the wheel. I mean, if Penn State has got a good map, if Beaver County has got a great map, we should be able to put all of that stuff together within the remaining counties and come up with something that makes sense for the entire Commonwealth.

Can you respond to that?

MR. GRABLE: I can't agree more. I mean, the reason that we did what we did, we had some great experience here with Michael Baker. I was frustrated, as well. I have a responsibility for the funding that I get to make sure -- and my commissioners are very responsible, as well, to make sure that the funding we get is used properly.

And overbuild has been mentioned, we didn't want that to happen. We wanted to make sure that we hit the areas that needed it the most. And there wasn't enough data, simply put, for us to be able to figure that out and responsibly spend funding that we would have, to make sure that we put it in those areas.

So what Michael Baker came up with and what they did -- we knocked on 2200 doors. Everything that they did led us to a point where we could create a map. Like I said, we know that we have 2,359 locations that need served. I don't know how many other counties have that specific data, but we do. We have it. We know how to get there. I believe we do have a road -- the roadmap, the blueprint of what we need to do. We're willing to help anybody go and do this.

It's the most important -- for me, it's one of the most important things that we've done. I have to spend that money responsibly, and I'm not going to do it based off of a guess.

MINORITY CHAIRMAN MATZIE: Appreciate it. And hats off to the commissioners for making the investment. I think that was -- that was crucial in getting it done.

Thank you.

MR. JURICK: Representative, one other -- one other thing related to this. So a lesson learned, FCC Form 477, many entities will take that data, recycle it, and publish it in a different color scheme or format. It's kind of the same thing recycled over and over and over.

The first thing we did was we leveraged 911 -- I know we're not talking about public safety -- but we did leverage 911 address level data instead of the census data to understand the true picture. So in coordination with Pennsylvania Emergency Management Agency, the likelihood that you'll be able to really hone in on some of these locations as opposed to general understanding via the Census Bureau.

MAJORITY CHAIRMAN MARSHALL: Thank you, Mr. Chairman.

The next question is from Representative Nelson.

REPRESENTATIVE NELSON: Thank you, Mr. Chair.

And I appreciate, you know, both the topic and the opportunity to have a bipartisan meeting. In your testimony, you touched on the digital divide. And we recognize that. We see it in Westmoreland County, and that divide impacts not only property values because people aren't wanting to necessarily move in, but also business attraction.

A couple of years ago, this Committee held a hearing where they announced broadband was

everywhere. And I wanted to get to the portion of your testimony that talked about upload speeds. Forty-two percent of those upload speeds fell below the 3 Mbps, you know. That is so low.

And I just was texting somebody from Monroeville. They're at 40.8 in their upload speed. So as we look to move forward and invest the money for the plan, can you talk about -- we will be building -- or like our goal is going to be set here, where we're not going to achieve that divide if we can't either redefine what our minimum speed is and what is the accountability if we're not hitting that?

MR. JURICK: Representative, thank you for the question.

So through ARPA funding, the interim final rule states 100 megabits per second download speed and 100 megabits per second upload speed, if possible. If not, 100 down, 20 up. So considering that against the -- which is very high speed. And that's a great goal to achieve.

Considering the current definition of 23 down and 3 up, we have a lot of work to make up here. So raising the bar for the definition of broadband in the Commonwealth would encourage

investments to make sure that we achieve that. And I want to borrow another term from ARPA as future proof technology. So ensuring that we install something that is future proof and is going to last for the next 30, 40 years, not the next three or four years and need reinvestment.

REPRESENTATIVE NELSON: So being from a county that really struggles with broadband, you can see the potential of the overbuild game. Because what's going to happen with this 100 threshold is all existing areas are going to continue to be underserved, and so they're going to overbuild in those current spots.

So would it be helpful for whatever we're doing moving forward, that we recognize or prioritize between those -- because those more convenient urban areas are all going to qualify because 40 is nowhere close to 100. So they're just going to rebuild in the same spots, you know. And how would you recommend we would structure that difference?

MR. JURICK: I'll echo what Mr. Youker said about ensuring that you allow funding to fix the areas that are considered unserved. And the first tier of unserved would be those that are

already below 25 and 3. If we advance the definition and heighten that definition of broadband to 100 or 120, ensuring that we get those areas caught up, then allow funding for potential overbuild for one provider-only areas, things of that nature.

And just to -- a point of clarification, the ARPA funding does state that the goal is to serve unserved areas. But the unserved definition right now is 25, 3 per the FCC. Getting those areas served will bring them up to a minimum of 120 down, which is something that Lance has been stating, that those areas may bypass some of the areas that are considered served now.

So playing with definitions, would advise to heighten the definition as early as possible of broadband to make sure that we achieve those goals.

REPRESENTATIVE NELSON: Thank you, Mr. Chair.

MAJORITY CHAIRMAN MARSHALL: Thank you, Representative.

Seeing no further questions, I would ask that the members of the panel stay in the room,

if we could reach out to you later.

And then, we will transition to the second panel. The second panel is Michael Brain from Nokia and Sam Garfinkel from Meta Mesh.

As I stated before, we have written testimony that's been provided from groups, such as Wayne Campbell from PA State Grange and Melissa Gates from the County Commissioners of Pennsylvania. We appreciate every individual or group that has provided written testimony to us. And again, I would ask that the members of the panel not read testimony verbatim and just please follow talking points.

Samantha, you may start when you're ready.

MS. GARFINKEL: Thank you, Chairman Marshall and Chairman Matzie and the rest of the Consumer House Affairs Committee for having me here today.

My name is Sam Garfinkel, and I'm the Executive Director of Meta Mesh Wireless Communities. We're Pennsylvania's first non-profit wireless internet service provider, also called a WISP. And we significantly scaled up our capacity to respond to the digital

inequities that were worsened by the COVID-19 pandemic. And I'll just give you a brief overview of how a non-profit wireless internet service provider works and what we try to do in order to provide last mile connectivity.

So our mission is to leverage existing community resources to bridge the digital divide in southwestern Pennsylvania. And so to do this, we deploy wireless infrastructure that's very affordable, and it can provide broadband speeds of 50 megabits per second download, 25 megabits per second upload. And we utilize 5 gigahertz unlicensed frequencies in order to keep this service affordable to our customers.

After we design the network, we co-locate that infrastructure on existing structures or buildings in order to blanket a community in broadband. The other somewhat novel approach for the non-profit wireless Internet service provider is the use of a social enterprise business model, which effectively allows local institutions to sponsor the monthly cost of internet on the end user's behalf. This cost is about $45.00 a month. And the reason that the sponsoring entities shoulder that burden on behalf of the

end user is because they have an existing responsibility, be it monetary, programmatic, or even legally to connect their constituency so that they can deliver those online services that they're currently offering.

And so -- but often these groups do not have the capability to extend Internet services themselves. And so we are a third-party community network solutions that they Can invest their money in and it can ultimately allow Pennsylvania consumers to receive broadband Internet services at no cost to them. And we know that -- oh, and I'd like to say that by 2024, we'd like to be serving 6,650 Pennsylvanians in rural and urban communities through this non-profit WISP.

So we know that for rural communities, the lack of access to broadband also means lack of access toe essential health, education, and employment services, among so many other things. We also know that large corporations and incumbent ISPs have considered it too costly to extend their network to these remote locations. So -- and while monetary costs will always be top of mind -- we're in a capital-heavy field in the

telecom industry -- we're in a unique position as a 501c3 charitable organization to put people and their needs before profit.

And so ultimately, what we're focusing on is mitigating the societal costs that would be the result of segmenting whole populations off from interacting with the global public square. And so wireless technology is often referred to as one of the last mile solutions. The idea being to transfer the power of fiberoptic technology -- which is middle mile -- direct to consumers' homes. And wireless technology is a very cost effective way to do that, meaning that it can carry that bandwidth across far distances, and ultimately, requires less fiber, even though it does require fiber backhaul, less fiber for more people.

And so Meta Mesh has demonstrated the efficacy of using Meta Mesh -- excuse me, wireless technology through the build of actually a 20-mile long distance wireless link from our backhaul at the Cathedral of Learning in Pittsburgh/Oakland to New Kensington, in fact, which is some 20 miles away. And this build alone will serve up to 150 households in New

Kensington, and it will allow us to expand to the surrounding areas in the -- Valley.

