UNITED STATES FEDERAL COMMUNICATIONS COMMISSION

CONNECT2HEALTHFCC TASK FORCE
VIRTUAL LISTENING SESSION - TECHNOLOGY AND
BROADBAND SERVICES FORUM

Washington, D.C.
Friday, September 22, 2017
PARTICIPANTS:

DAVID K. AHERN, Ph.D.
FCC

BEN BARTOLOME
FCC

STEPHEN BERGER
TEM Consulting

VERNÉ BOERNER
Alaska Native Health

TRACY BREWER
Ohio University

TROY CLAVEL
Avera eCARE

DARRYL COOPER
FCC

STEVEN DORF
Telequality

MICHELLE ELLISON
FCC

 STEWART FERGUSON, Ph.D
Alaska Native Tribal Health Consortium.

M. CHRIS GIBBONS, M.D.
FCC

KATIE GORSAK
FCC

JODI GOLDBERG
Hughes Network

RICK HAMPTON
Partners Healthcare
PARTICIPANTS (CONT'D.):

SYED ZAEEM HOSAIN
Aeris Communications

TIM KOXLIEN
Telequality

TERE LOGSDON
Lake County Broadband Solutions

ETHAN LUCARELLI
Inmarsat

SUZANNE MALLOY
SES Networks

JACKIE MCCARTHY
CTIA

KELLY MURPHY, M.D.
FCC

COURTNEY NEVILLE
Competitive Carriers Association

KAREN ONYEIJE
FCC

JEFF RIORDAN
FCC

RICK SCHADELBAUER
NTCA

YAHYA SHAIKH, M.D.
FCC

MARC SIRY
Comcast

JANE SNOWDON
IBM Watson Health.

JOEL THAYER
The App Association

COLIN UNDERWOOD
Alaska Communications

JOHN WINDHAUSEN
SHLB Coalition

PRESTON WISE
FCC

* * * * *

* * * * *

* * * * *
OPERATOR: Ladies and gentlemen, thank you for standing by. Welcome to Connect2Health FCC Virtual Listening Session Technology and Broadband Services Forum. At this time all participants are in a listen-only mode, later there will be an opportunity for your comments and instructions will be given at that time. If you should require assistance during this call you may press * followed by 0 and an operator will assist you offline. Also, as a reminder, today's teleconference is being recorded. Now at this time I will list the parties who are on the conference. We have with us John Windhausen with SHLB, Tim Koxlien with Telequality Com, Jordy Goldberg with Hughes Network, Preston Wise with FCC, Syed Hosain with Aeris, Stewart Ferguson of Alaska Tribal Health, Troy Clavel with Avera eCARE, Courtney Neville with Competitive Carriers, Ethan Lucarelli with Inmarsat, Jane Snowdon, IBM, Darryl Cooper, FCC, Jackie McCarthy with CTIA,
David Ahern with FCC, Rick Hampton, Partners Healthcare, Tracy Brewer, Ohio University, Marc Siry with Comcast, Verné Boerner with Alaska Native, Stephen Berger with TEM Consulting, Rick Shadelbauer with NTCA Rural Broadband, Steve Garland with Anderson Court Reporting, Steven Dorf with Telequality, Terre Logsdon with Lake County Broadband, Ben Bartolome with FCC, Susan Malloy with SES Networks, Colin Underwood with Alaska Communications, Jeff Riordan with FCC, Joel Thayer with ACT Application, and also in the room with FCC Connect2Health Task Force we have Michele Ellison, Karen Onyeije, Ben Bartolome, Dr. Chris Gibbons, Dr. David Ahern, Dr. Kelly Murphy, Katie Gorscak, Louis Peraertz, and Dr. Yahya Shaikh. And at this time we'll turn the conference over to your host, Mr. Louis Peraertz. Please go ahead.

MR. PERAERTZ: Good afternoon, everyone. On behalf of our Chair and Deputy General Counsel of the FCC, Michele Ellison, I would like to welcome all participants to the Third Virtual Listening Session held by the Connect2Health Task
Force.

These sessions serve two important purposes. First, they support the Connect2Health Task Force development of recommendations on key regulatory policy technical and infrastructure issues concerning the broadband-enabled health and care ecosystem as described in the April 2017 public notice issued in GN docket No. 16-46. Second, they facilitate targeted input from non-traditional stakeholders and those outside the Washington D.C. geographic area.

In today's forum we will focus on policy measures that could accelerate broadband deployment and provide greater access to merging broadband-enabled health technologies and solutions. We want to know about the most advanced broadband-enabled healthcare technologies currently available, but also about emerging solutions that we should expect to see five to ten years from now. The FCC wants to know what policies it can explore that could ensure that these new and emerging tech solutions are
available to all Americans including those in rural areas, low-income communities, on tribal lands, and people living with physical accessibility challenges.

The participants in this session include companies providing internet-of-things solutions and artificial intelligence capabilities and engineers working with large healthcare systems and organizations representing rural interests. It also includes representatives of wireless service providers, state and local governments, healthcare providers, researchers, and providers of telemedicine and telehealth services. This is your opportunity to be the voice for your constituents and communities and to provide input to the Task Force.

I would now like to turn it over to Dr. Yahya Shaikh for his introductory remarks.

DR. SHAIKH: Thank you, Louis. Over the past decade we've seen connectivity become an integral part of our health and care. Connected environments are no longer luxuries, they're
imperative for healthy and fulfilling lives for most people in the information age. The impact of connectivity on health is not just linear but is in fact multiplicative. If we consider factors in which we are born, live, and grow, factors that public health practitioners call social determinants of health, we see that better access to education leads to more facilities online resources which in turn can increase access to job training and employment opportunities, and in a recursive loop strengthen the connected health ecosystem around the person.

We also see that communities with the poorest resources in the physician environment also tend to have the least access to connectivity and resources in the virtual environment. While 20 percent of Americans live in rural communities only 10 percent of primary care physicians work there. These are the same communities with the worst broadband access levels. When communities that lack physical resources in their environment are also the same communities with poor virtual
access to them then the digital disparity is not only widening but it's widening faster and faster. A major part of making connected ecosystems effective are the innovations that emerge from them that make opportunity available for everyone. A major part of facilitating innovation is ensuring that infrastructure exists for innovators to imagine a vision of the future, and that infrastructure also exists to deploy those innovations to markets.

In this session we want to understand connectivity barriers to your visions of the future. Hopefully by the end of the session we will be able to understand visions of a connected future, connectivity barriers to achieving them, and possible recommendations for ways forward.

The first issue we would like to discuss is identifying new and emerging broadband-enabled health technology services. Help us think five to ten years in the future. Should we expect to see widespread adoption of advanced technology such as virtual reality, augmented intelligence
technologies and internet things in the healthcare services industry? What other types of products and services do you envision being developed that could support telemedicine, telehealth, or individual community-based health and care in general?

MR. PERAERTZ: Tony, at this point we would like to open the lines for the participants to speak.

OPERATOR: Thank you very much. Ladies and gentlemen at this time if you'd like to pose a comment you may press * followed by 1. Again, if you have comments on today's conference you may queue up by pressing * followed by 1. Our first comment comes from Jane Snowdon with IBM. Please go ahead.

MS. SNOWDON: Good afternoon. My name is Jane Snowdon, I am Associate Chief Health Officer at IBM Watson Health. Thank you for the opportunity to share some thoughts and engage in a meaningful dialogue on the important topic of new and emerging broadband-enabled health technologies
The mission of IBM Watson Health is to improve lives and give hope by delivering innovation to address the world's most pressing health challenges through data and cognitive insight. Cognitive computing is broadly defined as the computational approach to augmenting human intelligence. Cognitive systems use natural language processing and understanding and deep machine learning to answer questions, uncover trends, and formulate insights based on evidence that can expand a human's ability to solve problems and aid in decision-making.

With the advent of enhanced connectivity advances in technology coupled with the explosion of data from medical records, journal articles, and genomics to wearable social and behavioral determinants of health and the weather are helping clinicians to take better care of their patients, government program leaders to efficiently care for their clients, and individuals to take better care of themselves.
IBM Watson Health is supporting our clients' missions to simplify, solve, care, and cure across six key focus areas. In oncology, cognitive helps to reduce the variability of care to get the right medicine to the right patient. In imaging, cognitive tools help radiologists reach definitive diagnosis faster. In value-based care, we help institutions understand the cost and paths for chronic disease. For life sciences, we help organizations discover and develop new lifesaving medicines, devices, and diagnostics. In government, we provide actual data and tools to identify and act on fraud, waste, and abuse. In consumer health, we are exploring behavioral economics and blockchain.

Technology and services are available today that are effecting fundamental change in the healthcare and life sciences industry. With IBM Watson For Genomics, for example, oncologists can use advanced analytics and cognitive technologies to help them quickly translate DNA data into recommendations for personalized treatment options.
for patients by helping doctors identify potential cancer-causing mutations and mapping those mutations to evidence-based therapeutic options.

