Before the
Federal Communications Commission

In the Matter of **December 4, 2009**

Healthcare Delivery Elements of National Broadband Plan	**GN Docket Nos. 09-47. 09-51. 09-137 WC Docket No 02-60**

Comments of:

Pennsylvania Mountains Healthcare Alliance
Sting Communications
University of Pittsburgh Medical Center

Primary Contact:

Dr. AR Watson, MD, MLitt, FACS
Department of Surgery
Vice President, International and Commercial Services Division
Center for Telehealth
University of Pittsburgh Medical Center

Center for Connected Medicine
Medical Director

Phone: 412-647-6764
Email: watsar@upmc.edu

The collaboration of the Pennsylvania Mountains Healthcare Alliance (PMHA), University of Pittsburgh Medical Center (UPMC), and Sting Communications welcomes the opportunity to provide comments regarding the National Broadband Plan Health Care Delivery Elements.

Background

UPMC, PMHA and Sting Communications represent three organizations in Pennsylvania that are developing the largest telehealth network in Pennsylvania to provide telehealth services. Pennsylvania is considered to be one of the most rural and underserved states in the United States, with over 3.4 million people, or 28

percent of the state's 12.4 million residents, living in Pennsylvania's 48 rural counties. Thus the need for telehealth is of paramount importance.

The University of Pittsburgh Medical Center (UPMC) is committed to providing the highest quality health care to the citizens of Pennsylvania. With 50,000 employees and 20 hospitals primarily in Western Pennsylvania, UPMC serves as an anchor institution for healthcare in this region. The Pennsylvania Mountains Healthcare Alliance (PMHA) is composed of 18 hospitals located across Pennsylvania whose goal is to provide patient centered community base care at the local level, while maintaining their status as independent community hospitals. The PMHA and UPMC have engaged in recent discussions about collaborative efforts, brokered with the help of Sting Communications, a Pennsylvania-based broadband provider..

Health care reform is driving the extreme pressure to improve cost, quality and access to care requiring innovative and fundamental changes to the way health care is practiced and delivered. Traditional models of healthcare are being challenged and a new horizon is now visible. This new pathway will include game changers such as telemedicine, regional and national health information exchanges (HIE's), interoperability platforms, and virtual patient care through avenues such as remote monitoring. These technologies and tools must be pursued and applied in a scalable, collaborative manner, establishing successful regional models of progressive healthcare delivery.

Collaborative Telehealth Model

A partnership was formed in the summer of 2009 between PMHA, UPMC and multiple vendors for healthcare IT, including Sting Communications, IBM, Alcatel-Lucent and Polycom. This group assembled 86 hospitals and clinics in western PA interested in delivering healthcare to the citizens of rural PA with BTOP funding. The clinical portion of this partnership includes Federally Qualified Health Center's (FQHC's), critical access hospitals, rural hospitals, and a large tertiary center – one of the first such collaborations in the country. This proposal is in direct alignment with the needs of health care reform, creating a blue print for a sustainable telemedicine model, supporting the concept of a medical home, positively impacting cost, quality, and access to care, and is supporting the sustainability of critical rural healthcare providers and the economic viability of their communities.

Specific Comments

1. IT Infrastructure to Support Healthcare Delivery

With the guidance of Sting Communications, and its middle-mile connectivity broadband infrastructure, we agree with the need to determine a map for Internet connectivity and broadband backbones for rural states (using rural Pennsylvania as a paradigm) so that telehealth services can be delivered to key anchor locations:

hospitals (both rural and tertiary), community health clinics (such as Federally Qualified Healthcare Clinics), and homes. These locations represent the key "gatekeeper" or intake locations for this generation of telehealth services. Building on the backbone and expansion to all aspects of a society / community would include employer-based telehealth care, retail-based telehealth, and fully mobile telehealth applications. To pursue the latter, the former must be clearly and effective developed on an open-standards, large-bandwidth, highly redundant and reliable network connected to both urban and rural "anchor" institutions.