So with that being said, there are certainly constraints to using unlicensed frequencies because it is dependent on what's called line of sight. Obstructions, be they foliage or terrain, can compromise the quality of the signal. And that's because it's simply on the lower strength of the frequency band and those higher frequencies are licensed for specific use and are often quite expensive to use.

And so to accommodate for line of sight, we have to build additional infrastructure to basically relay that signal to multiple points within the community to maximize the number of homes that can see or be connected. And so one of the recommendations I will offer here today is that we compel the FCC to open up some of those higher licensed frequencies for public use or to lower the cost to use some of those higher frequencies.

In addition to that, you know, infrastructure investments are often also a barrier for non-traditional service providers,

like Meta Mesh. In New Kensington, we have the opportunity to actually co-locate our equipment on a Crown Castle-owned tower, which gives a great view into town and will create a really excellent quality of service for those community members.

That being said, that infrastructure investment alone will cost $50,000.00 up front and then a subsequent $600.00 per month to lease. So for a small non-profit like ourselves, this is a significant investment.

So ultimately, I'll just say we believe, like the others who have mentioned it here today, that there is no single solution to the last mile challenge, but we can collaborate through non-profits, governments, community institutions, and commercial providers to serve those unserved areas. But in order for this blended approach to be successful and replicable for use in other places across our country, we do have to level the playing field, both from a regulatory and funding perspective.

State and program funding should promote collaborative efforts and should seek to broaden the range of last mile solutions like wireless to

create more options for end users. Secondarily, we should also take a look at regulatory legislation that should be reviewed in order to create more opportunities for providers to solve this broadband issue or to streamline that process for faster deployment. And additionally, decisionmaking around funding should include voices from all sectors of this industry, including non-profits, community members, and anchor institutions that service them.

And so in this way, we are able to use existing community resources, be they monetary, structural, technical expertise, or people networks themselves to redirect to bridging the digital divide in our region. And so thanks to the thoughtful support of our strategic partners, including University of Pittsburgh, and Carnegie Mellon University, we've engaged in a distributed leadership model to engage with our community partners and deploy a program called Everyone Online. This is that subsidized Internet program I was describing earlier.

We also receive support as a non-profit from foundations like the Pittsburgh Foundation, the Heinz Endowments, and the Richard King Mellon

Foundation, who are really enthusiastic about solving this issue. And we are demonstrating right now that the non-profit approach to Internet service provision actually underpins the societal infrastructure that it takes to move an individual or family from an unconnected state to a connected one.

And so in summary, I'd ask this Committee to consider three recommendations that could immediately provide benefits to rural communities regarding broadband. The first would be to compel the FCC to open up those higher frequencies for use. And the second would be to encourage more non-traditional service providers by designating funding programs as exclusively available to non-incumbents and also ensure that these funding opportunities account for the outreach and marketing efforts that it takes to actually build trust and thus build that user base.

And lastly, I would ask this Committee to consider enhancing funding for the wireless infrastructure that's required to retransmit fiber broadband into communities directly. I hope this testimony gave you a better view of

what Meta Mesh is doing to provide last mile connectivity. And I welcome the discussion.

Thank you.

MAJORITY CHAIRMAN MARSHALL: Thank you so much.

Michael, when you're ready.

MR. BRAYEN: Okay. Can you hear me now? A famous Verizon saying.

To the Committee members, to the Chairs, thank you so much for letting Nokia come before you today.

Let me start to go backwards to go forward just a little bit because the most common question I get in the U.S. when I say we're from Nokia is are you still making phones? And I want to just give you a tiny bit of background about our corporation. And with that in your pockets, right, then I'll explain why we are so happy to be here today with all of you on this very, very important topic.

So the Nokia Corporation is actually three corporations brought together under the Finnish banner. So it is the Fins. And Nokia, the phones you remember, the French and Alcatel, but probably most importantly here for the U.S.

is that this is also Lucent Technologies, or if you're old enough, Bell Labs and Western Electric.

So you remember us as the purveyors of the telephone, the laser, the marriage of picture movies and sound, right. So if you watch John Wayne westerns, right, when you get to the credits at the bottom, you see Western Electric. So we are technology purveyors. So the phones in your pockets, the Internet, and the magic that makes those wireless towers come to life and carries the Internet, that is us.

Three thousand patents a year. Thirty thousand active patents. A hundred thousand souls in 163 countries. So the reason that we're here today -- one is obvious; one not necessarily so obvious -- so there is a decision made by our Federal government, money is about to flow in a fashion that is once in a generation for community broadband. And a real chance for us to close, as a community, to close the digital divide.

As the colleagues before the two of us spoke -- and what Samantha had to say today -- it's all true. We need to come to Pennsylvania,

which is really a microcosm of the U.S., and come up with ways to take the capital that is about to arrive, come up with a broadband plan, be thoughtful about that plan, and position those capital dollars where they can do Pennsylvanians the most good.

Now, we are gunrunners by trade, right. So if you're on Verizon Wireless, if you're on AT&T U-verse, if you do Fios, if you work with T-Mobile, behind the scenes, that's us. If you work with Allegheny Power or Pennsylvania Power and Light, or Philly Power and their mission critical networks, that's us. So the trick, we believe, from Nokia, as we have seen the decisions that have been made in the last seven days in Washington come to play, is we've made a conscious decision to come to the states and talk to all of you, to offer our help, our assistance, our resources, to help you to educate your consumers, educate yourselves, learn about the technologies that are available to play.

As my colleague said, one size is not going to fit all. If you go to the major carriers today -- and there are two players, one in cable, one in telephony, and there is mobile

-- their solutions are one-size-fits-all. But in Pennsylvania, what will work in inner-city Philadelphia to provide community broadband is not going to work in Mansfield. It's not going to work in Greene County. So we need to help you to educate you and to educate your constituents on the possibilities of the technology that can be brought to bear.

Why is that important?

Because as was said here earlier today, there are methodologies that need to be put in place to help you if you decide to build a broadband authority, like the state of Washington and Louisiana and Ohio. I think Pennsylvania will. I hope you do, right, so that you can focus your energies into creating decisions to get your unserved, and then your underserved, and then, if there's money available for those who have built once and they want to meet your guidelines of 100 down and 100 up, or 200 down and 200 up, or a gig to every home, have at it. Right. If the capital is available, it's fantastic, right.

And for us, since we have been in business, our three corporations now under the

Nokia banner for over 125 years, we believe that building something sustainable for the State of Pennsylvania is critical to your thinking as the two Committees that are sitting here today. You have a unique, as I said, once-in-a-generational opportunity to build something for Pennsylvania that keeps the kids here, that brings the industry here. Right. Those are important considerations for your communities of interest.

And if the pandemic hasn't shown us anything at all, other than I had to fight my better half for time on the Internet at home and a place to work, we will probably be a hybrid in the way we work and interface with each other going forward around the world. We've seen it. And what's about to happen here in Pennsylvania, it's happening in Canada. It's about to happen in Japan. It's happening in Europe while we're talking here.

The governmental bodies are bringing the capital to bear to build us connectivity around the world. So for us, there is a couple other points we would like to make though. Eighty-some years ago here in Pennsylvania and around the United States, communities got together because

the big companies would not bring electricity to their communities of interest. There is expertise and wherewithal and abilities inside of your rural electric co-ops and some of your community electrical systems that could really help you jump start this process.

They understand infrastructure. They have the intelligence to build networks, to work with the mapping people who were up here earlier today, with the Farm Bureau, and they can help you jump start this industry. We work with other cooperatives here around the U.S. Folks have put their toes in the water here at Trico. Soon I think Coverack will join. There are others.

And what Nokia will offer as part of this process is we will help them build business models so that they can find the right mix to build networks that are sustainable for last mile providers to ride on to deliver this connectivity. And I agree with my colleague. I think that, honestly, there is a place for wireless that can jump start and bring connectivity quickly, fast, affordable to the network.