Now, through partnerships with Quest Diagnostics and Alumina, clinicians and patients around the world can access via Watson For Genomics the deep cancer expertise from over 20 leading healthcare intuitions and the genomic sequencing capabilities of Broad Institute of MIT and Harvard.

Internet of things solutions help enable medical device manufacturers and healthcare providers to achieve increased levels of patient engagement and medical adherence. For instance, Medtronic and IBM have partnered to tackle diabetes. In 2015, 30.3 million Americans or 9.4 percent of the population had diabetes. One solution, Sugar IQ, is a personalized diabetes mobile companion with real-time glucose insights for individuals with diabetes to help make daily diabetes management easier and more effective. Sugar IQ provides personalized real-time insights
based on time of day or week, glucose, meals, and other behaviors. It discovers impact on glucose levels from a specific food or therapy action and identifies patterns based on retrospective continuous glucose monitor and pump data to help change patient behavior and make better informed diabetes decisions.

A second solution turning point is an integrated and personalized diabetes care program with coaching services and risk stratification for healthcare systems to help high-risk and at-risk individuals with diabetes improve their lives and reduce the cost of care by helping them avoid acute episodes, increasing their insulin therapy adherence, and controlling their A1C weight, blood pressure, and LDL.

Thinking five to ten years into the future I'd like to mention two broader health ecosystems plays: Healthcare services in rural areas blockchain. According to a recent American Society of Clinical Oncology study demand for healthcare will increase 42 percent over the next
decade. By 2020 there are likely to be 26 million new cases of cancer, many of which will be in developing countries. In places like China, India, and Africa cancer rates are exploding, there are not enough doctors to manage the patients, and cancer treatment drugs may be in short supply. There may be some areas where broadband or cellular are not available such as in rural areas. Hangzhou Cognitive Care in China is working with hospitals to increase efficiencies and enabling physicians to deliver care in rural areas.

In sub-Saharan Africa the American Cancer Society and IBM Health Corps work together with the National Comprehensive Cancer Network and the Clinton Health Access Initiative to create ChemoQuant, an online chemotherapy forecasting tool to assist African health ministries with constructing forecasts and budgets and planning procurements to secure the best quality cancer treatment products at the best prices from suppliers.
Finally, the healthcare ecosystem is complex with multiple stakeholders and intricate sensitive interactions. This leads to both data security and privacy challenges and operational inefficiencies. Ownership and trusted access to medical information and administrative data is critical, yet the process must be made simpler and less costly. IBM Watson Health and the U.S. Food and Drug Administration have entered into a two-year research initiative to study the use of blockchain for secure exchange of healthcare data. New healthcare research is seeking to apply blockchain's distributed ledger and decentralized database solutions to the critical issues of interoperability, security, record universality, and more.

Intriguing uses in other industries are being extended to healthcare, such as extending blockchain's smart contracts to provider network management or connecting myriad medical devices through common blockchain-enabled systems of information relationships. Moving forward,
blockchain technology and encryption will drive innovation in healthcare services and administration.

In conclusion, IBM encourages the FCC in collaboration with other federal agencies such as HHS and the states as articulated in the policy blog to Secretary Price to use advanced technologies to improve program quality for the nation including the country's most vulnerable populations, rural communities, the elderly, and other health despair groups. The need for speed increases when sending data images and video. Telehealth services and systems have made the most progress in remote management of post-acute care among patients with chronic conditions many of whom have one or more core (inaudible) such as heart disease, cancer, diabetes, or opioid addiction. Broadband-enabled health technologies and services will help to marketize healthcare.

MR. PERAERTZ: Thank you very much, Jane. That was terrific. We're really interested in learning about approaches to bridging digital
divides and bridging digital disparities in rural areas and international examples such as the one you brought up would be really exciting for us to learn from.

Tony, would you please invite the next participant to speak?

OPERATOR: Thank you. The next comment will come from Marc Siry with Comcast. Please go ahead.

MR. SIRY: Hello, my name is Marc Siry and I am a vice president of Strategic Development at Comcast and the general manager for our Comcast Connected Health Initiative. We're thankful for this opportunity to participate in the exploration of new technologies, techniques, and approaches to bring our collective vision of connected health to life. This is a very exciting time for the industry, for this entire field, and for the consumers, providers, and other participants in the healthcare economy who will ultimately benefit from these technologies and new innovations.

Comcast initiatives are helping
healthcare providers unlock the promise of broadband-enabled healthcare technologies through the use of our connectivity technology and media to improve the patient experience in the hospital, in the home, or on the go. We really believe that the patient experience is core and central to accessing the promise of connected health.

Comcast Connected Health and provide transformative solutions for the healthcare industry through the use of video messaging, home device monitoring, and patient data analytics capabilities. For example, we provide innovative ways for providers and patients to communicate through patient-clinician video messaging and screen-sharing capabilities that allow doctors, patients, and their caregivers to share documents and other information around the delivery of a personalized care plan.

We will also smooth the transition of care from provider facilities to patients' homes where we obviously have a significant footprint by enabling in-home connected device networks that
can monitor patient activities, collect data useful for ongoing treatment, and provide reminders and pop-ups to allow for better medication adherence.

We also have high quality educational content that can help patients understand how to access their care more effectively, provide them with the information they need to make better health choices both in their personal lives and in the lives of those they care for, and help them understand how they can access and leverage new technologies to improve their care.

We brought this promise to life in several partnerships that I'd like to talk about now. First with Kaiser Permanente a leading integrated delivery network, we worked to create a maturity-focused application which expressed itself on every screen a consumer can access including their televisions. The app features videos along with interactive elements that allow mothers-to-be and their caregivers to complete surveys and set preferences for their own
pregnancy timelines. Our initial trials were
highly successful with the race for sign-up and
use of the app much higher than expected. We
found that bringing these educational videos onto
the television set allowed for mothers-to-be to
access this health content in a comfortable
location and often with several of their family
members alongside them, and it really changed the
way they were able to access this information.

We're now in the process of launching an
exciting pilot with AmeriHealth Caritas, a managed
care provider. We're partnering with AmeriHealth
Caritas to provide online tools and content to
patients in an effort to empower Medicaid
recipients with more robust health resources. We
launched a pilot starting in June 2017 in
Pennsylvania and it includes patient-facing care
content, video messaging, and care community
support with an effort to really activate all of
the caregiving resources that are already in the
community and connect them more effectively to
then help drive better care for the members of
AmeriHealth Caritas. We are rolling out additional launches in other areas in the very near future.

Finally, we are partnering with payers and other providers in order to drive these platforms to underserved communities in a way that will allow these communities who, as mentioned earlier, often have difficulty accessing physical healthcare resources to more effectively access digital healthcare resources. We think that there is an enormous opportunity to completely transform the way that these communities regard these tools, access these tools, and use them in order to help overcome some of those social determinants that were mentioned before.

We're excited to be a part of this. We think that we can play a key role in delivering these tools at scale which is always very important for success in these initiatives. And we're excited to partner with all of the entities on this call to make sure that this future can become a reality. Thank you very much.
MR. PERAERTZ: Thank you, Marc. That is a very interesting project that you have going on with AmeriHealth Caritas. Tony, would you please announce the next participant?

OPERATOR: Thank you. The next comment will come from Joel Thayer with ACT Application. Please go ahead.

MR. THAYER: Hi, my name is Joel Thayer and I am the Policy Counsel of App Association's Connected Health Initiative, or CHI. We submit the following comments in support of the Commission's efforts to address the growing need for interconnectivity in the healthcare industry.

CHI is leading the effort by connected health ecosystem stakeholders to encourage responsible and secured use of connected health innovation throughout the continuum of care. By doing so we will create an environment in which patients and consumers experience improved telehealth. CHI incentivizes the use of connected health technologies and supports an environment in which patients and consumers can see improvement.
in their health.

As a leader in healthcare regulatory space, CHI filed briefs with a myriad of federal agencies and has participated in countless proceedings. CHI supports the Commission's efforts to realize a connected continuum share that will benefit countless Americans. The Commission will play an integral role in closing the digital divide and the CHI is committed to assist the Commission in its efforts.

As the Commission's Connect2Health Task Force knows, more than 320 million people in the U.S. could require healthcare services at any time. With nearly 280,000 primary care physicians on hand this statistic becomes even more stark. CHI urges the Commission to ensure that the broad diversity of connected health technologies and services are available through its policies and actions. The wide array of connected health technology products and services available today like telehealth and remote monitoring of patient generated health data and telemarketing, those
developments offer the ability to save countless Americans' lives while lowering costs.

The connected health sector is at the brink of incredible growth and has the potential to create thousands of high paying jobs across the United States but the American patient remains the primary beneficiary. The critical nature of the healthcare sector necessitates that improvements be made to America's critical infrastructure. This includes broadband infrastructure and measures to give healthcare providers the ability to use connected health technology products and services throughout the continuum of care both inside and outside the doctor's office.

