Illinois Rural HealthNet

Northern Illinois University Janet Wattles Illinois Critical Access Hospital Network (ICAHN) Ben Gordon Center
Tri-Rivers Health Network Sinnissippi Center Metropolitan Research and Education Network (MREN)
Delnor Community Hospital Illinois State University (ISU) University of Illinois College of Medicine
Southern Illinois University School of Medicine-Telehealth Networks and Programs The Carle Foundation

Compliance Checklist

Illinois Rural HealthNet
Compliance Checklist

Program Reference	Requirement	Response Reference
Notices 3/9/07	Respond with a proposal by 7 May 2007 per the specified delivery procedures	comply
FAQ	Support connectivity to Internet 2 or National Lambda Rail	15
FAQ	Support connectivity to the Public Internet	15
FAQ	Identify the organization that will be legally & financially responsible	14
FAQ	Identify the goals and objectives of the proposed network	14
FAQ	Estimate the networks total costs for each year	30
FAQ	Describe how for-profit participants will pay their fair share	30
FAQ	Describe the anticipated revenue stream for the organization	31
FAQ	Identify source of financial support for expenses not funded (15%)	31
FAQ	List of participating healthcare facilities	Attach 6
FAQ	Provide address, zip code, RUCA & phone number for each healthcare organization	Attach 7
FAQ	Discuss previous experience in developing telemedicine programs	17
FAQ	Discuss previous experience in managing telemedicine programs	17
FAQ	Provide a project plan with work plan and budget	30, 34
FAQ	Identify the project's leadership and management structure	36
FAQ	Indicate how telemedicine plans will be coordinated throughout the region or state	25
FAQ	Indicate how the network will be self-sustaining once established.	31
FAQ	Reference FCC WC Docket No. 02-60	Comply
FAQ	File either electronically or by hardcopy	hardcopy
FAQ	Paper Filing: original plus four copies	comply

Compliance Checklist

FAQ	Address filing properly to address below sent to arrive before the deadline	Comply
FAQ	Send three courtesy copies at address below to arrive before the deadline	Comply
FAQ	Objective: Meet the four objectives statements shown below:	Comply
FAQ	1 Identify cost: Initial Network Design Studies	28
FAQ	2 Identify cost: Transmission Facilities	28, 29
FAQ	3 Identify cost: Recurring and non-recurring cost of telecom and Info services	30
FAQ	4 Identify cost: Internet 2 or NLR connection	54
FAQ	Must identify public & non-profit health care provider for the rural area	Attach 6
FAQ	Note: May identify & include for-profit providers if they pay for their link to the system	Comply
FAQ	Note: Weight will be given to predominately rural health care proposals	Comply
FAQ	Meet requirements of FCC USAC to complete form 465 if selected	Comply

NORTHERN ILLINOIS
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April 27, 2007

Federal Communications Commission
Rural Health Care Pilot Program
WC Docket No. 02-60

Dear Commissioners:

Thank you for the opportunity to submit this proposal to the Rural Health Care Pilot Program. Northern Illinois University has a long history of involvement with, and advocacy for, the rural populations of Illinois. Because of this history, we have taken a lead role in reaching out to health care and educational institutions to bring them together for the purpose of creating the Illinois Rural HealthNet Consortium.

As you will see in our proposal, the Consortium includes statewide hospital and health care organizations, in coordination with major universities, medical and nursing schools, mental health clinics, and the State of Illinois itself. We have also included non-profit broadband networks, as a source of both fiber backbone and technical expertise.

Included in our proposal are the details of how the Illinois Rural HealthNet would be built and how the non-profit Consortium would manage the build-out process. While we at NIU organized the submission of this proposal on behalf of all the institutions listed within, it is the Consortium as a whole that is seeking FCC funding for the Rural Health Care Pilot Program.

If you have questions related to the proposal, please funnel them through Alan Kraus at 815-753-8945.

Thank you again for this opportunity, on behalf of the health care agencies and residents of rural Illinois.

