USAC Healthcare Connect Fund

<u>Illinois Rural HealthNet</u>

Network Plan
July 19, 2016

<u>A. Goals and Objectives of the Network</u>

The ultimate goal of the Illinois Rural HealthNet (IRHN) is to work cooperatively to provide the best medical and health care as can be made available to all of our residents and visitors in Illinois, even when they are located in rural areas that may be some distance from major urban hospitals.

If we can't always transport the patient to each health care facility, we can work to transport the benefits of each health care facility to the patient. The Illinois Rural HealthNet is dedicated to that purpose, through the use of advanced broadband services.

The objectives of the Illinois Rural HealthNet Consortium include the following:

- To aggregate the specific needs of rural health care providers in the State of Illinois in order to develop a cost-effective way to procure and deliver advanced telecommunications services and information to these entities.

- To utilize existing networks and technologies to leverage the value that has already been created.

- To develop and implement a cost-efficient broadband network that links rural health care providers to:
    - advanced telecommunications services and information;
    - rural and urban sources of tele-health and tele-medicine expertise;
    - Internet2.

- To improve the quality of health and medical care that can be made available in rural portions of Illinois.

Among the types of entities that can be included are:

- Public and non-profit hospitals, health care clinics, mental health facilities;

- Public and non-profit medical and nursing schools;

- Public and non-profit educational institutions with healthcare disciplines;

- Public and non-profit research and education networks with healthcare disciplines.

The Illinois Rural HealthNet has been created and will be expanded by utilizing a costs-effective mix of fiber and wireless equipment and services, along with copper-based services where necessary.

In order to provide the levels of broadband that are required for medical applications, the kinds of services that are routinely available in rural areas are not sufficient. Typically, rural areas may have access to T1 circuits (1.5 Mbps), but generally there are no services faster than T1 available. In order to satisfactorily transmit and receive medical imaging, and to really boost the quality of medical care that can be provided, speeds in a different order of magnitude are required.

The IRHN is focusing on fiber-based backbone services, some fiber laterals where cost effective, and point-to-point wireless/wireline connectivity for locations where fiber is not feasible or cost effective. At this point the IRHN has brought into service over 2000 miles of fiber-based services, including a fiber backbone that extends from Rockford on the north, Greenville on the south, St. Louis on the southwest, Danville and Paris on the east, and the Mississippi river on the west. The Healthcare Connect Fund (HCF) Requests for Proposals (RFPs) will focus on finding last mile(s) connectivity throughout Illinois for those Health Care Providers (HCPs) that demonstrate interest in being connected.

As per our original application for funding from the Federal Communication Commission's (FCC) Rural Health Care Pilot Program, we are providing 1Gbps service to locations connected via fiber, and 100Mgbs service for other locations, all speeds symmetrical. We may be offering a lower-speed and lower-priced connection, 50Mbps, for a number of locations where finances were a particular concern.

Goals of Telemedicine:

Telemedicine is now regarded as a subset of telehealth. Telemedicine usually implies the use of telecommunications technologies together with information technology to deliver clinical care at a distance. This has also been termed *in absentia care* and is now highly relevant to implementing modern healthcare. Telehealth is the total capability of providing all possible variations of healthcare-related services using telecommunications. Telemedicine focuses on the curative dimensions of healthcare. Telehealth focuses on the wider dimensions which include prevention, promotion of healthcare lifestyles, and the usage of curative approaches to illnesses. These approaches can include naturopathic medicine, surgery, drug protocols and psychological healing plus a wide variety of research procedures for particularly difficult illnesses and injuries. The term telehealth can also be taken to refer to clinical and non-clinical services such as the education of medical professionals.

Telehealth procedures are ideally appropriate for healthcare improvements to, and the modernizing of, the curative aspects of the treatment facilities for isolated communities in the suburban or rural living areas. They are equally appropriate for the isolated communities found in the urban areas such as the "ghetto" communities based on race and lack-of-money. Into these categories, the aged, the handicapped, the mentally-limited, and the single-parent families with minimal income can be placed. Telemedicine offers a means of offering uniform quality of care to all of these groups at a minimal increase in cost for the state.

Two fundamental forms of telemedicine exist. The first is real-time, or synchronous activities, which require the immediate interaction between the patient and the medical professionals. The second takes its name from the telecommunications industry of 75 to 100 years ago. This activity is called store-and-forward or asynchronous operation. Synchronous activities permit real-time interactions to take place over a communications link between patient and his or her medical team.

The Integrated Services Digital Network (ISDN) was originally used to establish video conferencing for this type of activity in the early 1990's. IP networking now permits video medical conferencing over great distances. The high bandwidth characteristics of Internet-2 now offer revolutionary real-time medical activities. These include, but are not limited to, real-time 3 dimensional x-rays of the beating human heart, the flow of blood through specific organs of the human body, the actions of muscles as they engage in a specific sports activity such as golf, tennis, boxing and tumbling. All of these processes can be

viewed in real-time by a team of medical professionals located at a remote distance from the patient under-going examination.