Since we're the purveyors of the 5G

technology you have in your pockets -- and don't get too comfortable, we're working on 6G, while we're talking here on the phone. A chance for the phone makers to sell some more devices. The technology is coming fast and furious and the options are finishing up. There should be more spectrum available in the lower bands to provide because that has the longest distance. It's not the fastest, but it can reach a lot of people quickly.

So with that, I want to thank you again for your time. And I will thank you in advance, both Committees, for your energy because you have a big task in front of you folks. And we're here to give you a hand in making those concepts become reality.

Thank you so much.

MAJORITY CHAIRMAN MARSHALL: Thank you.

Our first question is from Representative Carl Metzgar.

Mr. Brayen, one of the challenges that we have in developing rules, regulations, and laws in the Commonwealth to develop this technology is we're trying to develop those for the entire Commonwealth. And like you said, we have many

different issues as you look across the Commonwealth. I come from an area, a mountainous rural area, Somerset and Bedford County, and recognizing that Nokia is an innovator, I'm curious as to what you would recommend for an area, you know, such as downtown Glencoe, Somerset County, Pennsylvania, where you have to pipe in sunshine.

And I can challenge anyone, any -- out there to show me how we have broadband service in Glencoe, Pennsylvania.

What would Nokia recommend? Rather than just throwing gobs of money at the problem, what is the solution?

MR. BRAYEN: Yes. Yes, I -- well, thank you first of all. Thank you for the question.

And as I said to someone yesterday -- and I agree with this statement -- throwing capital, throwing gobs of capital at this problem, we've seen that before and we've seen the results before. And I think it's happened in Pennsylvania, as well. So some thoughtfulness from this Committee is the first step.

But to answer your question, it has not been an easy road to bring the kinds of speeds

and feeds to a community of interest like yourself. So if you think about the problem, there are two ways to go at it, right, the fastest and longest lasting solution, of course, is to bring fiber to the homes and businesses in your community. Okay. But it is also the most expensive because those hills that you live in, right, you know, you need a diamond drill to drill for the poles that go in the ground for the most part, right.

It's not an easy build. It's very expensive. And as all of you know here, and probably all too well, once the business cases for the larger players don't make sense to them, they never come to play in your community.

We're working on a technology -- and it is in the docket -- if you want to call it my testimony, in the slide deck. I'd be happy to point it out to you where there is one slide that has a proof of concept in it that we'll be developing over the next 18 months. And we'll be trialling it first offshore in Japan, soon to come to the U.S. And it is a -- it is a variance of the 5G technology. But the 5G technology basically is brought right into your

home. So it is a combination of fiberoptics networks, as my colleague talked about, and a wireless solution at the far end.

Now, the trick of 5G is, as you know, as you saw the commercials on TV when it first came out -- and it was in the high frequency range, which means it was super fast and went from me to you, right, and it was called -- it was called millimeter wave technology. Great for NFL stadiums. Great for NASCAR, right, where you're in a fixed area. But if I walk through the door of a building, the signal dropped. If I walked around the corner, the signal dropped. There were problems, right.

So we have changed that structure, right. And you've seen the options in Washington. Hundreds of billions of dollars are changing hands, right, in order to find the right frequencies to deliver the technology to a place like yourselves. So it's going to be a combination of fiber, possibly microwave, and then a new solution to basically create -- I'll call it a blanket, right, over your community of interest -- that will allow for the speeds and feeds to happen.

MINORITY CHAIRMAN MARSHALL: Representative Schweyer.

REPRESENTATIVE SCHWEYER: Thank you, Mr. Chairman.

And I want to thank the -- all of our testifiers so far today. If Representative Metzgar doesn't want those gobs of money, I'll take it in Allentown any time you want, Carl. And given the fact that he gets sunburned in these light, you can tell parts of his District don't actually get sunlight. So Carl, good seeing you as always.

We have the exact opposite problem. I represent the City of Allentown. So not quite Philadelphia, but the third-largest city in the Commonwealth of Pennsylvania. And our region, even though we're vastly growing, we're in a valley, but we have large swaths of relatively flat land. We're in a valley. And the slowest download speeds in our rapidly growing, rapidly increasing wealth -- wealthy communities is our urban core.

We have extensive -- I'm assuming it's some -- and I know nothing about technology, aside from the fact that it doesn't always work.

And a lot of those needs are -- it seems like it's old 3G technology mostly throughout the Lehigh Valley, and specifically in the urban core of downtown Allentown. And I know this is not unique, particularly in the non-Philadelphia, non-Pittsburgh regions of Pennsylvania where you have these counties that are growing. You have an urban center, whether it's the City or York, the City of Harrisburg, the City of Lancaster, and you have the wealthier suburbs around it as it's being built out.

What are some of the ways that we can use some of these dollars in a way to increase access for those largely underserved populations? My district is one of the poorest, between Philadelphia and Pittsburgh, in the Commonwealth.

How do we increase access for those folks, affordability for those folks using the existing technology, so that we can do so in a cost-effective manner?

MR. BRAYEN: So take a swing or I'll take the first swing? Okay.

So I lived in Bethlehem for five years.

REPRESENTATIVE SCHWEYER: It's a cute little town next to Allentown.

MR. BRAYEN: It's a cute little town next door. We have a little Christmas thing that we do every year. So now I'm back at the end of Route 81, last exit before Canada. So I was there in the '90s when things were not going so well in Allentown or in Bethlehem.

I would tell you that there are a couple of ideas as this 5G technology, or what we call fixed wireless access starts to come to play, both from the carrier perspective or from the private perspective. So there is nothing to stop WISPs from building private LTE and coming to the forefront to provide Internet services in a place like Allentown.

Now, since I was there, I think you've built a few buildings and things have really turned around quite a bit in your town. I'm your next-door neighbor, right. But for the people in Emmaus and Parkland, and even where I lived, in an old farm development, the problem is just nonexistent to us, right. But if I go to the middle of Allentown, which was kind of a bring-your-own-gun kind of a place maybe 15 years ago, as things start to turn, what can be built now, the technology exists -- the trick is that

inside of Allentown -- and Samantha kind of talked to it just a little bit -- you need to find places, not just the towers that Crown Castle builds for 600k, and then rents out and makes a small fortune on, but you need -- you can bring the 5G technology and soon 6G technology, you can bring it in tighter to the buildings.

A trick is for the city to help whoever is going to come to play to have access to the roadways to build either microtrenching or conduit systems where we can put the fiber backhaul into motion. Now, the Federal government has changed the SNAP Program a little bit, but between the USF and the SNAP Program, there's going to be dollars available, probably about $30.00 a month that will come to the folks that cannot afford it.

Now, I don't know if Pennsylvania will create a different set of rules than the federal government. I suspect they will, as to who will qualify, right, for support in this kind of a play. But if the WISPs could gain access to put their sites on towers and buildings and locations within the city that the city owns, they can create this environment, this -- I called it a

cover for the previous gentleman's question -- but they can create a cover over Allentown. It can be done by the carriers, right, the typical T-Mobiles, the Verizon and AT&Ts, but it can also be done privately and it can be built in a way with a little help, a little public-private partnership, it Can be put to life.

REPRESENTATIVE SCHWEYER: You also bring up a point, if I may -- and this will be my last question, Mr. Chairman, because I know we're pressed for time.

You also bring up a point that the carriers most likely will be providing some kind of low income incentive or some assistance for those folks. And you know, you reference $30.00 a month. Whether or not that's ultimately what it is, who knows. That's not for conversation, but I believe there's going to be a human capital role here in making sure that people know the government is really good at creating program, then not investing anything and making sure that people can actually get access to it.

My colleagues know my frustration with PA Power Switch, for example. And so there needs to be an investment on that side of it, as well.

There's a human side to it, as well. And when you talk about fiber and the moving forward on the last mile, with transient populations like we have -- I mean, 70 percent of my district are renters. With that transient population, I can wire somebody's house with fiber and they can move in the next six months. And yeah, somebody else moves in, maybe they have the financial means to be able to connect to that, but odds are that they don't.