Overall for hospitals, health clinics, and rural hospitals:

i. At a minimum this network must deploy 100Mbs full-duplex MPLS network with quality of service control. For urban "anchor" institutions, a minimum 1Gbps network should be deployed to support the wide range of telehealth services including store-and-forward and real-time telehealth.

ii. Internet connectivity in rural settings would be a minimum of 100Mbps. Population density and telehealth demands, based on healthcare provider shortage areas (HPSA) would also factor into rural broadband density requirements.

iii. Sting Communications can provide a network map for its broadband service that encompasses the majority of Pennsylvania (on demand, please see the contact above). The majority of the PMHA network is fiber-optic based transport, supported by the FCC Rural Healthcare Pilot Program, with the ability to easily scale from 100Mbps connections to 1Gbps.

iv. The criteria for delivery settings should assume at a minimum 512kbs transmission for real-time video and sufficient broadband overhead for transmission of large store-and-forward files such as echocardiograms and CT scans. Latency can be determined based on packet-dispersion and quality of service. The PMHA network, for example, is assured a maximum average latency of 65ms. Network availability is guaranteed at 99.99% uptime. Expectations are that additional improvements to network reliability will demand network uptimes of 99.99999% given the mission critical nature of Telemedicine. Further investments in network access, diverse paths in and out of healthcare locations and highly redundant network facilities will be required to support this level of network service availability. Peak demand is difficult to determine until a full quantitative population based assessment of telehealth needs can be determined based on population density and HPSA.

For home needs:

i. The Internet connectivity speed for individuals in both rural and underserved areas should be at a minimum 384kbs, with latency of 500msec or less. Expanding broadband beyond this bit-rate would

enable real-time telehealth services to the home and increase real-time transmission of critical vital parameters to a central monitoring facility. The next generation of telehealth may include home-based devices such as ultrasound (where a patient wears a special vest with indicators to guide probe placement) and potentially real-time diagnostic home-based devices such a portable stethoscopes. These devices, either on their own or aggregated, may require greater broadband speeds to the home.

ii. Wireless connectivity should mimic or at least match the minimum criteria for hard-wired connectivity. With the potential for Long-Term Evolution speeds from Alcatel-Lucent offering fiber-optic speed with low latency to cell phones, the wireless base for telehealth will depend upon reception / cell-tower placement only in the near future. Other technologies and wireless providers will match or surpass these speeds in the relatively near future.

2 . Connectivity Requirements to Support Health IT Applications

In addressing the IT applications listed in 2. a-e, the following specific comments apply:

vi. Network requirements for both patients and doctors are difficult to accurately determine at this point in time. Without a full needs-assessment of the predicted population usage, services required, and potential devices that would be utilized to provide telehealth services, such quantification is challenging if not impossible. This pertains to mobile telehealth in particular where the full spectrum of technology adoption cannot yet be predicted.

xii. The federal government should seek to leverage existing commercial and private networks for healthcare delivery .Continued expansion of the FCC RHCPP, modeled after the USAC SLD eRate program, will encourage broadband providers to deploy competitive alternatives to support healthcare applications.

4 . Health IT Use Drivers and Barriers

a. The primary barrier to taking advantage of available Internet connectivity across delivery settings is a lack of government funded customer-premises endpoints. These clinical endpoints in the end-user setting such a clinic, hospital, and home are critical to establish ROIs for telehealth. The absence of government funded programs to support development an adoption of telehealth endpoints limits usage of broadband and may negatively affect sustainability of existing grant programs.

b. The disincentive to invest in broadband services for telemedicine is a lack of well-developed ROI analyses. As a result, hospitals, communities, patients, and clinics alike are reluctant to incur capital endpoint costs. Government funded programs to identify key telehealth programs that deliver quality care, are cost-effective and sustainable could have a downstream effect of higher broadband utilization.
c. ii: The primary driver is real-time telehealth specialty clinics and telehealth specialist consultations. Behind this are patients who don't want to or can't travel for care, demand for specialists in rural settings, and distances between providers and patients. The primary barrier is a lack of funding for customer-premises endpoints by parties that have an advantageous financial stake in telehealth adoption (mainly commercial and government healthcare payers and local / state governments). iii: remote patient monitoring will be driven by outcomes especially for chronic disease applications. Current barriers for this technology are a lack of standards for the multitude of devices to interact, standards for communication to a transmission portal (if necessary), and central computer-based algorithms to parse large volumes of data into meaningful EMR based alerts / information for providers.