Sincerely,

Anne C. Kaplan
Vice President
Administration and University Outreach

State of Illinois
OFFICE OF THE LIEUTENANT GOVERNOR
SPRINGFIELD, ILLINOIS 62706

PAT QUINN
LIEUTENANT GOVERNOR

5/1/2007

Federal Communications Commission
Rural Health Care Pilot Program
WC Docket No. 02-60

Dear Commissioners:

As Chairman of The Governor's Rural Affairs Council, and Chairman of Illinois's Broadband Deployment Council, I am writing in support of the application by the Illinois Rural HealthNet Consortium for the FCC Rural Health Care Pilot grant. Improving and expanding access to high-speed networks is crucial to the development of new treatments for citizens in sparsely populated areas of our state.

Every person in the Land of Lincoln deserves access to first-class health care and this program will greatly improve the medical landscape in Illinois. I look forward to the day when families across our state can enjoy 21st century solutions to all of their medical challenges.

I urge you to give our state's application your most serious consideration. It exemplifies the very best in public-private partnerships our country has to offer -- all in the name of improving care for those who need it most. I am happy to support the Illinois Rural HealthNet Consortium and eagerly await your decision on the Rural Health Care Pilot grants.

Sincerely,

Pat Quinn

Pat Quinn
Lieutenant Governor of Illinois

Table of Contents

Executive Summary

OVERVIEW

The Illinois Rural HealthNet Consortium is pleased to submit this proposal to the Federal Communications Commission for the Rural Health Care Pilot Program. The FCC docket number is WC Docket No. 02-60.

We have gathered outstanding institutions within Illinois to become participants in the Consortium. While we are continuing to seek new entities that may be interested in joining, we are proud to list the following participants at this time:

- Northern Illinois University
- Illinois Critical Access Hospital Network (ICAHN)
- Tri-Rivers Health Network
- Metropolitan Research and Education Network (MREN)
- Illinois State University (ISU)
- Janet Wattles
- Ben Gordon Center
- Sinnissippi Center
- Delnor Hospital
- University of Illinois Urbana-Champaign Extension
- University of Illinois Urbana-Champaign College of Medicine
- Carle Foundation Hospital
- Southern Illinois University School of Medicine – Telehealth Networks and Programs

In addition to the above, we received a letter of support from the Illinois Rural Health Association (IRHA), a statewide association which has a diverse constituency and advocates for improvements in rural health care. Please see the letter from Pat Bickoff, President of the IRHA, in Attachment 1, Participant Overviews.

We are also benefiting from the strong support of the State itself. Please see the letter from Lieutenant Governor Pat Quinn that follows the Transmittal Letter. Among his responsibilities, the Lt. Governor is Chairman of the Governor's Rural Affairs Council and also Chairman of the Illinois Broadband Deployment Council. In these capacities, he has been and will continue to be supportive of our efforts.

In Attachment 1 in the Appendix, please see the descriptions of these entities situated in over 80 locations throughout the State of Illinois, most of them rural, and representing excellence in medical and health care, education, telemedicine applications, and broadband expertise.

We will seek to add new medical and health care institutions and organizations as we proceed.

Organization of our Proposal

In the front of this document, we have included a **Compliance Checklist.** The Checklist contains the major items to be addressed in proposals, and included near the beginning of the Checklist are the eleven questions that are listed in the FCC Order in Part II, Item 17. On the Compliance Checklist, after each item or question is listed, please note that the page number is provided, as to where that question and answer can be found in this proposal.

Following the Checklist and the Transmittal Letter, please find our Table of Contents, which lists the location of the major sections of our proposal. In this Executive Summary, we will briefly describe the contents of each section listed in the Table of Contents, and we will also point out which questions/answers can be found in each of the sections.

Executive Summary

Goals and Objectives

The ultimate goal of the Illinois Rural HealthNet 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.

In this section, we also describe the organization that will manage the Illinois Rural HealthNet (IRHN). 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;
- Agencies of government;
- Public and non-profit educational institutions;
- Public and non-profit research and education networks.