So that investment in the wireless last mile is more than just an investment and trying to help folks that live a mile away from the tower, but really, it's also those folks that move frequently and it's just easier for them to have a phone or a hot spot. And so any -- your continued guidance and thoughts on this is going to be very helpful to us because there's more to the wireless conversation and the broadband conversation than non-served and certainly extraordinarily important. I'm not diminishing that, but there's also those underserved populations. So --

MR. BRAYEN: Yeah. Do not disagree with any of your comments. I mean, there are -- as I

said before, Pennsylvania is really a microcosm of the states. You have the inner cities. You have very sparse rural areas that butt up against the state where I live. I -- you know, we're going to have to find and help you find multiple solutions to the problems.

Affordability is going to be an issue, but in order to bring the WISPs with the exception of the 503 here, but with most players, right, they're looking to have something that is sustainable. Now, you know, as a young lad, I put up a fiberoptic cable in front of the arena where the Russians got beat in Lake Placid when I was a kid working for New York Telephone. That cable is still in service. We placed it in 1979, and we did weather tests on it today. And it wasn't the first in the United States, but one of the first certainly.

So there's a tremendous sustainability in the middle mile networks that you've built. We purvey the electronics on both ends of it. We see it as limitless. Right. It's the colors of the rainbow. So we do have to really struggle on the last mile, as you describe. We have to find something that we can build it, as you said,

affordable but also is -- allows for this transient to take place.

So we have some -- we have some challenges. And of course, you know, we think that we can help you with some of the answers with the technology.

MS. GARFINKEL: I'll also add that there are digital inclusion workers in Allentown doing excellent work exactly in this vein. We can build upon the work that they've already started. And they're going to be the ones who are the most imbedded with your community members that are probably the most skeptical of new programs, free services. That's a huge challenge for us, as well.

But to that point, as well, there is funding in the community already earmarked for solving this issue. It's flooding our school districts. It's going to libraries. They need a solution for those earmarked funds. So we don't have to raise brand-new capital to solve this issue. It does exist already within the community.

MAJORITY CHAIRMAN MARSHALL: Representative Pickett.

REPRESENTATIVE PICKETT: Thank you, Mr. Chairman.

My question is for Nokia. The two rural electrics that you mentioned are both within my district and we're very excited about their build out, one on the way and one about to start in '22, but a little bit nervous also. But it strikes me as I listens to you that while we've had a really rough time for the last couple of years with lack of service -- and it's the number one call in my offices, no question about it -- we almost -- we may be at a good place, in an odd way, in that if they have the correct knowledge and ability to do what they want to do with the funds that they're now having come available to them, we may be able to do something that's really going to be outstanding.

You mentioned them, and that kind of surprised me. Are you in communication with those rural electrics?

Are they -- what advice would you have for them maybe that they're aware of not doing something that isn't going to be the best build out with these dollars and the opportunity that they have in their hands?

Any thoughts on that?

MR. BRAYEN: Well, a couple of thoughts. So it boiled down to two companies when we were working with Craig before he retired. We did not win that bid. Our -- one of our partners is providing the fiberoptic cable and doing all of the logistics for them right now, which is about 80 cents of every dollar that will actually get spent when this money shows up at the table.

So for them, we spent a lot of time with Erin. We spent a lot of time with Craig. Although we are not the technology purveyors, a company that I helped start years ago back in California is. I'm very confident that the products that they're going to bring to the table are going to meet the needs of your constituents. No question about it.

The difficulty, as I talked about the 80 cents of the dollar for them, is to be very intelligent about how they construct their network. Now, they're sitting in the most wonderful of all places because they're going to build out. Word of mouth is going to come to play. They have made a serious commitment to it. We have also talked to them, as my colleague

sitting next to me runs our energy piece here in the five state area, about, you know, leveraging the fiberoptic technology to smarten up the grid.

Although they do a very good job with the cost of electricity in your constituency compared to what my kids paid in other places in Pennsylvania. I won't go into that. But the net of it is that I think they do a really, really fine job. And it's a hometown team. This is one of the comments I made earlier. I'm -- we're very hopeful, Michael and I, that we'll be able to talk to additional co-ops here in the State.

Now, I know some are very adverse to wanting to get in to taking that 2:00 call when somebody's Apple TV doesn't connect up to the network, and they've got to do that. I know that Trico is stepping up to that customer's service. And I'm sure that there is, as I have found with co-ops around the United States that have built these networks, because they're the hometown team, they take a special interest in -- when things go wrong. Right. Very similar to this WISP that's being built right here in Pittsburgh, right.

So I'm very confident in that. I will be

very honest with you, Representative, I'm very confident in them. The young man that's running the show came from upstate New York out of the Empire Telephone Company. They've built this network before, with our gear as opposed to the gear they're using now. They are very successful, cash flow positive. So it will take a little time. And that would be one comment back to you as we go forward.

The one thing that Nokia -- and we have designed business cases for whole countries. We're building Germany right now and Poland, my counterpart in Europe. So we will bring that resource to bear for other entities here in the State, if asked. And with the mapping that was talked about here earlier today, building the GIS and QGIS databases in order to find out, you know -- and we can talk about the census tracts till the cows come home.

I think they were used against us, frankly, if you're in rural America, but I don't want to get too political. I've been up on the hill and had my conversations with Mr. Pie [phonetic]. Know his parents pretty well. So I was a little unhappy.

I think that we're on the right track now. This new database that will come out, I think, will help the whole country. And I think it will help Pennsylvanians, but I -- be confident in what Trico is doing and what Claverack is about to do. They have some good people.

REPRESENTATIVE PICKETT: Thank you so much. I'll continue to tell my people light is on the horizon.

Thank you.

MAJORITY CHAIRMAN MARSHALL: Thank you, Representative.

Representative Nelson.

REPRESENTATIVE NELSON: Thank you, Mr. Chair.

Great second panel with a non-profit provider and a global provider. You know, from my perspective, today is the Marines Corp birthday. And as we look at building out technology and grid, security, public safety are really critical components, you know. So in your testimony, you had mentioned, you know, gunrunners or the technology to smarten up the grid. Nokia does outsource or service -- source

some components from China.

Can you touch on what our panel in Pennsylvania, you know, needs to have some critical components so that we ensure the safety of these systems on that international scale?

MR. BRAYEN: Well, that's a loaded one. So a couple of points I would make. It's a problem, right. I went -- I -- small story, right. So I was on vacation when I got the phone call to come up here. So I went to buy a shirt. Brooks Brothers. Walked into the store. I had been there years ago.

I was in West Palm Beach and asked the gentleman for a shirt in my size. And he says, you know, let me make a couple of calls. And I'm like, it looks like the inventory is a little low here. He says, all my product is on a boat in the ocean off of Long Beach. I said, funny, right, the folks as Vacation Club said that their furniture is also on that same boat, and so are my routers. Right. To help Verizon and AT&T and T-Mobile build out their 5G networks.

So behind the scenes, Nokia, because of our resources, we have diversified now our supply chain. We will not go through this process

again. But to answer specifically your question, if you have GPOM or XGS-PON from Nokia or Calix or edge tran, right, that chipset that we're using right now, it's coming from the same place. It is a big problem.

All three of us, even though we compete pretty aggressively in this market here in the United States, we have all started to diversify our chains to Vietnam, to other places. There is a consortium that is about to find a landing spot here in the United States and invest about $12 and a half billion dollars to build these chips, the next generation of chips.

When it comes to our routing protocols, though, our routers that are in the back-end of the internet, or at the base of the towers, in the cell towers, that silicon is developed here in the United States out of our division that we bought a number of years ago in Silicon Valley. Our silicon is homemade. It's special. It's not what our competitors that are in the routing market -- you know the biggest one with a C -- their stuff is off the shelf. Ours is not. That's why we just won the cyber security contract with the Federal government.

We build something that goes inside of the mission critical networks, both for the military and for the utilities that are here in this State, that is designed in such a way that it cannot be shaken down in a DDoS attack. And we're very proud of that. And I've been involved in two of them in the utilities here in the U.S., and they went through other providers' that were in the peering like Swiss cheese. But when they got to us, we stopped them dead cold. Thank God.

But to your point, we have a lesson here that we have learned, unfortunately, the hard way. And the pandemic kind of brought it to the forefront. So sometimes shipping things to the cheapest providers to get you the lowest possible prices is not necessarily the best plan. So we have brought our final configurations back to our NAFTA sister countries, right, for final assembly.