6. Universal Service Rural Health Care Support Mechanism and Rural Health Care Pilot Program

a. Questions Relating to the Rural Health Care Support Mechanism

ii: The rapidly developing field of telemedicine is primarily being driven by healthcare systems, both academic and community-based. These organizations have the capacity to generate meaningful ROIs for telehealth that will depend on connectivity. The current pilot program funds broadband and not customer premises endpoints, the critical clinical endpoints necessary to practice telehealth. These healthcare providers do not have domain knowledge nor core competency in infrastructure / broadband wiring. As a result, the pilot program is funding broadband without the ability for the key drivers (healthcare systems / hospitals) to afford and deploy clinical end-points. With a change in FCC policy to include clinical endpoints, utilization and successful telehealth implementation would be significantly increased.

iii: An effective way for the Commission to better leverage the benefits of rural health care support is to approach collaborations of healthcare providers and technology companies. There should be discussions, publications, "town-hall" type meetings, and symposiums for experts, end-users, and vendors to openly explore barriers and incentives for telehealth adoption. Two such examples exist in Pennsylvania alone. First is the Center for Connected Medicine in Pittsburgh, a joint-venture between Alcatel-Lucent, IBM, Cerner, UPMC, Google, Blackberry, Turner Construction,

Johnson Controls, Polycom, dBMotion, and IKA systems. A second such forum to host a discussion, debate, or symposium would be the collaboration between the Pennsylvania Mountains Healthcare Alliance, Sting Communications, and the University of Pittsburgh Medical Center as described above.

iv: Please see 6.a.ii. Inclusion of customer-premises endpoints or clinical endpoints would have a significant positive benefit on telehealth adoption, deployment, and utilization. This process would help to generate the first generation of telehealth ROIs that will drive large scale development and deployment.

v: The Commission should consider options for providing discounts on connectivity for Urban healthcare providers that support rural healthcare initiatives. Broadband connectivity from the Urban "tertiary", medical research oriented facility to deliver Telemedicine services to the rural community healthcare providers would be enhanced with funding support for these types of connections.

vii: Please see 6.a.ii and 6.a.iv.

b. Questions Relating to the Pilot Program

ii: (same as 6.a.ii): The rapidly developing field of telemedicine is primarily being driven by healthcare systems, both academic and community-based. These organizations have the capacity to generate meaningful ROIs for telehealth that will depend on connectivity. The current pilot program funds broadband, and not customer premises endpoints, the critical clinical endpoints necessary to practice telehealth. These healthcare providers do not have domain knowledge nor core competency in infrastructure / broadband wiring. As a result, the pilot program is funding broadband without the ability for the key drivers (healthcare systems / hospitals) to afford and deploy clinical end-points. With a change in FCC policy to include clinical endpoints, utilization and successful telehealth implementation would be significantly increased.

iii: (same as 6.a.iii): An effective way for the Commission to better leverage the benefits of rural health care support is to approach collaborations of healthcare providers and technology companies. There should be discussions, publications, "town-hall" type meetings, and symposiums for experts, end-users, and vendors to openly explore barriers and incentives for telehealth adoption. Two such examples exist in Pennsylvania alone. First is the Center for Connected Medicine in Pittsburgh, a joint-venture between Alcatel-Lucent, IBM, Cerner, UPMC, Google, Blackberry, Turner Construction, Johnson Controls, Polycom, dBMotion, and IKA systems. A second such forum to host a discussion, debate, or symposium would be the collaboration

between the Pennsylvania Mountains Healthcare Alliance, Sting Communications, and the University of Pittsburgh Medical Center as described above.

iv: Key metrics for success are broadband utilization, number of telehealth encounters, number of patients accessing telehealth, number of real-time vs. store-and-forward vs. remote telehealth encounters, time of day for telehealth encounters, number of employer or school based telehealth encounters, predicted travel time saved per telehealth encounter, patient satisfaction, quantitative change in compliance with medical follow-up, decrease in local emergency-department admissions, readmission rate and reduction in ED visits for patients with chronic-diseases or recent complicated discharges, cost of travel time saved, provider satisfaction, overall population healthcare statistics (such as HgB A1C levels for diabetics). In addition, the networks deployed through the RHCPP provide an opportunity to deliver cost savings on IT infrastructure, such as shared applications, disaster recovery and backup services, VoIP, etc., that should be evaluated.

v. The Pilot Program should be extended beyond its scheduled end date of June 30,2010. Selection criteria should be based on collaboration between local, regional, or state-based provider networks. Isolated or private networks should not be included for funding. Collaboration within or between states should be encouraged based on existing or developing networks. Networks should include a wide array of hospitals, clinics, and home-based telehealth services.