The technologies used for telehealth and telemedicine cover all of the following applications:

i. Groups of physicians or individuals exchanging information about healthcare services covering both clinical and educational situations.

ii. The transmission of medical images remotely for diagnosis. This includes dental imagery for oral and/or dental diagnosis of what procedures to follow for a critical condition determined to exist in a person's mouth.

iii. The monitoring of individual's health remotely over a period of time to determine the progress of an illness or the efficacy of a healing protocol.

iv. The coordination of an individual's prescriptions from several different medical professionals. This would minimize or eliminate interactions between two or more drugs which have been prescribed for the same individual.

v. The general management of the state of an individual's, or a group's, health needs in real-time to ascertain what the general health of an organization is.

vi. The creation and maintenance of a continuing medical educational environment using both synchronous and asynchronous technologies. This area includes both assisting in grand rounds, and educating patients in terms of their health and the medical procedures that they may be subjected to.

B. Strategy for Aggregating the Specific Needs of HCPs (including providers that serve rural areas) within a State or Region

The Illinois Rural HealthNet Consortium (IRHN) has and will continue to coordinate the varied offerings of its separate members, and will also promote opportunities to create new vehicles for sharing telemedicine and telehealth applications via the broadband network. Following are some examples of approaches that have been and will continue to be used:

- The IRHN will help coordinate the telemedicine and telehealth services, such that the applications offered by one of our members will be available to all members. This will expand the reach of these programs.

- The IRHN will develop new marketing techniques to inform healthcare institutions and the public of the services and applications that are being made available. Specific needs to be addressed will include transmission of radiologic imaging, stroke diagnosis, data for Health Information Exchanges, and data for HCP management and billing.

- The IRHN will contact healthcare entities within Illinois that are not in the Consortium, to inquire as to whether they are interested in participating.

- The IRHN will coordinate the efforts of our members to explore the offering of new and expanded services and applications.

- The IRHN will communicate with other states and international sources, to find new applications that may be worthy of replication.

C. Strategy for leveraging existing technology to adopt the most efficient and cost effective means of connecting those providers;

The main backbone network has been composed of a twenty gigabit per second fiber optic system running through key areas of the state with lateral connections to nearby hospitals running at one gigabit per second. The fiber optic system will be created using the resources from several sources of infrastructure including:

1. State owned fiber, such as the run from Bolingbrook (near Chicago) to Collinsville (near St. Louis)

2. Long term IRU for fiber, such as the fiber run from Collinsville to Kankakee.

Those fiber optic resources obtained through the use of an IRU, Indefeasible Right to Use, effectively become the property of the IRHN Consortium for a sustained period.

Over time more communities are installing fiber optic infrastructure. As fiber optic resources become available in the local loop the radio systems will be redeployed to bring services to an ever increasing number of participants. The existing fiber optic network has the capability to be expanded. As future resource become available, the proposed fiber optic system can be extended to create a region healthcare network.

All network elements that need to be purchased or leased will be publicly advertised for bid.

Please see attached IRHN Technical Design Narrative.

D. How the broadband services will be used to improve or provide health care delivery;

All of the HCPs will be using the IRHN to reduce the time and cost of transmitting radiological data, much of which is either CT Scans, digital mammography, or tele-stroke data. Most of the HCPs are also using the increased bandwidth for training and education of hospital personnel.

For example, Kirby Hospital is using the IRHN to connect to radiologists, for reading imaging data files. The HSHS hospitals, ten locations in Illinois, will be using the IRHN to connect at high speed from their large hospitals to their small rural locations, to allow the smaller hospitals to use the sophisticated applications available in their large hospitals.

E. Any Previous Experience in developing and managing health IT (including telemedicine) programs;

The following have experience in developing and managing health and HIT programs:

Dave Lunemann of Fiberutilities Group has over ten years of experience in planning, implementing, and managing health-related broadband networks, and worked with USAC-funded rural healthcare networks in Iowa and Nebraska.

Doug Power formerly of Northern Illinois University and currently a preferred vendor with Fiberutilities Group, was instrumental in the planning, implementation, and management of the IRHN, beginning with its creation under the Rural Health Care Pilot Program, and continuing with the Healthcare Connect Fund.

The Carle Foundation Telemedicine program is run through the Regional Outreach Services Department and is focused on providing access to specialty care for patients located in rural Illinois through the use of telemedicine technology. The program began in the early 1990's when an OAT grant paid for the purchase of telemedicine/videoconference equipment to be placed in small rural hospitals.