And like one of our major competitors in the mobile networks, we have -- they have brought their manufacturing back to the United States. We're in the process of doing something very similar. And I think the new chipset consortium that is going to be developed here in the U.S. --

and you asked a fantastically relevant and excellent question. We are changing the way we bring our supply chain into this country.

MAJORITY CHAIRMAN MARSHALL: Thank you.

Question from Representative Mackenzie.

REPRESENTATIVE MACKENZIE: Thank you, Mr. Chair.

And thank you to all of our testifiers. Obviously, a very important topic that we're dealing with here today is connectivity for all citizens across the Commonwealth, not just the general areas. We've heard about the challenges in all different parts of the State, and in certain pockets especially. But so my question relates to kind of the advances in technology that we're seeing, the speed at which things are advancing, and then also the cost to connectivity, particularly those mid and last mile that we're talking about now.

I want to just introduce kind of a maybe an analogy that we can think about, and it's one of Africa from about 15 to 20 years ago where they were dealing with rural connectivity for telephone. And ultimately, they ended up finding that it was too -- it was cost prohibitive to

string those telephone lines across parts of rural Africa to get connectivity. And all of a sudden, wireless technology developed and became cost effective enough that that was deployed across the continent.

And all of a sudden, wireless subscriptions, you know, shot through the roof, millions of people had access, and they jumped a whole generation without spending that money on building out a telephone network on the continent. So with that in mind, how should we be thinking about deploying and getting connectivity to people across Pennsylvania?

Is there technology coming that makes it possible to, in a more cost effective way, through either wireless, you know, expanded wireless or satellite or any kind of other technology that doesn't require that physical infrastructure on the ground, is that coming and should we be thinking about that in terms of getting connectivity to people in Pennsylvania?

MS. GARFINKEL: I'll just add a comment.

We often talk about wireless as bringing yesterday's technology to people today, those who do not have it. And so there's always, in

technology, as you described, there's always going to be an evolution, a next best. And similarly, there might be a private sector offering that is better than, perhaps, a non-profit offering. But the point being that if we keep looking forward to the next best thing, we're leaving people behind without picking them up and carrying them along with us.

So investments in wireless and other last mile solutions that maybe aren't on the bleeding edge are still very much worthwhile for our communities.

MR. BRAYEN: So you're right about what happened to Africa. So Nokia had to grab our cable queens and build a fiberoptic cable from Saudi Arabia around the Cape and touch all those countries because the network, the backhaul network collapsed in realtime. So we have just completed a run from Saudi Arabia to Gibraltar, looping in and out of all of those countries to create a backhaul through the -- what we call dense wave division, multiplexing to handle all the traffic.

You're right. It was an explosion. Now, Samantha's point though, the money will come

rather soon, right, to the Commonwealth. Wireless technology, we learned our lessons about millimeter wave and its -- and the extent of what it could do to serve communities of interest. And so a lot of money has changed hands as the FCC has opened up additional spectrums.

Wireless in your home, Wi-Fi 6, Wi-Fi 7, Wi-Fi 8, 5G, 6G, 7G, yes, the devices in your home for the most part will be wireless, right. Your car will have wireless technology. The trains today, you can hop on the Internet while you're on a train. It will get better. It will get faster. There is no question about it. However, it all comes to a backhaul point of fiber. And so the fiber is the long-term play.

Now, to the gentleman who talked about his community not seeing sunlight, we're going to have to find a -- and Nokia is in a unique position. There's only one other company in the world -- and they're not allowed to do business in the U.S. right now -- that can provide a toolbox for you. I do agree with Samantha though. The moment is now. The technologies exist.

We will be delivering in Japan and in

another country 25 gig symmetrical to the home this year to people. We do not even sell 1 gig symmetrical anymore. We sell 10 gig symmetrical. And so the large carriers can bring solutions to the table now that will be very long sustaining for the Commonwealth. The technology that will come to forefront is going to be available to do the 100 down and the 20 up on a wireless solution set. It won't be long. We'll have it there.

So to just overbuild the State with wireless, however, the number of towers that you would need and the amount of money that you would charge -- and this is why Nokia is offering our business model that we've used for countries to you gratis right as your constituents need it to look at those alternatives. So your point is perfect because for this two sets of Committees, you really need to have a tool through your broadband authority to look at the alternative technologies that can be brought to a Beaver County versus somebody who is up in the Trico turf or someone who is in between Drexel and Penn in inner city Philadelphia, right.

And we'll offer that tool to you folks to help you make that business decision. I hope

that helps you.

REPRESENTATIVE MACKENZIE: Thank you.

MAJORITY CHAIRMAN MARSHALL: Thank you, Representative.

REPRESENTATIVE MACKENZIE: Can I just make a closing comment?

MAJORITY CHAIRMAN MARSHALL: We are 30 minutes behind, but if you can briefly do that --

REPRESENTATIVE MACKENZIE: Just very briefly.

No, I appreciate the comments from both of you and your input. I would kind of hit on your last remark there about, you know, thinking about all of those different technologies as we move forward. And I would just encourage both of our Committees as we do move forward in this process to keep those advanced technologies in mind, be thinking about their applications and how we can use them across the Commonwealth to bring connectivity.

And I appreciate the comments of both of you here, but hopefully we can also, as we move forward, expand the voices that are taking part in this discussion because I think there are some others out there that aren't represented here

today that may have new technologies that we would like to consider, as well.

Thank you.

MAJORITY CHAIRMAN MARSHALL: Thank you.

If you would stay for possible questions afterwards. We'd like to transition into the next group.

While we're transitioning, I'd like to take the time again to thank Senator John Kane and Senator Kristin Phillips-Hill and all of the members of the Senate Communications and Technology Committee that have joined us today.

I'd like to thank Chairman Matzie and all of the members. We had a great turnout for this public hearing. And I appreciate all that were able to attend, especially Representative Pam Snyder, who's been a true leader in broadband. She is joining us remotely, and we appreciate that from her.

Our final group today is Todd Eachus from Broadband Cable Associations of Pennsylvania; Steve Samara, from Pennsylvania Telephone Association; and Jim Morozzi from DQE Fiber.

Gentlemen, whoever is ready to start

first. Like the Chipmunks. Go ahead, Todd.

MR. EACHUS: Well, thank you, Mr. Chairman.

Chairman Marshall, Chairman Matzie, Chairman Kane, and the absent Senator Phillips-Hill, Chairmen, thank you very much to both Committees for holding this hearing. It's timely. It's important. And I am grateful to have the opportunity to speak to you today on behalf of the Broadband Cable Association of Pennsylvania, of whom I am the current president.

We represent cable operators from across the Commonwealth, from the very largest in the nation to very small operators, independent private companies who, by the way, invest tens of thousands of Pennsylvanians with life and family-sustaining jobs, not just directly, but amongst the contract universe as well for folks who build service and maintain these networks.

I would also tell you that in the last two decades or so, these companies have invested $10 billion dollars of private capital into the networks that you see today. And the good news is that a vast number of Pennsylvanians are currently served or have the opportunity, have

access to broadband service. I might add, mostly at a gigabit, but we do recognize that there are those unserved elements and locations across our Commonwealth. And it is important to join together here to talk about how we solve that solution. Our members serve residents in all 67 counties across the Commonwealth and we are intimately familiar with the complexities of the problems presented here today.

And one of the compelling messages that I think this Committee has to consider is -- and it's been said here earlier today -- this is a once-in-a-generation opportunity, perhaps, with the funding that is available. But I would remind you that this is one-time funding to extend these networks, to provide the necessary access across the Commonwealth. But it is going to take experienced operators, managers of these networks who are willing to bring the risk capital in the future to continue to upgrade these networks, continue to manage them, and continue to allow them to meet the needs in the future.

We've heard a lot of talk here about speeds. That is driven by the market. We don't

know the next app being developed by a kid in a garage somewhere that's going to take multiple gigabits. The market will respond, and the market will respond with private risk capital to upgrade those networks to meet the needs of the consumer and business demands.

And so as we look at how we approach this, we would urge caution. I think what we don't want to do is look at each other in five or seven years and say, wow, we had a lot of capital and we did not solve this problem. Collectively, we owe it to the residents of our Commonwealth to get this right and to be very careful and measured in the approach to getting this right.

