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Statement of

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Before the

Committee on Commerce, Science, and Transportation

United States Senate

Regarding

"Expanding Broadband Infrastructure in the Granite State"

Field Hearing in Keene, New Hampshire

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Senator Hassan, thank you for this opportunity to come before you and the U.S. Senate Commerce Committee to share my experiences as a technology provider helping businesses in New Hampshire and northern New England obtain quality broadband Internet service to support and grow their businesses.

I am Tom Strickland, President and Co-owner of Sequoya Technologies Group in Peterborough, NH. I have been in the technology industry since 1978 in roles ranging from software development to infrastructure management and consulting. I studied electrical engineering at the University of Oklahoma and received a BS in Computer Science from Franklin Pierce University.

From 2011 to 2015 I also served on the board of New Hampshire FastRoads, which built a fiber optic open network to provide middle-mile and last-mile service in rural areas of western New Hampshire.

Sequoya Technologies Group was formed in 2002 and provides comprehensive technology services to businesses headquartered in northern New England and to their regional offices throughout the country. For the majority of our clients, we manage every aspect of their technology, including on premises infrastructure, helpdesk, and management of 3rd party technology vendors. In this role, we are often directly involved in recommending and procuring broadband services for our clients so we are intimately familiar with the challenges of obtaining these services in rural New Hampshire.

Quality, high-speed broadband has become as essential to business growth today as rivers were in the 18th and 19th centuries and as interstate highways were in the 20th. Some of the largest and most successful businesses in the United States don't sell any physical products. Virtually everything that Google, Netflix, and many others sell is delivered over the Internet. These businesses could be located anywhere that people want to live and work

and where quality broadband is available. And, while it is true that these established businesses have the resources to build high speed Internet virtually anywhere they choose, the next Google or Netflix will only locate where high speed Internet already exists. My own business would not exist without the Internet communications infrastructure that connects my office to each of my clients. Even more traditional businesses that ship physical products depend on the Internet to connect with their customers, their suppliers, and the advanced cloud technologies that can give them a competitive advantage.

Over the last 30 years, the Internet has evolved from a science network used only by geeks to a utility service that businesses depend on. Unfortunately, that rapid evolution of technology has outpaced the regulatory frameworks needed to keep it running efficiently and ensure that all businesses compete on equal footing.

There have been specific instances where the lack of broadband regulation has caused significant problems in obtaining service.

In my role with New Hampshire FastRoads, we frequently encountered sluggish responses to our pole access permit requests when those poles were owned by competing services. Delays were not excessive when the poles were owned by entities like PSNH, who did not offer competing services. Regulations to prevent this type of obstruction would encourage network growth and competition.

Lack of universal service for broadband has resulted in balkanization of the market. For example, one of my employees lives in Rindge, NH, in an area with about 100 homes. This particular area is separated from most of Rindge by a lake so there is no land route from Rindge proper to his area. However, he is ½ mile from the town line with Jaffrey, NH. Rindge has a franchise agreement with Argent Communications. Jaffrey is served by Comcast. My employee won't be served by either of them because Argent can't cross into Jaffrey and Comcast can't cross into Rindge. As a result, he is limited to DSL service at the distance limit of that technology and, at best, gets 1.5Mbps service.

Lack of transparency makes it difficult to determine which carriers can serve a particular location and delays procurement of service. Most carriers consider their network maps to be intellectual property and do not share them. Thus, we must inquire of each carrier and wait for field surveys to be completed. One of our clients is a power plant in the center of Berlin, NH. When the plant came online in 2013 we had to wait several months for an Internet line to be extended to serve them. During that time, the plant was forced to rely on cellular Internet service that was expensive and slow.

The opening of my own new office in 2012 was almost delayed due to lack of Internet service. The carrier that had surveyed our location and assured us of service months in advance, neglected to tell us that the actual delivery of their service would take 6 months rather than the 2 weeks that is typical.

This same lack of transparency impacts the cost of construction when infrastructure must be extended. I've received quotes of over $50,000 to extend consumer-grade cable Internet for ¼ mile along a state highway and offers to build similar extensions at no charge and for comparable services. These quotes were from the same carrier in locations 2 miles apart.

Kimball Physics was started 40 years ago by a group of physicists from MIT in Wilton, NH. They manufacture ultra-high vacuum electron optics that are used on the International Space Station and around the world. When they started the business, Internet service wasn't necessary. Today, it is essential and, as a result, they spent $100,000 to extend fiber optic service to their location. An established business can afford to do that and might choose to do so to stay here and keep the quality of life they value. New businesses will look elsewhere.

Businesses need high quality, low latency connections with service level guarantees and symmetric bandwidth delivery. A consumer connection that provides 25Mbps down and 5Mbps up with 80ms latency and 99% uptime is fine for watching Netflix at home, but it is not sufficient for a business that needs to upload large files or access cloud hosted servers. Mission critical applications and bandwidth-sensitive services like VOIP don't work reliably on consumer-grade Internet service. Unfortunately, most businesses in rural areas have no choice other than a consumer-grade service at business-grade prices. And, while DSL is still considered broadband, our experience is that DSL technology rarely, if ever, delivers the kind of service businesses need today. The lack of business-grade Internet services means that businesses in our region cannot make use of the cloud services their competitors in other areas take for granted.

In the State of New Hampshire, towns are prohibited from bonding to build broadband infrastructure. A community that wishes to solve the broadband problem for itself, cannot reasonably do so. If towns could not issue bonds to build roads or water lines, we would find that unacceptable. The lack of a regulatory framework at the federal level to ensure universal, and equitable, service for everyone combined with state level prohibitions on bonding leaves the people and businesses of New Hampshire at an unfair disadvantage when competing with the rest of the nation.

In conclusion, I encourage the committee to act quickly to establish the regulatory framework needed to encourage the deployment of broadband infrastructure to New Hampshire and to the rest of the United States. Our businesses need these services to flourish and compete with the rest of the world.