The goal of the Carle Telemedicine program is to partner with Critical Access Hospitals and Rural Health Clinics to offer access to sub-specialty care that is not available in the local community through telemedicine. In order for a physician to offer reimbursable telemedicine services in any hospital, the physician must be credentialed in that facility. Currently, the Telemedicine program at Carle is working with just 2 facilities, both of which are Critical Access Hospitals. We are conducting an average of 8 telemedicine visits per month. There is much more capacity for offering scheduled telemedicine physician appointments.

The Mission of ICAHN is to strengthen Illinois Critical Access Hospitals through collaboration. The Illinois Critical Access Hospital Network is a 501(c)(3) not-for-profit corporation established in 2003 to share resources, provide education and promote operational efficiencies for member critical access hospitals. ICAHN was created to enhance health care services for the rural communities of the member hospitals. The homepage for ICAHN [http://www.icahn.org/] is particularly helpful in understanding the goals established for ICAHN and how the consortium has progressed since fall 2003. ICAHN is not a formal member of the IRHN, but many ICAHN-member hospitals are included in the IRHN, and the Executive Director of ICAHN is a member of the IRHN Board of Directors.

The category of *critical access hospitals* (CAH) was created by MEDICARE as a means of formalizing reimbursement for medical procedures and healthcare given at a rural hospital or in a medically underserved area (MUA). It is a mechanism that allows an organization, once it becomes a CAH, to access MEDICARE funds in a straight-forward manner.

ICAHN allows its member organizations to collaborate in various areas. These areas are a form of telemedicine and include:

- Regulatory preparation for medical facilities funded by the federal or state governments,

- The coordination of grant applications between two or more members, particularly applications to the federal government for monies to improve rural or MUA healthcare,

- The assistance with hospital operations that address quality improvement of healthcare and human resources coordination between member organizations,

- Managed Care Consulting,

- The institution of Educational programs to the member community from a wide variety of areas. This has the classical form of telemedicine and telehealth. The patients or caregivers may be in rural areas or MUA's.

- Network-wide videoconferencing which allows unusual medical cases to be studied by healthcare professionals at remote sites. This makes use of the educational aspects of telemedicine and telehealth but directs the information flow to caregivers in rural areas and MUA's, as well as specialists in distinguished urban hospitals.

- The operation of User Groups and List Serves for the member organizations.

- The production of a newsletter four times a year which updates the member organizations on the latest developments in quality healthcare. This newsletter can be regularly accessed via the Illinois Critical Access Hospital Network (ICAHN) web site. It is also emailed out to all member organizations.

All of these activities represent various dimensions of telemedicine and telehealth that are now being provided by ICAHN to caregivers and healthcare professionals located in rural or MUA environments of the state of Illinois.

F. A Project Management Plan outlining the project's leadership and management structure, and a work plan, schedule, and budget

The Project Coordinator of the IRHN is Laura Zaremba, who has long experience in public health administration in the State of Illinois.

The purpose of the Consortium is to work cooperatively with entities within the State of Illinois to facilitate and assist in the implementation of high-speed data transmission facilities for the provision of advanced telecommunications and information services to public and non-profit health care providers. Among the types of entities that are and will continue to be included are:

- Hospitals
- Rural health care clinics
- Community Mental Health Clinics

The activities of the IRHN Consortium have included, and will continue to include, the following:

Work Plan:

The IRHN has already been implemented, for the most part. It was constructed between 2011 and the present. The backbone consists of a 20Gbps ring, with HCPs connected via laterals.

The remaining steps are as follows:

1. The IRHN has used and will continue to use multiple RFPs for various purposes, for example, HCF RFP 01 was for ISP Services, RFP 04 was for New Locations.

2. The IRHN currently has 60 HCP locations. The IRHN envisions growth to as many locations as prove interested in becoming members.

3. As new HCPs express interest, the IRHN will continue to carry out the FCC-outlined procedures for the Healthcare Connect Fund (HCF). The IRHN backbone is sufficient for additional growth. At such time as capacity issues begin to loom in the future, the IRHN will increase switching capacity at relevant network Points of Presence (POPs).

4. The IRHN envisions the continual requesting HCF funding to acquire new members and support eligible operations and understands that the IRHN must provide 35% matching funds from eligible sources.

5. The work plan and schedule for new locations that result from RFP 06 and future RFPs will depend on the HCP preference and the vendors' availability.

6. Schedule: The connection of new members to the IRHN is expected to occur as follows:

     a. IRHN anticipates developing and executing new contracts or amendments, as may be appropriate, from the results of RFP 06 and RFP 07, by November, 2016.

     b. Development and execution of new or revised Master Service Agreements with HCPs, beginning in September, 2016 and ongoing through November, for the locations specified in RFP 06.

     c. Development of a replacement schedule for network equipment, as needed, beginning in October, 2016.

     d. Connection of new IRHN member locations beginning in October, 2016, and continuing through December, 2016, and into the following year, if weather or other circumstances dictate.

