# META ✦ MESH
## Wireless Communities

Testimony of Samantha Garfinkel
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Good morning Chairman Marshall, Chairman Matzie, and members of the House Consumer Affairs Committee.

My name is Samantha Garfinkel and I am the Executive Director of Meta Mesh Wireless Communities, Pennsylvania's first Nonprofit Wireless Internet Service Provider (also called a "WISP"). Much like the other groups represented here today, our organization significantly scaled up capacity in 2020 in order to respond as quickly as possible to glaring digital inequities that were exacerbated by the COVID-19 Pandemic.

Our mission is to leverage existing community resources to bridge the expanding digital divide in Southwest Pennsylvania. We achieve this mission through two somewhat novel approaches: The first is the deployment of affordable 5GHz wireless infrastructure in urban and rural communities, which offers broadband speeds of 50 Mbps download and 25 Mbps upload. A wireless network is similar to the traditional broadband experience in comparable speeds and number of users per location. We utilize 5GHz unlicensed frequencies to keep this resource affordable to our customers, because licensed bands are quite expensive. After carefully designing a network that addresses the specific Internet needs of each community, we co-locate our wireless infrastructure on existing local buildings and structures.

The second novel approach is applying a Social Enterprise business model through Every1online, a Meta Mesh flagship program that allows local institutions (such as local governments, school districts, and other NGOs) to subsidize or sponsor the monthly cost of Internet on the end-user's behalf. This cost, which is $45/month per household, is shouldered by the sponsoring entity because they have a responsibility, either legally, programmatically, or monetarily, to connect their constituency and deliver their respective online services. With the Meta Mesh model, Sponsoring Agencies have a third-party community network solution they can invest in, and Pennsylvanian consumers that need broadband gain access at no cost to them. By 2024, we project we will be serving 6,650 Pennsylvanians in urban and rural areas through our nonprofit WISP.

For rural communities, we know that the lack of access to affordable broadband means the lack of access to key health, employment, education and other quality of life amenities. Historically, serving these constituents was considered too costly by incumbent ISPs. Due to low population density in rural areas, large corporations do not see value in spending high infrastructure costs to extend their networks out to remote locations. While monetary costs will always be top of mind, our organization is in a unique position as a 501c3 to put people and their needs before profit. Driven by our mission, we focus on mitigating the massive *societal cost* of restricting certain populations from accessing the global public square. The estimated opportunity costs to the some 540,000 rural Pennsylvania households is projected to be more than $1 billion a year in lost economic opportunity[1].  Our privilege is to invest our time and resources into enhancing the personal success of each community member through the intervention of no-cost-to-them broadband.

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[1] The National Bureau of Economic Research estimated that broadband connectivity supplies roughly $2,000 a year per household in economic value (see: http://www.nber.org/papers/w21321.pdf).

Wireless technology is often referred to as one of the *last mile solutions*--the goal being to harness the power of fiberoptic, considered the *middle mile,* and transport that directly to people's homes for use. For rural communities, bandwidth needs to be transported across far distances. Wireless is one cost effective way this can be achieved.  While it still relies on fiber as backhaul, it requires far less fiber to reach more people. For example, Meta Mesh has established a wireless link that transports user traffic from our fiber backhaul at the University of Pittsburgh's Cathedral of Learning in Oakland to our service area in New Kensington, nearly 20 miles away. This build will support the connection of 150 households in New Kensington, and will allow us to expand into other surrounding high-need areas in the Alle Kiski Valley.

That being said, there are constraints to the use of unlicensed frequencies, which are weaker than the higher and more costly licensed frequencies. Namely, it relies on local towers or elevated equipment with *clear line of sight* between signal distribution points. Lower frequency signals can be blocked by terrain and foliage, so the network needs to be meticulously designed to the geography of the community served. These limitations require additional infrastructure costs to effectively "relay" the signal to multiple points across the area to maximize the number of homes which can connect. If the FCC were compelled to open up more frequencies for public use, or to lower the cost of some licensed bands, it would enable newer or smaller wireless service providers to enter the playing field, and it would diversify the service options that are available for rural and urban communities.

Infrastructure investments are also often a barrier for nontraditional ISPs like Meta Mesh. For example, the town of New Kensington-Arnold is surrounded by hills and sits in a valley, so we will be co-locating our equipment on a Crown Castle-owned tower at the crest of a hill that has a great view of the town. We're fortunate to be a participant in Crown Castle's WispGO program, which reduces some of the industry costs that are often barriers to entry for small providers. While this network design will offer excellent quality of service to the community, the investment

in this single point tower-based infrastructure requires an installation and equipment cost of $50,000 up front, and a $600 monthly lease cost after installation. The increase of federal funding opportunities that are specific to and accessible by nontraditional ISPs will encourage new ideas to solve the digital divide in a more equitable way.

There is no single solution to the last mile challenge but through collaboration between nonprofits, governments, community anchor institutions and commercial providers, we can reach those underserved and unserved communities. In order for this blended approach to succeed and be replicable for use across the country, we must level the playing field – both from a funding and regulatory perspective. State and federal funding should promote collaborative efforts to resolve these issues. It should seek to broaden the range of last mile options like wireless and should be fair and equitable with regards to access. From a regulatory standpoint, outdated legislation should be reviewed to avoid limiting opportunities for providers to solve the broadband issue, or alternatively streamline the process for faster deployment. Additionally, funding decision-making should include voices from all sectors of the industry, including nonprofits, community anchors and end users. In this way, existing community resources, be they monetary, structural, technical expertise or people networks, can be redirected to bridging the digital divide where possible.

Thanks to the thoughtful support of our Strategic Partners, including the University of Pittsburgh and Carnegie Mellon University, we are engaging in a creative distributed leadership model to collaborate with our community partners and deploy our program Every1online. Together, with added support from our funders at The Pittsburgh Foundation, The Heinz Endowments, and the Richard King Mellon Foundation, we demonstrate that the nonprofit approach to Internet service provision in fact underpins the social infrastructure that actually moves an individual or family from an unconnected state to a connected one.

In summary, I would like this committee to consider three recommendations that could provide immediate benefits to rural communities regarding affordable and reliable Internet connectivity.

1. Compel the FCC to open up higher frequencies for public use and/or lower the cost to use licensed frequencies.

2. Encourage increased presence of nontraditional service providers by designating funding programs as exclusively available to non-Incumbents. Ensure these funding opportunities account for outreach and marketing efforts to build trust and thus a user base.

3. Enhance funding for the wireless equipment and tower presence required to retransmit fiber broadband into rural communities by WISPs.

I hope that my testimony provided you with a greater overview of what Meta Mesh Wireless Communities is working on to provide last mile connectivity for underserved areas of our region. I want to thank the Chairman and the members of the Consumer Affairs Committee for having me here today and I am looking forward to the following discussion.  Thank you.