There are so many complexities and so many challenges to building these networks, from the cost of extending a network, which is why not every single home is served, to understanding the barriers and obstacles, to access to rights of way, local permitting processes, make ready and pole attachment processes, et cetera. So none of these networks will be built quickly, but what I do believe is that while the private sector has not solved the access issue to date, I don't believe that government can. I believe that

together though, we can.

And what that means is understanding that private risk capital -- a model that will alter the economics to get there, which requires operators to put some of their own investment and skin in the game in order to receive these one-time opportunities to fund these networks. And there's some really simple things that will make the program right, I believe.

A technology-neutral approach. Not one technology is going to address every situation across the Commonwealth. A model that helps alter the economics, as I just said. A model that does not impose -- part of the reason that we've had great success nationally is because broadband in the emerging technologies and the wonders that are the Internet, that has been so transformative to our economy, has been dealt with with a light regulatory touch. And that light regulatory touch needs to continue so that operators, investors, creators of all stripes can continue to innovate, invest, and lead the way.

And I will close with this very briefly. We should be proud of the networks that are present today. The pandemic, as we have all

acknowledged, has driven us to rise the issue of broadband to the top. While it's always been discussed previously and for many years, the pandemic showed us that with the work from school -- or the work from home, the educate from home, the additional needs and demands, our networks were amazingly resilient.

And that was because of the privately invested capital of billions of billions of dollars that allowed those networks to continue to operate, contrast with Europe, who had asked residents to stop streaming in high definition and reduce the standard definition because the networks were unstable with the increased demand. So we have met it. We look forward to solving these issues, and I would ask you to think of these in two ways because we've heard so many great issues this morning.

And I would urge you just to think of our Commonwealth and the challenges to access in two ways. Yes, there are counties and places like Representative Metzgar's district that have large rural areas that need to be addressed, but so much of this also is an edge-of-network element, where there are boroughs and towns and cities

across the Commonwealth where they're 99.9 percent served, but there's that edge of network, the last mile, the last five or six or seven poles that have only two or three homes, that the economics didn't allow for service. And there can be a way to solve for those issues. And I think that we will find that there are many, many unserved customers.

And so finally, the closing point, which has been driven home here today previously, is that it is critically important that these funds address unserved areas as the number one priority. I thank you, and I look forward to your questions.

MAJORITY CHAIRMAN MARSHALL: Thank you.

Steve.

MR. SAMARA: Good morning, Chairman Marshall, Chairman Matzie, Chairman Kane, members of the Committee. Thank you for the opportunity to be here. And Chairwoman Phillips-Hill, who just came back, thanks for the opportunity. I appreciate it.

For those of you who aren't familiar with the Pennsylvania Telephone Association, we represent all of the rural local exchange

carriers in Pennsylvania, RLECs. Lots of acronyms and abbreviations in our world, so I'll try and keep that to a minimum. But they all have a bunch of unique characteristics that make them RLECs.

This first one isn't necessarily a requirement to be a member of the PTA, but they've all been around for a decade, some for a century or more. They all serve rural areas, which is self-evident in the name of RLECs and the acronym. They are also carriers of last resort for landline service, which is a unique designation. That is if you move into one of my member company service territories and want a landline voice service, we have to provide it to you.

That is unique. No one here at that table has that designation, nor are they regulated fully by the PUC. I'm not suggesting that they be because I'm not wearing my shin guards, and I think either under the table would probably kick me under the table if I suggested that. But we are looking to modernize the regulatory paradigm here in Pennsylvania on behalf of my member companies because it is a --

it is a very competitive environment out there.

I will give kudos to the PUC. They recently passed an order which takes some initial steps to get the Public Utility Code, with regard to Telecode a little more modernized, recognizing that we are in a competitive environment. I will talk a little bit about that later.

But my member companies are unique in that regard because they stand apart as providers of last resort. And not only for landline service, but for broadband, as well. A little bit of the history of broadband in Pennsylvania. I don't know how many folks on the panel know it. We do have the only state statute that requires universal broadband availability in Pennsylvania.

Looking at the dais, I think only Representative Pickett was here when we passed Act 183. Congratulations, Tina, for sticking around that long and seeing this through.

The gold standard back in 2004 -- and hold your snickers till the end -- it was 1.554 megabits. That was DSL back in 2004. It is not the gold standard anymore today. We know that, but back then, that's what we were all aspiring to deploy everywhere, and again, the only state

law that I know of that requires broadband availability to everyone by a date certain.

If you have any questions about what my member companies have done in that regard, I would suggest you take a look at last June's Legislative Budget and Finance Committee Report, which did an analysis of what they've all done, not only my member companies, but Verizon as well and employing broadband by a date certain. And that was teed up by Senator Phillips-Hill's Resolution 48. So there is a study out there that takes a look at what they've done under the original Act.

But the Act also facilitated deployment above and beyond that. Obviously, my member companies are going beyond the 1.554 megabits in broad swaths of the State. Give you a couple of examples from two actual PTA member companies, one small, one large. Small company, under 10,000 access lines. And I think this is fairly typical, over 500 square miles of territory, about 17 structures per plant mile. Structures are not necessarily inhabited households or small businesses, but structures.

They are 99.9-something percent fiber

deployed to their customers. None of it has been funded by any of the Federal programs we're talking about here today. They use their own capital to do it. And almost 70 percent of those subscribing to service are un -- subscribing to it under the definition of Federal broadband. So under the 253 that we've heard mentioned earlier today.

So when we talk about unserved and underserved, it's helpful to keep in mind what's happening out there in the real world environment. I don't think this company would consider 70 percent of its customer base to be unserved or underserved, but by the definition, technically they would be. Now, when you take a look at affordability, which we can talk about, as well, the compression between price levels and speed levels is de minimis for all of my member companies. So it's not an affordability issue necessarily. I understand some folks don't want to spend $5.00 or $10.00 dollars more a month to go from 3 to 5 meg or to 10 or whatever, but they're offering a service that they think their customers will purchase and are using.

For a large company example, one of my

larger companies, 78 percent of its households have broadband service at the 253 definition. Sixty percent at 100 megabits. Two years ago, that number was 37 percent. More than 40 percent have gig access, which is fiber to the premises. We talked a little bit about fiberoptic cable here and how important that is.

That 40 percent number was 4.5 percent two years ago. This company has invested over $100 million dollars in broadband over the past three years, and this company is taking advantage of some of the Federal broadband programs that are out there to help them deploy. In addition to that, the RLECs in the State are doing a couple of things. It's not just give us the bucks to get stuff done, as was alluded to earlier.

SB 341 is our effort to get regulation modernized for my member companies, to get us where we need to be. I mentioned the PUC order to move it in the right direction, those initial steps to get us there. I think that's all important. Working with Senator Kristin Phillips-Hill on SB 341, I think, gets us closer, even closer to where we need to be. My member

companies are now in single digits as far as the voice subscriptions they service in the State.

I usually ask folks how many folks -- how many people have a landline in their house. I won't ask today because it's usually depressing when I ask people to raise their hands, but you know, we're all moving to a different model. You know, we're all moving to a different model. The days of monopoly and state-sanctioned monopoly in this State are long gone. You know, we don't have that anymore. It's in the rearview mirror.

We think our regulatory paradigm here should reflect that and allow us to compete more fairly. So we're working on that. That bill has already passed the Senate. It's before the House Consumer Affairs Committee for its consideration. We think it balances very nicely consumer protections with recognizing what's happening out there in a competitive environment.

We're also looking at a number of other things. I know Todd had mentioned pole attachment. These are things to kind of clear out some of the clutter. I would consider it. It's costly clutter. If you're getting a chunk of change to deploy, and a big chunk of that is

to just get on the poles or get access to deploy, we don't think that's in the benefit of the consumer at the end of the day.

We worked with the PUC several years ago as an association and an industry to get them to take adjudication to pole attachment issues from the FCC back to the PUC. So we didn't have Federal cops on the job. We had the State and local cops on the job. We think that's important to work through that process. This body, both bodies, just passed 5G legislation to kind of streamline some of the local permitting process to get fixed wireless out there for everybody. I think that's important as we go forward.