Ample evidence exists and continues to grow identifying telehealth and remote patient monitoring of PGHD as cornerstones of advanced healthcare systems particularly with respect to (inaudible) and chronic care (inaudible) for patients of rural healthcare in the country. The benefit of broadband adoption in connected health includes improved care, reduced hospitalizations,
prevents complications and (inaudible) particularly for those that are chronically ill.
To inform the Commission's work, we have appended a non-inclusive list of studies demonstrating the improved patient outcomes and cost-saving members savings of telehealth and remote patient monitors for patients. Given the extraordinary advancement in telehealth space the Commission must maintain its focus on building 5G while closing the digital divide.

CHI is encouraged by Chairman Ajit Pai's recent actions to make 5G deployment a priority for the Commission. Additionally, we applaud the Chairman's efforts to close the digital divide by establishing the Broadband Development Advisory Committee (inaudible) opportunities on programs and in particular the digital empowerment zones objective which would bring broadband and digital opportunity to our nation's most economically challenged areas.

CHI urges the Commission to continue on this trajectory to ensure that the necessary
infrastructure is in place to facilitate more
innovative healthcare solutions in this country.

CHI also encourages the Commission to coordinate
with other key agencies in the connected health
space such as the Department of Health and Humans
Services. CHI stands ready to partner with the
Commission as the Connect2Health Task Force
focuses on these specific goals and measures and
hopefully helps telehealth policy take shape.

Moreover, the Commission should allow
innovators to leverage TV white spaces to bring
much needed broadband to rural areas. Providing
the industry with more unlicensed bands can assist
with success of deployment of 5G infrastructure
and we urge this Task Force to support the
increased innovation within the unlicensed
spectrum. Unlicensed bands will play a key role
in the success of 5G networks and the Chairman and
this Task Force should consider it as a viable
solution to remote and structure buildout and to
IOT.

While this proceeding addresses the
challenges to 5G deployment in the long term,
especially when it comes to healthcare services,
we believe that the Commission can take an
important step to greater connectivity in the
short term including the resolution of several
pending matters related to unused TV white sets
and bands.

In conclusion, we appreciate the
opportunity to comment on this very important
topic and look forward to working with everyone on
this Task Force and including all those industry
stakeholders to accomplish this ever-growing and
every-challenging goal. We appreciate your time,
thank you.

MR. PERAERTZ: Thank you very much,
Joel, for your suggestions on 5G, digital
empowerment zones, and TV white spaces. Tony,
would you please announce the next participant?

OPERATOR: Thank you. The next comment
will come from Courtney Neville with Competitive
Carriers Association. Please go ahead.

MS. NEVILLE: Great, thanks. Courtney
Neville with Competitive Carriers Association; I'm our policy counsel. I just want to thank you all for the opportunity to be here today and participate in this exciting discussion. I think there are a lot of great initiatives and innovations on the horizon and hopefully our collaboration can help foster those.

Before we get into that I want to give you a brief background on CCA. We represent nearly a hundred wireless carriers that serve urban centers and most rural parts of our country along with vendors and supplies that feed the mobile ecosystem. Something exciting about CCA members is that most of them are small businesses that are members of the communities that they serve, so they are really engaged in the Connect2Health Initiative and our members applaud the FCC on the Connect2Health Task Force for all of the efforts to promote the advancement of these broadband-enabled health technologies especially this year with the release of the PN and with these virtual listening sessions.
I wanted to first highlight some CCA member programs that some of our members have deployed across the U.S. and especially in rural and remote areas. One of the exciting things about these initiatives is that they help to bridge the digital divide, especially in the health arena. They connect rural residents with the same medical attention that is provided by their urban counterparts which is really exciting.

First, I want to highlight CCA member's C-Spire in Mississippi. You might know that they launched a pilot program called the Diabetes Telehealth Network which focused on improving healthcare in rural Mississippi for individuals struggling with chronic diabetes through remote monitoring and data analytics. They relied on their own mobile broadband communications and participants in the program were provided tablets to enable their healthcare providers to remotely manage their patients and automatically capture individual health data to deliver the connected monitoring that was necessary and their
cost-effective care.

According to the Sunflower Medical Center, which is the local medical center there, the first six months of the program saved approximately $400,000, reduced A1C levels by 1.7 percent, and saw no ER visits or hospitalizations among the 100 residents involved in the pilot program. Initial results also saw not a single case of hospital re-admission and over 10,000 miles of patient travel saved in patient visits which is really exciting.

So, because of this success the program has been tentatively extended for the next five years and they project that these initiatives will save $189 million a year in Medicaid expenses which over five years equates to nearly $1 billion. I think we can all agree that that's a pretty penny, so that's really exciting.

Another CCA member, General Communication, Inc., or GCI, has implemented a successful telehealth program called ConnectMD. Through this program GCI supports telemedicine
services like remote patient monitoring to customers in Alaska and in most instances the ConnectMD network is the only way that rural Alaskans can gain access to specialist. The program also allows these communities to offer readily available cost-effective health services to their residents and have eliminated the need for residents to take long and expensive trips for medical attention.

Additionally, at lot of CCA members participate in programs like iSelectMD which offers a mobile platform and online portal for patients to connect with medical professionals in their area. Members that participate in this program include Blue Grass Cellular, Carolina West and MTPCS which cover consumers in states like Kentucky and North Carolina. The iSelectMD program is exciting because like I noted it allows a lot of CCA members to engage in the portal and can ensure consumers in their network's footprints continue to have access to the best service and programs available.
I also wanted to note that Sprint has partnered with a technology vendor called IDEAL LIFE to provide devices that transmit patient monitoring data directly to patients' physicians and their relative family members which is particularly important especially for young patients and senior care as well.

Finally, Accapability which is based in Iowa recently launched a quote Heartland Global Health Initiative which is a specially equipped van that offers meek mobile health services and creates an electronic medical record for communities in the areas across the state.

These are really exciting programs and we're proud that CCA members are really engaged in telehealth solutions but it's important to note that their success hinges on FCC and industry action and collaboration and without the proper network capabilities their efforts could be thwarted. So, CCA continues to engage with the FCC to ensure that competitive carriers have access to low, mid, and high band spectrum. The
low band spectrum is particularly important because it has the latency and capability to travel far distances which is critical for these networks that are especially working in rural and remote areas. And then mid and high band spectrum of course is important because it will be the foundation for these 5G networks and next generation technologies that will eventually support these telehealth solutions.

CCA continues to advocate for streamlined infrastructure sighting processes and is honored to participate in the FCC's Removing State and Local Barriers Working Group of its Broadband Deployment Advisory Committee, or BDAC. We are excited to partner with industry and help to spur mobile broadband across all areas of the United States.

Finally, we have continued to applaud the FCC's Universal Service Fund, or USF, efforts particularly in the Mobility Fund II Program. A recent report and order just allocated approximately $4.5 billion to fill coverage gaps
over the next ten years which is something that's really exciting and will be imperative to making sure that these rural consumers are accessing medical technologies remotely and can continue to have those services available to them.

Lastly, I just wanted to thank you all again for allowing CCA to participate and we are excited to hear what the rest of the participants bring to the discussion today.

MR. PERAERTZ: Thank you, Courtney, very much. The Connect2Health Task Force with Commissioner Clyburn travelled to Mississippi in December 2014 and saw all of the great work that the partnership that C-Spire had with University of Mississippi Medical Center and the Diabetes Telehealth Network, all the great work that was being done there. And you're right, $189 million a year is quite a pretty penny. So, thank you very much for that and your recommendations as well.

MS. NEVILLE: Thanks, Louis.

MR. PERAERTZ: Tony, would you please
identify the next participant?

OPERATOR: Thank you. The next comment will come from Jackie McCarthy with CTIA. Please go ahead.

MS. MCCARTHY: Thank you. My name is Jackie McCarthy and I am Assistant Vice President of Regulatory Affairs at CTIA. We thank you for the opportunity to participate today and we're glad to be here.

CTIA represents the U.S. wireless communications industry and companies throughout the ecosystem including carriers, device manufacturers, and suppliers. I lead CTIA's internet of things policy participation in sectors like mobile health and I lead CTIA's Mobile Healthcare Working Group.

We commend the Commission and the Task Force for focusing on the steps that we can take to stay ahead of the health technology curve. Wireless technology, as you've heard from some of our colleagues, enables increased access to healthcare, improved outcomes, and reduced costs
especially for seniors, rural Americans, and those with accessibility needs.

In terms of wireless technology it's particularly well-suited for costs and outcomes issues. Wireless technology supports applications like remote patient monitoring and diagnostics which can facilitate clinical trials, also allow healthcare providers to care more efficiently for patients, and can empower patients and consumers to manage chronic conditions and stay healthy.

Wireless innovations can also enable seniors and consumers with disabilities to engage fully with their communities through functionalities like voice commands, artificial intelligence platforms, and location information technology. One of the other speakers mentioned 5G wireless networks and their promise. 5G mobile broadband definitely will enable a lot of the future uses of mobile health and broadband-enabled health technologies.

Some of the characteristics from the network perspective of 5G that makes it especially useful for healthcare applications include
increased bandwidth for data intensive services like high resolution medical imaging or remote procedures or remote surgery. Also, 5G enables many more devices and centers to be on the network receiving and sending data and that will allow for the proliferation of connected devices, not just phones and tablets but things like fitness tracking devices, connected medical devices, and in-field and public safety or first responder related connected devices.