The Illinois Rural HealthNet (IRHN) Consortium has been created as a Not-for-Profit entity to work cooperatively with public and non-profit health care providers, with governmental and educational agencies, and with the public and private sectors to identify items such as described in paragraphs in the previous Section. The Consortium has been created as a 501(c)(3) organization to carry out the functions outlined for the Consortium.

The functions to be carried out by the Consortium include the following:

a. Create and administer the Illinois Rural HealthNet (IRHN), including the management structure.

b. Coordinate the aggregation aspects of the IRHN, in terms of effective organization and management of the initially aggregated health care entities.

c. Continue the outreach to add new health care entities and to solidify the sustainability of the IRHN.

d. Coordinate the technical aspects of the IRHN.

e. Manage the financial aspects of the IRHN, which includes the following:

- Cost effective use of existing technical resources.

- Prudent use of available funding, both from outside and from within the IRHN. This includes managing the re-allocation of funds expended by entities to procure telecommunications services, to allow for targeting spending by the IRHN that maximizes economies of scale.

- Continued efforts to seek new sources of funding, to expand the positive impact of the IRHN over time.

- Management of budget and cost-reimbursement cycles and structures.

- Management of the inclusion of for-profit entities, to expand the impact of the IRHN while also assuring that for-profit participants pay their fair share of network costs.

f. Incorporate the existing expertise and experience within Illinois in developing and managing telemedicine and tele-health programs, and also incorporate the lessons-learned from other states' and regions' efforts.

g. Develop and administer the work plan for implementing, maintaining, growing, and providing financial stability for the IRHN.

Budget Detail:

The IRHN 35% match will be provided by eligible HCPs that are joining the network, and by the IRHN's operating budget.

Budget Estimate Summary - 2016 – 2018

	2016	2017	2018
IRHN HCP Revenue $	940,484	946,934	975,734
Operational Expense $ (no HCF subsidy)	806,840	806,840	806,840
Net HCF subsidized expense $ (35%)	147,095	186,671	127,461
Net Revenue $	(13,451)	(46,577)	41,433

BUDGET HISTORY FROM IRHN in PILOT PROGRAM:

FY	HCP	FRN	Vendor/RFP/Sub						USAC FRNs Pilot Inv Paid 5-5-2016
2009	17223	41595	NIU/1						$1,737,832.52
2009	17223	47942	NIUNet/2						$2,471,457.47
2009	17223	48758	Windst/Paet/2						$835,652.71
2009	17223	49471	TriLightNet/2						$1,448,258.90
2009	17223	50487	Windstream/3						$46,155.00
2009	17223	50713	CMS ICN/2						$1,275,000.00
2009	17223	53797	Ciena switches/5						$1,902,103.60
2009	17223	53798	Ciena 3916s/5						$26,481.00
2009	17223	53799	Mediacom/4						$799,637.50
2009	17223	54658	G4S Adesta/4						$578,406.53
2009	17223	56008	Windst/Paet/2						$327,432.78

2009	17223	56009	INOC/7					$652,903.76
2009	17223	56666	Windstrm/8					$583,333.77
2009	17223	56667	Maplenet/4					$188,476.44
2009	17223	56668	Maplenet/8					$0.00
2009	17223	57309	G4S/8					$179,291.35
2009	17223	57878	IMBCA/2					$375,359.67
2009	17223	57879	IMBCA/8					$214,625.00
2009	17223	58986	Windstrem/2					$247,975.76
2009	17223	59777	NIU Amend 1/1					$686,481.48
2009	17223	62185	G4S/8					$328,326.65
2009	17223	62646	G4S/8					$22,804.01
2009	17223	62647	NewWave/11					$274,550.00
2009	17223	62648	NewWave/10					$459,000.00
2009	17223	63144	G4S/4					$127,032.50
2009	17223	63843	Windstrem/2					$187,860.95
2009	17223	64246	Windstrem/8					$101,513.40
2009	17223	64519	G4S/4					$50,499.85
2009	17223	64520	G4S/11					$72,510.71
2009	17223	64716	Windstrem/10					$336,908.55
2009	17223	65257	G4S/10					$687,039.41
2009	17223	65264	Mediacom/10					$663,000.00
2009	17223	66574	CMS ICN/11					$1,363,429.97
2009	17223	66575	iFiber/11					$362,394.10
2009	17223	66576	TriLightNet/11					$0.00
2009	17223	68909	Maplenet/4					$45,357.56
2009	17223	68910	G4S/4					$24,522.50
2009	17223	68916	NewWave/10					$153,000.00
2009	17223	68917	G4S/11					$80,325.00
2009	17223	68919	Windst/Paet/2					$1,003,710.92
			Total					$20,920,651.32