Another initiative we've been working on is HB 1658, prime sponsored by Doyle Heffley. It is a -- we call it a roads moved legislation. When PennDOT comes out, wants to improve a bridge or improve a road, we are often asked to move our infrastructure to help that. Great for the motoring public and the Federal money that's coming down for broadband, it's also coming down for some of these transportation projects. It's terrific. We're all in support of it.

A lot of those expenses are not

recoverable by my member companies. So it's great for the motoring public, not so good for their customers necessarily. So municipal and -- municipal water and sewer folks can enter into cautionary agreements with PennDOT to help mitigate some of the costs associated with the moving of that infrastructure. We'd like that same ability as tele cos to be able to do that. That bill passed unanimously here and is before the Senate Transportation Committee.

What have we done as a State? We passed Act 132 last year. It provides a nice framework, minimal investment in broadband, but it provides a framework for what we're trying to do here. Five million, I think the initial outlay. One competing -- local state or a bordering state, Ohio, has $270 million. So we've got some work to do there. We are getting some Federal money; I understand that.

A couple things about that, which I think apply to the Federal money that's coming down, as well, some things for you guys to keep in mind. We like when applicants have to have the technical, managerial, and financial expertise to pull off a project. We like -- we're okay with

having them put some skin in the game to get a project done and not just rely on other money to do it.

We really like -- and we mentioned overbuilding a little bit before. We really like to have a challenge process. If company A comes in and says, we want to build this, and company B says we're already there, we think there should be a process there to be able to do that. So that's -- I think is important to take a look at as we go through because overbuilding is not getting the biggest bang for the buck.

I mentioned the Federal initiatives, $65 billion nationally, $42 billion coming through the states for rural broadband deployment. Some of it to go towards the affordability, getting broadband out for folks, and helping them afford it. Again, those same principles apply for what we'd like to see coming down through for the Federal initiatives, as well as some of my member companies obviously participating in that. So we look to that.

What we're doing going forward is working with all folks, municipalities -- Darrin -- Darrin has a group together through the Farm

Bureau. The Manufacturers Association has a group together working on all of these things. We're party to all of those. We think it's better to sit around a table and talk about where we are and where we want to go. I haven't seen a map yet that I love, quite frankly. It's better when you sit down and say, hey, we're here as opposed to relying on any map. And we look forward to working with you folks going forward on all of that stuff.

So thanks for the opportunity, Chairman.

MAJORITY CHAIRMAN MARSHALL: Thanks for your testimony.

This hearing will end at 11:00. We're not authorized to go beyond. Session begins at 11:00. I apologize for the short amount of time that we have left, but Jim, if you're ready, if you have a condensed version, we would appreciate it.

MR. MOROZZI: I am. Good morning, everyone.

And let me dispense with some of the formalities just because of the interest of time. I find myself as the last speaker among three different panels, so there's not a lot of

uniqueness that I can now bring to the conversation because we've heard a lot of these things, but let me try a couple of things here.

First, let me introduce myself. My name is Jim Morozzi, and I'm the president and CEO of DQE Communications based in Pittsburgh, Pennsylvania. We are a broadband fiberoptic company that provides services to many businesses in and around Pennsylvania.

DQE is a subsidiary company of Duquesne Light Holdings, also headquartered in Pennsylvania. And we've built over 4,000 fiber miles to serve our customers in the area. The types of customers we currently serve are large universities, health-care systems, municipal governments, school districts, school IUs and things like that.

And we've done that through making investments of well over $200 million dollars in fiber infrastructure in the Commonwealth of Pennsylvania since our inception, to where we are today. I'm very, very encouraged with the passage of this most resent infrastructure bill that was passed by the House on Friday. There is a unique once-in-a-generation opportunity for us

to make a difference for residents of Pennsylvania by taking advantage of some of these funds that are available to us. And we need to be diligent. We need to be prudent. And we had need to be smart about going about how to attack this problem.

And for many of you, I'm sure that you have heard from your constituents. I'm sure you've heard from county commissioners that are in your districts that we have a problem out there with reliable, robust broadband communications, particularly in the underserved or sort of the least densely populated areas of the Commonwealth. That's where we have our circumstances and our situations. It is not in the major metro areas of the Commonwealth or the suburbs around them, like the Pittsburghs, the Philadelphias, the Allentowns, places like that. We are talking about areas that are more rural, fewer homes per mile, farms, and things of that nature.

A significant problem I believe we have here is with the overall connectivity of bringing street communities together and making them part of the overall network. That's very cost

prohibitive. You know, we refer to that as the middle mile. If I have discreet pockets or discreet little towns, you know, maybe there is an economic or business justification to go build that town, but now connecting this town to that one that's 15 miles away and bringing that traffic all the way back to Pittsburgh or to Philadelphia, it would be very, very expensive.

But the good news is I do believe that there's a lot of pieces already in place to help solve some of these connectivity problems, some of these reliability problems here. Number one is the technology already exists and it's readily available for us to take advantage of. We have a very good skilled workforce here in Pennsylvania that are building these networks, whether it is a fiberoptic network, a wireless network, a more traditional telecode network, we have a good solid workforce in place that can help solve these problems here.

And then lastly is that these broadband expansion projects can be done quickly. You know, we at DQE Communications have the workforce. We have the project management. We have the engineers necessary to build the

solutions and then make that happen in reality. But you know, one of the limiting factors -- and I'm sure it doesn't get lost on anyone here -- is that it is extremely expensive to build these fiberoptic networks.

It costs tens of thousands of dollars per mile to build a network, particularly fiber. And that does not include any of the electronics or any of the switches, the routers, the optics, the transceivers necessary to make this happen. So this is truly a cost-intensive, capital-intensive kind of a business.

You know, we have found creative ways in the past to try to solve these by unique routing of our networks by trying to gang two, three, four projects together to try to take advantage the best way we possibly can, but we still have a challenge to solve here.

We all think and agree that a robust reliable fast Internet is essential for Pennsylvania for our competitiveness, our children to get quality education in realtime. We do need to establish standards. We do need to become a benchmark kind of Commonwealth that has these systems necessary to make our Commonwealth

strong and acceptable.

You know, my position is that what we have today is just not acceptable in a lot of this Commonwealth. We've heard the numbers before, the 25 megabits, 3 megabits per second. It's just not good enough for 2021 and beyond. We need scalable. We have need to have standards that are much, much bigger than that. We strive for one gigabit per second service. We think that that is something that is broadband. We think that that is something that people and businesses do look for.

But at a minimum, this 100 megabits per second should be our standard going forward. And importantly, because I want to make sure that people understand this point, the symmetrical aspect of the broadband is important, as well. One hundred megabits down, 100 megabits up. We talked about 25, 3. We talked about 100, 20. It's hard for a child to do online education and do that through a video call without having a symmetrical broadband. Same thing with business communications or Zoom meetings or things of that nature. So symmetrical, I think, is important as well. So as you as a body think these things

through, I would encourage you to make that one of your key points, symmetrical broadband here.

You know, I am not a believer in picking a technology and calling that the racehorse to go forward. I do believe we should establish standards. We should establish what makes sense for achieving goals. And we should strive for technologies and all sorts of technologies that could be helpful in that vein. That allows the private sector to utilize its best judgment to move forward, as well. But clarity of standards, clarity of what the objective is, I think, is very, very important.

We've heard from a lot of different people here today about different ways to attack this problem. I believe that no technology is future proof, but I do believe by setting those standards and allowing the private sector to sort of attack it the right way gives us the best bang for the buck and allows us to try to achieve our objectives here.

You know, lastly, I'd just like to sort of say that with the passage of that $1.2 trillion dollar infrastructure bill, what that really will mean for us is that this nation will

have $42 billion dollars to solve this problem. As I understand, the states will all be allocated $100 million dollars to start. And then states will then get in line, basically, to say we're in the best position to take advantage of these next projects.

But I strongly encourage this body to be strong advocates for what Pennsylvania needs, what Pennsylvania wants, and how we go about doing it. We've heard from other testifiers today about trying to truly identify where the problem areas are, getting to specific information, specific data points, specific maps so we can identify where we need to solve these problems. I think that's really important to do that, as well, so that we make sure that we are putting those dollars and those resources where it's most necessary.