5G networks will also enable very low latency on wireless networks. Latency is the time between when a device requests to begin a task and when it actually completes that task. So, for things like, again, remote surgery or critical care applications that low latency and almost real-time or very, very close to real-time data receipt is critically important.

Just to step back a little bit on data usage. It has been sky rocketing in recent years and we expect it will continue. Americans are using 35 times more mobile data today than in 2010
and data usage is projected to increase five-fold from this year to 2021. So our companies are building the 5G wireless networks that will accommodate these and other uses.

In terms of policy objectives, very similar to what we've heard from other speakers, we urge the Commission to make available both low, mid, and high band spectrum for licensed uses. We need all levels of this spectrum to make 5G a reality. Likewise, the Commission's efforts to alleviate delays and unreasonable costs associated with infrastructure deployment for wireless broadband is much appreciated and then the continued availability of Universal Service Fund subsidies through the Mobility Fund and the Rural Health Care Program is also really important to achieving these objectives. Thank you.

MR. PERAERTZ: Thank you very much, Jackie. The Connect2Health Task Force worked with CTIA to have an event down in Florida. We very much appreciate the President and CEO of CTIA and former FCC Commissioner, Meredith Atwell Baker's
remarks during that convergence. Thank you.

Tony, can you please announce the next speaker?

OPERATOR: Thank you. The next comment will come from Stewart Ferguson with Alaska Native Tribal Health Consortium. Your line is open, please go ahead.

DR. FERGUSON: Good morning. My name is Stewart Ferguson, I'm the Chief Technology Officer for the Alaska Native Tribal Health Consortium in Anchorage, Alaska. My organization is the largest most comprehensive tribal health organization in the United States. We not only co-manage the largest tribal hospital in the United States, we also are part of the Alaska Tribal Health System which provides care to 153,000 Alaska natives through a partnership with 30 tribal health organizations and managing more than 200 facilities in Alaska.

So, thank you for the opportunity to address the Task Force. Knowing where we were ten years ago with connectivity in Alaska it's very
exciting to think where we might go in the next
ten years with your leadership.

The point I wanted to emphasize here, and I'm not sure if it's becoming clear through the other presenters, is that connectivity is now absolutely mission-critical to my colleagues and partners in delivering healthcare to some of the country's most remote communities. We simply can't live without it and our needs continue to grow, and we have to think about how this Task Force can help us develop the new technologies in an affordable manner.

Let me start by reiterating the earlier statement that the patients simply are not where the providers are, and that's incredibly true in Alaska. Without connectivity patients now become more portable than their data. Quite seriously we have travelled patients for many years while their data stayed behind. Now with connectivity the data becomes more portable than the patient and we can change how we deliver healthcare.

As evidence of this, the Alaska Tribal
Health System has relied on telehealth programs for more than 20 years to deliver care throughout the state at over 600,000 square miles. The system has been used by 4,500 providers for more than 300,000 clinical cases. We've generated almost 70,000 EKGs for heart patients, over 200,000 images of ear disease, and another 500,000 images of trauma wounds and rashes that have been moved through our conNectivity supported by the telecommunications program and USAC funding. (inaudible) percent of our entire native population are involved in telehealth on an annual basis, which I would suggest is one of the greatest penetrations of telehealth in any system in the world. Most specialty consultations are completed within four hours regardless of where the patient lives. For the first time, I think we're providing access to care in our remote regions that's actually better than what you can get in major urban areas in the lower 48. Our major medical center offers 30 different specialties by videoconferencing. More than 70
percent of all our consultations prevent patients
from having to travel resulting in a statewide
savings of approximately $10 million annually just
in avoided patient travel.

The bottom line is that people living in
rural and frontier locations such as Alaska
villages squeeze more out of every bit of
connectivity than anyone else in the world in my
opinion. The partnership between the FCC and the
tribes has done much to address disparities, not
only in connectivity but in the delivery of
healthcare over the last 15 to 20 years. But my
worry, and it's important I believe for the FCC
Task Force to hear this, is that the subsidy
program, the telecommunications program, the USAC
funding is unquestionably the only reason we are
able to do this in Alaska, otherwise connectivity
is too expensive. It can cost between $10- and
$20,000 per month for a T1 line in Alaska. Recent
limits that force prorating of use (inaudible)
subsidies have a dramatically unfair effect on
Alaska tribes raising our out of pocket costs for
connectivity by more than 1000 percent and creating a real risk of staff cuts, reduction in healthcare, and potentially dismantling the programs I've just discussed.

This is perhaps the most important point I can make today, that we continue to expand our infrastructure in a cost-effective manner and that we support remote communities for both our needs and where the costs are the greatest. I urge the Task Force to make sure that we do not leave our remote communities behind. Thank you for this opportunity.

MR. PERAERTZ: Thank you, Stewart. I hope to delve into your engineering expertise with regard to the challenges faced by wireless connectivity in Alaska and other rural areas later on in this conversation.

Tony, would you please announce the next participant?

OPERATOR: Thank you. The next comment will come from Ethan Lucarelli with Inmarsat. Please go ahead.
MR. LUCARELLI: Sure, thank you. And thank you Louis and Michele and the entire FCC team. Inmarsat greatly appreciates the opportunity to participate in this event. By background, for anyone not familiar with our company, we're a global provider of mobile and broadband communications leveraging more than a dozen active satellites in the 1.5 and 1.6 gigahertz bands, 2 gigahertz, 28 gigahertz, and several other frequency bands. We are very happy for the great work being done by the Connect2Health Task Force at the FCC. It's very important that the FCC address this issue at this time.

Our experience whether supporting healthcare, diagnosis, or training in rural and remote areas or supporting emergency responders around the world has been that the most important aspects from a connectivity perspective are that the connectivity be available, that it be sufficient for its purposes, and that it be reliable. While our health operations at Inmarsat
are largely international by virtue of our business, some examples of the projects we've been involved in might be of interest to the Task Force.

In Benin we worked with clinics in two rural areas to monitor, diagnose, and treat adults and children. Using a telemedicine application to gather patient information on tablets and send it back using Inmarsat (inaudible) links to urban hospitals and doctors these clinics are able to monitor and evaluate health in rural areas. When we deployed this program first in 2014 in these two African villages within three months remote doctors using this technology were able to identify instances of various diseases like diabetes, hyperglycemia, hypertension, and other conditions in over 850 adults and children referring those for further treatment. It also enabled over 250 consultations for people who previously didn't benefit from any social programs and we were able to identify almost 100 people with serious conditions that needed immediate
attention that they wouldn't have gotten for weeks or months without this sort of connectivity.

Currently we're also partnering with funding from the UK Space Agency with an organization called InStrat Global Health Solutions and others on a project that brings training videos and medical service applications to medical workers in Nigeria. So, this training focuses on maternal and newborn child health issues and provides information that's vital and that can help save lives using mobile satellite broadband services which are portable and deployable, we can transmit information directly to medical workers on the front lines, (inaudible) communities that otherwise wouldn't have access to this information.

Getting this affordable and reliable connectivity into the hands of health workers also can support additional applications like healthcare database management, identity registration, insurance claim tracking, disease surveillance and monitoring that can help improve
early response to epidemics before they develop.

A little closer to home, in light of recent tragic headlines, I don't think any of us need any reminding about the horrific destruction that can be caused by natural disasters. As we've seen this isn't limited to far off lands.

Inmarsat and other satellite operators partner closely with relief organizations. In my company we've been working for over 15 years with groups like Télécoms Sans Frontières and Doctors Without Borders, other organizations so that we can support relief efforts in the immediate aftermath of major disasters. We and other satellite operators are there in every major disaster in recent memory including the hurricanes that we've seen in the last several weeks. When all the other connectivity is down, when an entire island is without power, when networks are otherwise completely compromised its mobile satellite services that relief workers use and rely upon for those critical communications.

So, getting back to the question that
was asked, I'd say that looking five to ten years
out I think it's important to focus on those three
aspects I identified first: Availability,
sufficiency, and the reliability of connectivity.
In terms of availability some of these eye-
catching and exciting technologies that we hear
about like remote surgery or 5G terrestrial
networks, they might be more than five to ten
years off especially for rural and remote areas
that have unique economic, social, and geographic
challenges. Reiterating what a speaker just said
a few moments ago from Alaska Native, connectivity
is mission-critical. It's an unfortunate reality
that many areas in the U.S. Remain unconnected to
broadband including wireless, and despite the best
efforts of everyone on this call and everywhere
else those challenges might not be resolved in the
next five to ten years.

But the satellite sector is a leader in
connecting these areas. Satellite by its nature
is a ubiquitous service. Looking at sufficiency,
again, I'd say current networks aren't always
sufficient for the purposes that we want to date let alone the services that we need five to ten years or that we expect more than ten years down the road. But current and future satellite broadband services are robust, blanketing the entire United States in broadband connectivity in excess of the FCC's current 25-3 advanced telecommunications service definition. New services that are going up, new satellite constellations going up, are going to provide greater capacity, lower latency, really unlocking all sorts of new applications and solutions.

Finally, reliability. A lot of areas have real challenges with reliability, whether it's weather related, whether it's geography, whatever the case may be. But again, I would say with satellite systems these systems are developed with reliability built in. It's sort of the core requirement for a lot of our customers is that these services be 5-9s reliable, something along those lines. A lot of that is based on the lack of reliance on local terrestrial infrastructure.
So, in each of these cases it's my belief that both current and future satellite communications can be an important part of telehealth solutions. We look forward to continuing to work with partners globally and in the United States on these matters, and we urge the FCC as well as local and regional stakeholders to keep these solutions in mind. Promoting continued availability and growth to satellite services, ensuring sufficient access to necessary input resources like spectrum for service links and gateway links.

With that I'll yield the floor back and look forward to continuing the conversation. Thank you.

MR. PERAERTZ: Thank you, Ethan, for that passionate and persuasive explanation about why satellite services still remain an important part of the connectivity picture.

Tony, can you please announce the next participant?

OPERATOR: Thank you. The next comment
will come from Stephen Berger with TEM Consulting.

Please go ahead.

MR. BERGER: Thank you. I'd like to bring some network-based comments, talking about two networks. The first is the supply chain network that develops technology builds and supports, broadband networks and services, and the second is the networks themselves.

I think it's clear that healthcare is not the technology driver but it has to participate in these networks. It just simply isn't large enough to create the new technologies and independent networks in parallel with the main stray networks that exist and will be built in the future.

The issue in my view is that healthcare delivery has different quality needs and even metrics than other users of the networks and the dominant drivers for those networks. So, the question becomes how do we make sure that in the future healthcare delivery can maintain its quality needs and unique metrics it has while
using mainstream technology? Will the network support the ability of healthcare services and to achieve their required reliability levels?

Clearly as we think about moving out we have to assume the past is not the future. If we're going to see wider dispersion of broadband services, devices and services of which the cost of deploying networks is a significant cost are going to have to come down. We see efforts in a variety of places to dramatically reduce network deployment cost as well as device cost, trying to reduce them by factors of 10 or more.

The question I think that we need to contemplate is what do networks look like if their built of equipment of 1/10th or even 1/100th of the current cost? They certainly are not going to be like the networks we have today. So, then what's the possibility of healthcare providers to achieve their quality needs on those networks?

Another future development -- again picking up on the past is not going to be the future -- beyond artificial intelligence I think
we can anticipate that we're going to have increasingly ontological-based networks in which the network itself can reason on the data it's passing. So, let's just think about what that does fundamentally. Even the programming languages change at that point. Picture a patient calling a doctor from Houston either just before or just after Hurricane Harvey that just happened. If you have an ontological-based network potentially the doctor then gets the information currently that that patient who may be asking about who knows what, some healthcare related issue, is in danger of being flooded and he may want to first treat the patient some assistance in getting relocated versus the thing they called about. Or alternately let's say that call happens today and the network provides the doctor because it sees a connection the information that there is a flood claim on the patient's house. The doctor may then want to explore whether mold and impacts of mold are an important component in the patient's healthcare picture.
I would also champion the comments that have been made about important ways this is a risk management issue and we need to remember the possibility of low probability-high impact events. Clearly today we're all aware of Harvey, Maria, Mexico City and what's the probability of any one of those things let alone three of them in a short timeframe and looking to the future are we planning networks and healthcare delivery that can withstand natural disasters and even multiple natural disasters?

So, I would say it's not enough just to make spectrum available to healthcare. Spectrum needs to be made available in ways that attract supply chains to develop and deploy technology and networks in ways that meet the dispersion needs reaching rural and disadvantaged communities, but also do so in a way that healthcare providers can maintain the quality levels that they need to achieve as they delivery healthcare. And then it needs to be maintained in a variety of circumstances, particularly in disaster scenarios.
and others, that healthcare delivery can continue to be delivered.

Thank you for the opportunity and I look forward to the rest of the conversation.

MR. PERAERTZ: Thanks Stephen. That was an awful lot of really great stuff. I very much appreciate it. I hope I can follow up with a couple of detailed questions on your recommendations if we have time.

MR. BERGER: Sure.

MR. PERAERTZ: Tony, could you please announce the next participant?

OPERATOR: Thank you. That next comment comes from Jodi Goldberg with Hughes Network. Please go ahead.

MS. GOLDBERG: Hi, and I want to echo everyone's gratitude for hosting this call. I think it's a very important initiative that the FCC is hosting. Hughes is the largest satellite broadband provider in the United States and globally. We recently launched our newest (inaudible) satellite in December and started
service on it in March.

FCC defines broadband speeds as 25-33 ubiquitously across the United States from Puerto Rico into southeastern Alaska. We're excited to be able to assist in providing telehealth services throughout the United States, especially in communities that aren't as connected as urban centers. We believe that we are an excellent partner in these initiatives.

We're currently working on managed cloud access and cloud services for hospitals to help with patient portals, medical record-sharing.

Hughes has a long history in distributive networks which is actually one of our biggest avenues, one of the areas that we focus on through our satellite networks and through our ground infrastructure.

We are also focused on senior care and providing different access to skilled nursing facilities, post-acute care facilities in residential communities where healthcare is woven into the operational environment to make sure that
they can connect with their doctors whether they're local or commuting between cities.

To echo what Ethan was saying, one of the benefits of satellite broadband is that it is reliant and it is cost-effective. The broadband that we provide through our satellite network is actually cost-comparable to a terrestrial network and the speeds are comparable. Where people start to get concerned about satellite broadband is the issue of latency. Often latency gets a bad rep when talking about satellite broadband because people become concerned about the delays in services, but what we actually notice latency in is a lot less significant than what most people think. It's really just in things like high speed interactive gaming or if you actually want to do robotic surgery.

But a lot of telehealth services would benefit from the addition of satellite services because it's large data files or voiceover IP and connecting people with their doctors, and these are services that actually are highly beneficial
through satellite services and the connections that we can make. So, it's actually facilitated by these wide networks that we provide and this ubiquitous service that connects these communities to their doctors.

So, we think it's very important that we focus on what is currently available and what will be available in the future. The truth is satellite broadband capacity is increasing greatly and there are a lot of filings for additional capacity at the FCC. My company has recently filed to construct and launch an additional satellite in the next four years. There are several non-geostationary satellite constellations, which Suzanne Malloy from SES is also on the call and can talk to, which will have a lower latency than most terrestrial networks actually. She can speak to that hopefully. And they will add additional capacity to communities that do not have access to built-out terrestrial networks.

It's important that when designing
regulations going forward we consider the fact that regulations have to be technology neutral to allow the technologies that have the ability to build out to these communities, that can connect these communities and provide telehealth services now and in five to ten years, that they're the ones who are able to provide the services, and that they're the ones who are able to get the funding they need to build out into these communities.

Because the truth is satellite broadband is available now and in these communities that need it. It's available in southeastern Alaska and at 25-3 speeds. Unfortunately a lot of people don't know that it's there. One of the most important aspects is to make sure people know it's there, and that it's available, and that it works really well, and that it can enable these telehealth services to take root and be available to their customers.

MR. PERAERTZ: Thank you very much, Jodi. That was a very passionate and persuasive
argument again for the importance of satellite connectivity.

I think, Tony, we should pause at this moment and just -- our intention was to get through four questions before 3:00 o'clock and using this format it doesn't look like we're going to be able to go to the next three questions in successive order the way that we had planned.

So, what we would like you to do is ask you about a couple of issues that we would like you to provide us some information on during this phone call. One of them is the type of connectivity and connectivity speed that is going to be necessary to the support to the deployment of health IT applications today and in the near future, connectivity whether it be fixed, wireless, or mobile wireless, as well as connectivity speeds.

Jodi was talking about this a little bit when she mentioned that since medical services require large data sets, the transfer of large data sets, at the Task Force we've been really
trying to figure out what level of connectivity
and connectivity speeds will be necessary to
enable the deployments of advanced technologies in
the future.

I think Yahya has another question that
he would like you to focus on.

MR. SHAIKH: Well, in relation to
existing product offerings you might have are
there any that, for example, might require
physical deployments that might shift to the cloud
if sufficient cloud activity exists? Or are there
innovations that are currently being shelved or
features not currently being deployed in existing
products because of limitations with connectivity,
whether it's the issue of speed or whether it's
the issue of coverage or anything else related to
connectivity which prevents sufficient market
reach?

MR. PERAERTZ: Tony, you can identify
the next participant.

OPERATOR: Thank you. That will come
from Syed Hosain with Aeris Communications.
Please go ahead.

MR. HOSAIN: Thank you very much. I thank the FCC for the opportunity to speak over here. Very quickly I'll talk about who Aeris is and then dive into some of the applications which might determine the technology in questions that you have raised here.

We are a provider of IOT services all the way from connectivity to analytics including our cloud-based analytics solutions, and we've been providing this for more than two decades. I am one of the founders of the company (inaudible) CTO responsible for architectures for the future.