I look for this entity to find a framework for how Pennsylvania will compete favorably going forward. We need to win in this race. That's for sure. Because that does help with our competitiveness as a state. It helps with our education systems.

Facilitating regional collaboration. We

heard a little bit about that earlier today. I think it's extremely important, as well. Local people know where local problems are, and they know sort of best how to go about trying to solve those sorts of things. So I'd encourage us to do those things and continue to try to foster those ties with local communities.

And lastly, your leadership and your advocacy on behalf of the counties you represent, I think, is going to be an extremely important factor here. This is a big challenge. It's expensive to solve these kinds of challenges. It takes time to solve these kinds of challenges, but I do believe we've got the resources. I think we've got the intent. And I think we've got, sort of, at least the beginnings of the plan to move forward here.

And I think with some combination of these various thought processes, these various technologies, we can make this happen. You know, for DQE Communication, I can tell you that we are committed to continuing to work on this problem. To date, we have served mainly business-oriented customers, but we recognize that there is this issue with these more rural areas. And with an

appropriate economic model, with an appropriate kind of funding, I think we could be part of that solution, as well. And I offer my team's help and sort of offer to you whatever kind of a resource that this group would need to make decision and stay informed.

Again, I want to thank you all for the opportunity to be here today and to testify with you. And I'm happy to answer any questions you may have.

Thank you.

MAJORITY CHAIRMAN MARSHALL: Thank you, gentlemen.

We have time for two quick questions. The first one from Representative Metzgar.

REPRESENTATIVE METZGAR: Obviously we're here today because there's a tremendous amount of money that's pouring into the space of broadband. But I have to tell you that my constituents in Somerset and Bedford County, they're mad. They're mad because for a number of years they've watched dollar after dollar pour in to create rings and rings of dark fiber that provided no service to them at the end of the day.

Obviously, there's a wireless portion of

the solution, but that's not the solution at the end of the day. We have wire line groups sitting in front of us today. There's only a finite amount of bandwidth that we can push through the air, and we need to have the wireline side.

So my question to you is with all of this money that's coming down the pike, how am I to make sure that it gets to that last mile? How am I to make sure that you actually provide that service, whoever you is, to my constituents on Ridge Road, Hubersville, Pennsylvania, that have not been able to get service for a number of years?

And I guess, is part of that solution making that there is some sort of carrot at the end of the day, meaning that a modified BFFR program where you have to have chase the dollar, the dollar is allocated to the customer and if you want that dollar, you have to build to that customer, not the other way around. And that's one of the solutions that I've put out there at this point. Curious about your thoughts on that.

And as a follow-up, you've mentioned that health and safety were one of the things whenever we had a regulated environment for telephone

lines. It was so important for health and safety that we regulated that area. I put to you that maybe broadband is the same. Maybe, rather than de-regging, we need to start looking at the regulatory side and say if you guys are not going to provision broadband to the people who need it the most for health and safety reasons, we have to go the other direction.

And if you want to go the other direction and play in the broadband game, you need to become regulated. I don't want to go that path, but is that the tough love that we need to provide if we're going to put all of this money out there?

Thank you.

MR. MOROZZI: So I will answer that first. I will start by saying I don't support the regulatory approach. You know, I do believe that you identify projects and you put plans together that address all of the constituencies in that area.

What we've been doing so far, you know, as these dollars that have been talked about may be coming available, we've been talking to county commissioners and showing that, hey, here's a

plan to build this community. With this amount of money, we can build up and down every single street in this community. Now, whether a resident chooses to take service or not is a separate and independent issue.

And think about it, if we build to, let's say the doorsteps or right in front of the doors of 100 percent of the homes and 30 percent of the homes choose to buy service, there's 70 percent of the network that I just built that never pays for itself, never gets a return. So I think there has to be this kind of mutual development and design of plans. And that's where I was trying to articulate that. We need to come together to figure out where and what to build. But again, we can't ask a resident whether that farm or that house over there is to take this service and cause those dollars to sort of build in this area.

MAJORITY CHAIRMAN MARSHALL: Thank you for your response. Further responses could be e-mailed to Senator -- not Senator yet, but Representative Metzgar.

Our final question from Senator John Kane.

SENATOR KANE: Thank you.

And this is going to be, I guess to Mr. Eachus.

How do cable companies actually decide on where to deploy, I guess, cable broadband? It's a two-part question. So I will ask you that part first.

MR. EACHUS: Sure. Thank you, Senator.

You know, it's a very simple exercise. It's a fantastic business. It's a monthly subscription business. And so there is incentive and motivation to serve every single household that is possible. It is purely an economic exercise to figure out where you can build that will provide a reasonable return over a period of years from that capital investment. And that is why I said earlier that having -- and I think Steve echoed this -- having experienced operators and managers of these networks that are willing to put some risk capital or some skin in the game in partnership with these programs and these funds is the pathway to success.

SENATOR KANE: The other part of this is will infrastructure only be extended to areas with the certain income level or where there are

a large number of potential customers at the end of the road?

MR. EACHUS: Absolutely not. There are no considerations for economic situation, income, or whatever the case may be. It is purely about the number of homes passed. And as I indicated before, the obstacles to getting there, whether it's the make-ready and the pole attachment and the pole replacement or the permitting process or the geography and topography of an underground build or whatever, they're pure costs and economic drivers that determine nothing about what that resident does, who they are, or what they make is a factor.

Thank you, Senator.

MAJORITY CHAIRMAN MARSHALL: Thank you.

Senator Kane, a closing remark or comment?

SENATOR KANE: If I didn't have opening remarks, I might as well say something in closing real brief.

I do know that -- let's remember that we have close to 600, or probably even more than 600,000 Pennsylvanians without broadband and they're counting on us to deliver. So you know,

these individuals that don't have it presently, you know, they're not able to do it from -- at least in my district, I've been hearing it from a lot of the families that are in my rural area.

You know, they have problems with the school, you know, not being able to do their work because a lot of people are working from home because of the pandemic. I'm glad we're taking this important step today to have this hearing and to open my mind a little bit about what's out there.

So I thank you, Mr. Chairman, for allowing me to have a closing remark.

MAJORITY CHAIRMAN MARSHALL: Thank you, Mr. Chairman.

Senator Kristin Phillips-Hill.

SENATOR KRISTIN PHILLIPS-HILL: Thank you, Mr. Chairman.

And again, I want to thank Chairman Matzie, Chairman Marshall, members of the House Consumer Affairs Committee for extending the invitation for the Senate Communications and Technology Committee to join the House for this very important hearing. I would like to thank all of our testifiers.

And clearly, this is a top priority for the House and the Senate, for Republicans and Democrats. And I appreciate the opportunity to work together, to continue this conversation and find solutions to this great challenge.

Thank you.

MAJORITY CHAIRMAN MARSHALL: Thank you, Chairwoman.

Chairman Matzie.

MINORITY CHAIRMAN MATZIE: Thank you, Mr. Chairman.

Thank you, everybody. And I'll use my often-used phrase. There's a level of expectation. The level of expectation from consumer to the business would be that when they turn their computer on or when they go to their phone, they have access. And I think that's paramount to any discussion.

And I know that DQU, and Jim, your comments about needs and wants really struck home. And I think that's very important. The first $100 millions go to the states; and after that, whoever's best prepared and ready. Needs and wants need to be ready, and that's our job as policymakers to have the adequate needs and wants

prepared, ready, in statute to go on day one.

Appreciate it.

Chairman Marshall, thank you.

MAJORITY CHAIRMAN MARSHALL: Thank you, Chairman.

I'd like to thank all of those that came to testify, all of those that provided us written testimony. We hope to put this information together quickly and get legislation out that will help to get this problem done and done right. Again, I want to thank Representative Pam Snyder, who I believe is still on virtually, for her leadership on broadband. And this hearing is hereby adjourned.

(Whereupon, the hearing concluded at 11:05 a.m.)

C E R T I F I C A T E

I hereby certify that the proceedings are contained fully and accurately in the notes taken by me from audio of the within proceedings and that this is a correct transcript of the same.

Tracy L. Powell

Tracy L. Powell,

Court Reporter