In terms of number of cellular units which is what we deploy today we're the third largest in the U.S. and sixth largest globally. We offer services around the world, but are based here in North America and a large majority of our devices are obviously based right here in the U.S., Canadian, and Mexican markets.

Healthcare is the most rapidly growing opportunity in the IOT industry that our customers
which are enterprises are deploying. That necessarily drives us to be concerned about some things that I'll talk about in a second. I'd like to give you a couple of examples overseas and then come right back to the U.S.

We are working with organizations that are working on vaccine quality monitoring in Africa, and for that technology to work properly just the availability of even a simple 2G connectivity service is sufficient because frankly while the next generation broadband technologies will enable capabilities that are somewhat more futuristic today's deployments of healthcare IOT devices simply doesn't need them. Wide coverage and longevity is far more important so something like that vaccine application at 2G coverage is sufficient.

In India we're working with a company that is providing a tuberculosis medication compliance monitoring device that is incorporated as a battery-powered unit inside the box itself so every time it's opened that is a proxy for
Here in the U.S. we are working with companies that are doing I will say relatively non-mission-critical IOT healthcare applications. I define mission-critical in the manner that if coverage were not available or if there is a failure in the network it would not result in a medical emergency or God forbid a fatality.

So, applications such as home elder healthcare monitoring systems where people might be monitored for their presence in the home, monitoring their ovens, their shelves, their medicine cabinets, is something that is being rapidly deployed today. We have companies who are deploying tracking devices for shoes for Alzheimer's patients so that if they're living at home they can be monitored by their caregivers, et cetera.

And we're working on some capabilities for diabetic patient monitoring. The reason being that when there was a study done from one of our customers with regards to what kind of monitoring
of healthcare parameters that physicians wanted literally two-thirds of the doctors who were responding said they wanted weight, blood sugar, and blood pressure to be the primary monitoring that patients do. So, we're working with a small start-up that is coordinating an effort to make a sugar level monitor, a blood pressure monitor, and a weighing machine all connected together to provide information particularly for low income families who may not have an ISP or a home transmission device of some sort that they would be able to use our cellular network to transmit that data to their local county and regional healthcare systems and coordinate that information with supermarkets in the area who could provide coupons, for example, to those patients to allow them to get the kinds of foods that would be beneficial to improving their diabetic problems rather than causing them harm as they might tend to do otherwise.

In terms of the connectivity, as I mentioned, today coverage and longevity of service
is far more important. In a self-contained unit such as what our customers provide with these devices the ability to plug-and-play or battery-powered units is essential. What 5G and other technologies in the future might enable are perhaps more mission-critical apps where these speeds and the necessary transmission of medical information associated with medical emergencies might be more relevant. Today we don't see that. And the benefit of having widespread coverage in the future for those what I will call the more speed-oriented technologies would be essential.

I'd like to thank you all for the opportunity to provide this information. If there is any additional information that we can provide later on we'd be happy to do so.

MR. PERAERTZ: Tony, I would like to ask Z a follow up question. Z, because Aeris is able to manage its always-on, 24-7 connectivity across 2G, 3G, 4G, LTE, LTEM networks I think you have a unique view into the spectrum needs for the future of healthcare. In our PN we specifically ask for
how could the Commission make an assessment of the spectrum in the wireless infrastructure needs for the future of health and care in the United States?

Because time is short I would appreciate it if you could provide just a broad general approach that the Commission could take to ensuring that we have sufficient spectrum and think about other sort of coexistence issues that we need to think about going forward to ensure there is sufficient spectrum for the future of health.

MR. HOSAIN: Yes, that's a very good question. The issue is very simplistically that we piggyback on the cellular networks that are deployed for entirely other purposes. The applications that are running IOT cloud for less than 1 percent of the revenue of a typical large carrier in the United States, and therefore change technology decisions tend to be driven by the smartphone user community rather than the IOT community, let alone healthcare that is using
those kinds of technologies.

So, I think that in particular the way we manage it is that we like to be as technology agnostic as we can from our support perspectives. We have built in solutions for monitoring the device performance regardless of the technologies operating, including hybrid solutions that include both Wi-Fi such as the information from Comcast or satellite services that was mentioned earlier today. For us, information and processing that data is far more important so we will be very careful to locate a device no matter where it happens to be, which network it happens to be operating in, to provide the kind of reach and connectivity that is necessary.

Now, from a perspective of capacity, today's applications simply don't have to worry about that yet because even 2G is quite sufficient for a large class of applications such as reporting basic health parameter monitoring, et cetera. It's the more futuristic applications that I think will require extensive coverage in 5G
and LTE expansion, more spectrum expansion for the networks that are available today. Since we piggyback traditionally those networks are deployed by the larger carriers who have the ability put the tower resources up to make coverage happen as best they can.

MR. PERAERTZ: Great, thank you. For other participants who have a unique view on wireless spectrum needs of healthcare participants if we have time I would appreciate it very much if you could think about the question I just posed to Zaeem of Aeris. Thank you.

Tony, would you announce the next participant please?

OPERATOR: Thank you. That next comment will come from Colin Underwood with Alaska Communications. Please go ahead.

MR. UNDERWOOD: Hello, thank you very much to the Committee for hosting all of us on this important topic. My name is Colin Underwood and I am the Healthcare Program Manager for Alaska Communications, a telecommunications provider
providing consumer and business commercial services in the great state of Alaska. Among those commercial and business providers we provide services to healthcare and education customers.

I would just like to first voice my support of everything that Dr. Stewart Ferguson mentioned earlier. He and I have the privilege of working together as one of the telecommunications providers providing connectivity to his organization and some of the other tribal health organizations around the state. What he spoke about in the critical need of telecommunications, universal services, is something we all see here in Alaska.

However, I would like to add to what everyone has been saying on consumer need broadband connectivity as well. To really recognize the potential for telehealth consumers are going to need this connectivity in their homes, as we in Alaska in many cases do not have that access and where it is accessible it may not be affordable. So, we see consumers not able to
recognize the full potential of telehealth services.

One way to meet that demand is through wireless technologies. Needless to say, it is very expensive to build in very remote Alaska any wired infrastructure to these homes that are across mountain ranges, through rivers, lakes, miles and miles away. So one avenue we are looking at is wireless deployments using a fiberoptic network terrestrial service to bring into a community and then deploy a wireless mesh network across the community that would then benefit consumers, small businesses, healthcare, and education businesses alike.

However, to make such a network available as I mentioned requires a strong terrestrial network, the backbone to bring that connectivity in there. I've heard many people talk about wireless technologies, spectrums, and 5G technologies; those are all great, we are looking at those. I heard someone mention earlier TV white space. That's a technology we're looking
at as well as millimeter wave technologies to
deploy these in a much more cost-effective manner.

I'm going to come back to Alaska lacking
infrastructure. Technology, I'm going to equate
it to much like an elementary school where you
have a third grade class and you might have one
third-grader that is reading at a fifth grade
level and you have another third-grader that's
reading at maybe a second grade or third grade
level. You're not going to want to give both of
these the same reading material and expect them to
advance at the same manner; you're going to give
that one student who is advanced something a
little more challenging and that other student
something that's more appropriate for their level,
that way both are going to feel success and
advance.

Technology is much the same way. The
idea that there is one solution for the entire
country is not always the case. In Alaska we are
lacking infrastructure and that is reflected in
basically our 25 percent use of the Universal
Services Fund for rural healthcare. Those high
costs are due to lack of infrastructure and
competition, real competition, in the state of
Alaska.

So, I'd ask the Committee to consider as
we go forward looking at the future ways that we
can encourage different regions in the country to
advance and get the benefits they need while also
supporting the higher advancements of other parts
of the country. For the entire country to really
truly benefit from the advancements of digital
healthcare and telehealth we need not only the
healthcare centers to have good connectivity but
also the consumers at an affordable level.

Lastly, as far as broadband speeds go we
have seen just in the past couple of years
critical access hospitals and community health
centers in Alaska asking more and more for 100 meg
and even in some cases, some of the larger rural
locations, even gig services to support the EICU
and other advanced real-time critical care
delivery systems that are out there. This is in a
large part due to a few years ago Congress passed
laws that said, you know, thou shalt adopt digital
healthcare, electronic health records, that sort
of thing and we've seen healthcare really take off
in this field. As a consequence the demand in
connectivity in broadband has exponentially grown.

In conjunction with that the USAC and
the FCC have seen to add additional service types
in facilities that are eligible to participate in
the Rural Healthcare Program. So, we've had two
major impacts to the Rural Healthcare Fund and at
no time has that fund been adjusted to match this
increase in both the broadband demand that's being
brought in by laws, saying thou shalt adopt
digital transformation, and also the additional
demand from new facility types. And rightfully
so.

But I ask the Committee to think both
about how we can incentivize different parts of
the country for their own acceleration as well as
how we can address the Rural Healthcare Program
and its funding caps issues right now. As Stewart
Ferguson mentioned it is a critical, critical need in Alaska and is the only reason we are able to see the success we have in Alaska. Thank you very much.

MR. PERAERTZ: Thank you very much, Colin. Enabling communities to find solutions that are tailored to the unique situations of those communities is something that the Connect2Health Task Force is laser focused on.

Tony, would you please announce the next participant?

OPERATOR: Certainly. The next comment will come from the line of Suzanne Malloy with SES Networks. Please go ahead.

MS. MALLOY: Hi, this is Suzanne Malloy and I'm Vice President of Regulatory Affairs for o3b, which is now going to be known as SES Networks. We really appreciate the opportunity to participate in this particular forum to explain how specifically satellites fit in to helping deliver the kinds of services and applications we've been talking about on the call.
By way of introduction into who we are and the facilities we use to provide our services, SES is one of the world's largest commercial communication satellite operators operating more than 50 geostationary satellites that can reach 50 percent of the world's population. Many of these satellites have been authorized under commission authority.

The specific division that I work for, SES Networks, formerly known as o3B, provides high throughput low-latency connectivity via a non-geostationary satellite network that delivers performance of fiber in places where terrestrial networks don't reach. It makes this broadband connectivity affordable for billions of consumers and businesses globally in reaching 180 countries. SES Networks provides these capabilities over a 12 satellite medium-earth orbit satellite constellation and we will be launching starting next year 8 additional satellites using additional spectrum to address what is a really fast growing demand for the kind of high performance
connectivity that we can provide.

SES is unique in that it's the only joint medium-earth orbit and geostationary satellite operator in the world and can therefore access both of the satellite technologies to deliver telehealth, eHealth applications, and telemedicine services. These would be in hard to reach areas that have limited internet access. SES Networks NEO-enabled satellites provide low latency and high throughput connectivity, and I emphasize those two points because these are at speeds that can support 4G or LT applications like cloud computing. These capabilities allow for really fast, flexible, and affordable solutions to challenges that we have in delivering telemedicine and eHealth applications.

SES uses spectrum in the CKU and KA bands to support a range of eHealth applications. Just as Hughes and Inmarsat have noted, this spectrum supports both geostationary and medium-earth orbit eHealth applications depending on the specific requirements of each activity, and
which particular speed and latency are needed for
the specific applications that we're talking
about. So, the speed and latency that we've been
talking about are just a few of many factors that
determine how you can effectively deliver advanced
satellite technologies or advanced eHealth
technologies.

SES' effort to specifically provided
satellite connectivity to maternity and children's
hospitals, floating hospitals, and mobile clinics,
as well as to military ships and to humanitarian
response vehicles. So, a couple of examples would
be an SES collaboration with the Luxembourg
government called SATMED. It's an IT-enabled
cloud infrastructure that facilitates data
exchanges between professionals and medical
facilities and framework. Specifically SATMED
provides satellite connectivity for areas where
there is inadequate mobile or terrestrial internet
coverage. It also provides eHealth tools in a
single access platform, so this would cover the
full spectrum of eHealth including eLearning,
eCare, eSurveillance. This would also include the ability to maintain medical records, and a specific example might be having at-home nurses have the ability to videoconference with nurses in hospitals.

The services were deployed for the first time during the 2014 Ebola outbreak in Sierra Leone. Other deployments have included a maternity hospital in Benin, a children's hospital in Niger, and three floating hospitals in Bangladesh.

Now, that's a well-known existing technology but the NEO constellation, medium-earth orbit constellation, can offer low latency and very high throughout. It combines the kind of capabilities that we just talked about for geostationary satellites, with one particular example being rapid response vehicles. This is the kind of application that can be used in something like restoration which with the recent hurricanes is a very sort of real need. So, this particular rapid response vehicle is the first
mobile platform that can offer collaborative
communication technologies over multiple orbits
and frequencies, specifically, the band user Ku,
Ka and military X-band. It works across the
geostationary fleet and across the NEO
c constellation. Using this rapid response vehicle
we can provide high speed connectivity and
communication services globally that can be
tailored to a range of commercial, civil,
humanitarian, and defense missions including
teledicine.

One thing I wanted to mention is that
satellite services can operate hand in glove with
terrestrial services and they do. So, they
support local terrestrial applications. One of
the unique capabilities of satellite is one to
many transmissions of information or satellite
services can support terrestrial services by
extending their reach of terrestrial networks.

In the future our own satellite
deployment and those of the others in the industry
will include innovations and increases in
throughput that will enable support of the kinds
of terrestrial networks that we're hearing about
on this call while they develop. And they will
also enable the provision of even more advanced
satellite services directly to end users via
satellite.

If there is time for questions I'm happy
to take them. But again, thanks for the
opportunity to participate in this forum.

MR. PERAERTZ: Thank you very much,
Suzanne. Tony, would you please announce the next
participant?

OPERATOR: Thank you. That's from Tim
Koxlien with Telequality. Please go ahead.

MR. KOXLIEN: Thank you, Tony. Thanks
to the Task Force for the opportunity to talk with
you. You had brought up the connectivity type
speed and then also added some cloud issues. I'll
really not spend much time talking about the other
items, I think your other guests have spent time
talking about infrastructure and so on.

We're a telecommunications company that
services healthcare providers throughout rural America. It's great to hear the important initiative that the chairman has at the FCC on bridging the digital divide. Lots of ideas going on with regards to the MPRM and so on, and I'll just leave it at that for what's written down. But I'd like to touch on two items in terms of connectivity type and speed.

We serve about almost a thousand locations throughout rural America. The type of connectivity that we have is pretty much probably two-thirds fiber and the remaining amount mainly copper but with some coax. There are some wireless connectivity serving those locations that can't get reasonable priced access into those sites. But pretty much anything that can get them a good amount of bandwidth is satisfactory until higher bandwidths or better latency can be taken care of by buildout, whether it's wireless or wireline or anything else.

When we take a look at a lot of these applications too I think we've talked about an
MR. PERAERTZ: Excuse me? Tony, are you there?

OPERATOR: Lines are still open.

MR. PERAERTZ: It's now two minutes past 3:00. We would like the listening session to extend for about another 15, 20 minutes if that's okay.

OPERATOR: Certainly, you may proceed.

MR. KOXLIEN: Is that referring to me with a couple more comments regarding speed?

MR. PERAERTZ: No, please go ahead, Tim.

We'd love to hear from you.

MR. KOXLIEN: Well, we have seen speeds increase in the last three years. Our average customer was using an average of 7 meg, it is now up over 300 on our average customer sites. It's more than just the typical healthcare applications that these folks need, they are also using these services for emails, internet access, training, et cetera. So the bandwidth needs going into a specific location are beyond just the healthcare
delivery. It also includes the important business administration needs for that facility as well. So, these increases have continually exponentially grown, and I would say that the number one indicator that's really driving that is the electronic health records systems themselves because these businesses are now being operated in a digital format versus with what it had been in the past.

The next item I think is really important for the Commission to look at and understand, and this probably incorporates interagency work on behalf of the FCC and other agencies, and that is there is a lack of skillset within especially rural America in supporting the IT and medical tools that clinicians would be using in a telemedicine network. These people that are struggling today trying to manage the business of just getting a patient from a waiting room to an exam room are now being called upon to do some higher-skilled types of functions and roles, perform these roles within their work.
There is an important lack of training for not only those that are supporting, maintaining, and keeping these tools working so that the clinicians themselves can perform the medical service using these tools, but also for the clinicians because the work flow of having some of these telemedicine applications within their business is an important difference doing it in an analog environment versus digital. So, we see the skillset piece really becoming a jobs issue and something that I think the Commission should really take a look at, especially on your interagency work on shoring up this digital divide.

I'll leave it at that. Hopefully that addresses in terms of connectivity type fairly ubiquitous need there, speed. And I'm thankful again for the opportunity to talk with you all today.

MR. PERAERTZ: Tim, thank you very much for that data that you were providing, that you've seen needs go from 7 meg all the way up to over 300.
Tony, please announce the next participant. We have about three or four more people in queue. We would like to extend the conference until all speakers have had a chance to present what they would like to tell us. Thank you.

OPERATOR: Thank you very much. The next comment will come from Stephen Berger with TEM Consulting. Please go ahead.

MR. BERGER: Thank you. I just want to add one issue to the mix, and I'm going to open the issue not suggest solutions, but that is the cost and complexity of compliance. That's clearly something the FCC has a great deal of influence on.

Clearly we want healthcare services to be delivered where they have the highest possible reliability which means they can operate on the greatest number of bands and protocols to find one that they can connect on, and we want them to remain technologically current. But if we look at more complex areas of regulatory compliance, and
we might look at the Wi-Fi DFS channels and look at how many devices support only the non-DFS -- that's dynamic frequency selection channels -- where there is not transmit power control, you see quite a disparity that the cost of compliance discourages devices from making use of those additional bands and channels.

So, it's a complex issue but I would suggest we first of all definitely want to see the FCC and the FDA coordinate for example with the newer requirements the FDA is bringing for coexistence reliability analysis. We definitely want to do anything we can to encourage high reliability equipment and part of that would be anything we can come up with creatively to lower the cost of compliance for equipment that supports multiple bands, multiple protocols. We want to improve test repeatability which is materially connected to cost of compliance. And we want to improve international harmonization. If equipment can be tested for regulatory purposes and qualified for multiple markets that's a
significant cost reduction. So, thank you.

MR. PERAERTZ: Thank you very much, Stephen. Really appreciate that and would love to hear more. If you are interested in filing comments with us on that specific point we would really appreciate it.

Tony, would you please announce the next participant?

OPERATOR: Our next comment comes from the line of Rick Schadelbauer with NTCA Rural Broadband. Please go ahead.

MR. SCHADELBAUER: Thank you very much, and thank you for the opportunity to speak today. My name is Rick Schadelbauer, I am the Manager of Economic Research and Analysis for NTCA-The Rural Broadband Association. NTCA is an industry association comprised of approximately 850 rural local exchange carriers, all of whom are defined as rural telephone companies under the Communications Act of 1934. All of our member companies provide a mix of advanced telecommunications and broadband services and many
also provide video or wireless services to the rural communities they serve despite the numerous challenges inherent to serving rural areas.

Many of our member companies are involved in projects with hospitals and healthcare providers to bring the benefits of telehealth to rural America. While there is a tremendous potential for telehealth to benefit rural America it's important to remember that telemedicine is not viable without access to robust and reliable broadband service. Currently rural areas lag somewhat behind non-rural areas in broadband deployment but they continue to make impressive gains due in large part to the efforts of small providers such as our member companies.

I'd like to just spend a couple of moments talking about a recent white paper that we published entitled Anticipating Economic Returns of Rural Telehealth. In this white paper we looked at both the quantifiable and non-quantifiable benefits of telemedicine. Now, among the non-quantifiable benefits we identified were
greater access to specialists, the timeliness of
treatment, increased patient comfort, reduced need
for transportation, benefits to the healthcare
provider, as well as improved overall outcomes.

We looked at five quantifiable benefits
as well and attempted to estimate the cost savings
that would be associated with each of these
benefits. Those benefits included travel expense
savings, money that was not spent having to go to
a distant site to seek treatment. We calculated
that the U.S. average -- now, in the white paper
we did this on a state by state basis, but the
U.S. average for travel expense savings due to
telehealth we estimated at $5,700 per medical
facility per year. Savings in terms of lost
wages, which would be the time that folks would
have to take away from their job to go seek
treatment, we calculated the U.S. average to be
$3,400 per medical facility per year. Savings
accruing to the hospital itself due to the reduced
need to have full-time specialists on staff, their
ability to share specialists with other
facilities, we calculated that to be $20,800 per medical facility per year. Increased local revenues for lab work, so when being treated locally those moneys that would be spent for lab work would stay in the local community as opposed to going to a distant location, we estimated those savings to be between $9,000 and $39,000 per type of procedure per medical facility per year. And finally, increased local pharmacy revenues, again, spending would not be done remotely but in the local community, and we estimated that savings to be between $2,300 and $6,200 per medical facility per year depending on the specific drug prescribed.

So, there are substantial potential benefits to be gained from telehealth, but realizing these benefits will first require overcoming several challenges including reimbursement cost, patient privacy, and licensing.

Now, as I mentioned previously rural telemedicine's ultimate role in addressing the
significant health problems inherent to rural areas will depend in large part on the availability of an underlying future proof fiber-based broadband infrastructure, and further investment in and expansion of that infrastructure is a critical need for our nation. In rural areas particularly ongoing broadband deployment will depend in large part on the availability of critical universal service funding and that that funding be sufficient and predictable.

The three most critical components of the Universal Service Fund program for telehealth are the High Cost Program which allows funding for broadband deployment, the Lifeline Program which allows low income Americans to afford service, and the Rural Health Program which helps healthcare providers afford connectivity.

So, our member companies have begun the task of deploying high quality broadband in rural America and ongoing sufficient universal service support will allow them to continue this important work. Thank you very much for this opportunity.
MR. PERAERTZ: Thanks, Rick. I commend Rick's work on this topic to all the participants on this call.

Tony, would you please announce the next participant.

OPERATOR: That will come from the line of Verné Boerner with the Alaska Native Health Board. Please go ahead.

MS. BOERNER: Hi, there. This is Verné Boerner, President and CEO for the Alaska Native Health Board. I just wanted to say first of all thank you for hosting these forums to allow us to provide the FCC input.

I wanted to state our support for Stewart Ferguson's presentation. I am hoping that he's actually in the queue. I think he's got a few more points that he would like to make regarding connectivity on how 2.0 will empower healthcare delivery and another point on the future not necessarily being evenly distributed. So, I will yield my time in order to make some space for him if he's able to get in the queue and
speak to these issues.

MR. PERAERTZ: Thank you very much, Verné. We appreciate your participation in some many of the fora. Tony, would you announce the next participant?

OPERATOR: It comes from the line of Stewart Ferguson, Alaska Tribal Health. Please go ahead.

DR. FERGUSON: Good morning, and thank you very much again for the opportunity to speak here, and thank you, Verné, for yielding your time there.

I think I would just like to finish with two kind of key points I'd like the Task Force to be cognizant of. The first one as Verné said is really -- I call it connectivity 2.0, whatever we're calling this kind of next gen connectivity. It will empower healthcare delivery 2.0.

The telecommunications program and USAC support has absolutely allowed our telecommunications carriers to really change the way they deliver communications in Alaska and to
build a comprehensive fiber microwave network across our state. What that did is it resulted in 40 percent of our communities making a shift from satellite-based connectivity to terrestrial connectivity in the last seven years. That brought reduced latency, increased bandwidth, and increased reliability.

More importantly, that created the possibility for us for sharing a single unified electronic health record with our rural hospitals. We tend not to put them on a shared EHR when they're satellite-based, the latencies just make it harder for the physicians to do their job. So, now we're doing something that is the ultimate goal I think for most health systems, moving our patients to a single shared electronic health record.

In the last six years we've created a single unified health record that's used by most of our tribal health systems. 66 percent of all the healthcare activity at more than 200 sites throughout Alaska now happens in a single
electronic health record. It's one of the few times that physicians thank us for their electronic health record. Our physicians will point out that, for instance, our children on the shared domain get better, more comprehensive, and more complete care. In physicians' words they say it results in seamless care, fewer mistakes, and less guessing. One physician described it as beyond fabulous.

The next step for us though with this better infrastructure is through the use of population health and big data solutions. We're currently deploying smarter patient registries and beginning to use predictive algorithms for patient care. We're investigating options for an enterprise analytics solution that's smarter and faster than anything we've ever seen because it will have complete patient data from all of our sites, it will run on hyper parallel computing systems in the lower 48, and it reaches all the way back to our most remote locations through this connectivity. So, the bottom line is the new
infrastructure that's being supported now and will'
be supported in the future will absolutely change
the way we deliver healthcare and make it smarter
and better.

The last point I'd like to make, and
Verné pointed out, the future is not evenly
distributed and that's really important to
understand. The present is certainly not evenly
distributed. As you think about building out 5G
capability recognize that some rural villages may
never have that capability. It may not be
technically or financially feasible to bring 5G
into villages with 300 residents with a single
(inaudible) station for satellite link, but
brining 3G into these sites is transformational.

We recently started a pilot program to
take care of some of our most desperately ill
patients that need palliative care in their home
because we finally have 3G abilities in the home.
These patients are desperately ill. It takes more
than an hour to disconnect them from the oxygen
and move them across the village to the clinic for
a healthcare session, and imagine doing that in
the winter. These patients must be seen in their
homes and they only need 3G or better to do this.
But without subsidies or other support
3G connectivity to the home is very expensive in
Alaska and often there are limitations placed on
usage. We have subsidies to support connectivity
at clinics through USAC but it leaves a tremendous
gap for the homes where there is no subsidy or
support. Affordable connectivity into the homes
is usually important. Simply put, the Task Force
must not develop an infrastructure plan that
simply broadens the existing digital divide. 5G
to homes and urban areas cannot be our sole focus
if we forget to deliver affordable 3G or better to
homes in rural and frontier locations. Those are
the places where we need it and we use it the
most.

I know if anything we need reliable high
(inaudible) and affordable connectivity and it
will continue to pave the way for better
healthcare in Alaska and beyond. Thank you very
much for your time.

MR. PERAERTZ: Thank you so much,

Stewart. Thank you, everybody, for your

thoughtful and in many cases passionate

recommendations. We invite you to provide

additional comments into our docket. You can do

so by following the instructions in the last email

we sent. If you have questions you can send them
to Connect2Health@fcc.gov. Thank you. Tony,

would you please close the conference?

OPERATOR: Ladies and gentlemen, that
does conclude today's conference. Thank you for
your participation. You may now disconnect.

(Whereupon, at 3:20 p.m., the

PROCEEDINGS were adjourned.)

* * * * *
CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III
(Signature and Seal on File)
Notary Public in and for the Commonwealth of Virginia
Commission No. 351998
Expires: November 30, 2020