Attachment 5 in the Appendix contains a detailed draft of the IRHN Consortium Agreement, that includes objectives, organizational structure, and management plans.

<u>Questions addressed under Goals and Objectives include:</u>

Question 1) Identify the organization that will be legally and financially responsible for the conduct of activities supported by the fund.

Question 2) Identify the goals and objectives of the proposed network.

Question 6) List the health care facilities that will be included in the network.

Question 7) Provide the address, zip code, Rural Urban Commuting Area (RUCA) code and phone number for each health care facility participating in the network.

By working together, the participants of the Illinois Rural HealthNet Consortium can truly make a difference in the quality of medical and health care that can be offered in areas rural as well as urban.

Telemedicine and Telehealth Programs

In this section, we discuss the importance of telemedicine and telehealth programs, and list some of the important applications and services that can be provided to improve medical and health care in rural areas.

The Illinois Rural HealthNet is fortunate to include entities with strong experience in providing these programs, including:

- Southern Illinois University School of Medicine – Telehealth Networks and Programs
- University of Illinois Urbana-Champaign College of Medicine
- The Carle Foundation Hospital
- Illinois State University
- Illinois Critical Access Hospital Network
- TriRivers Health Partners (Swedish American Health Group and Freeport Health Network)

In addition to providing details on their experience, we include their future plans and describe techniques to coordinate these varied offerings to promote opportunities to create new vehicles for sharing telemedicine and telehealth applications via the broadband network. Following are examples of approaches that will 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.
- 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.
- One of the IRHN's strengths is complementary capabilities.
    - Some members have strong experience in telemedicine and health, such as Southern Illinois University, the University of Illinois Urbana-Champaign, and TriRivers.
    - Other members have strong experience in broadband networking for research, educational, and healthcare purposes, such as the Municipal Research and Education Network (MREN) and NIUNet. Via MREN, the IRHN communicates at lightspeed with sources around the world.
- The IRHC agreement provides the vehicle and procedures for our member institutions to actively coordinate the network's services, applications, and assistance to rural health hospitals, clinics, and organizations.

<u>Questions addressed under Telemedicine and Telehealth Programs include:</u>

Question 8) Indicate previous experience in developing and managing telemedicine programs.

Question 10) Indicate how the telemedicine program will be coordinated throughout the State or region.

Executive Summary

Proposed Network Approach

In this section, we describe the logical and topographical design of the network that we will use to improve broadband services to rural healthcare locations.

The Illinois Rural HealthNet will be created 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 Illinois Rural HealthNet will provide 100 Mbps of bandwidth, upstream and downstream, to all locations connected via wireless, and the IRHN will provide 1 gigabit of bandwidth, upstream and downstream, to all locations connected via fiber. In our proposed network design, over 95% of the locations included in our proposal will have the benefit of at least 100 Mbps.

Network Design Highlights:

The IRHN network will be composed of a fiber optic backbone running through key areas of the state, with lateral connections to hospitals that will either be fiber or that will be high-bandwidth full duplex wireless systems.

The fiber optic system will be created by combining a number of elements of existing fiber infrastructure:

- State-owned fiber
- NIUNet fiber
- Metropolitan Research and Education Network (MREN) fiber
- Municipal fiber
- Long term contracts (called IRUs) for fiber provided by private companies
- Fiber owned or controlled by Consortium members.

Please note that, while this proposal speaks to the network of 85 healthcare facilities, the network design will easily scale in both locations and bandwidth.

In this section, a narrative description and a logical diagram of the network design are provided.

Costs and Financial Model

In this section, we provide information as to how the Illinois Rural HealthNet will be financed, both in terms of the original build, and also its long-term financial sustainability.

In the first part, we provide the estimated costs for initial implementation, and for ongoing management and operation of the network. At this time, our estimates are as follows:

Initial Implementation	
Fiber optic network system	$8,014,395
Fiber optic hardware	$3,670,000
Wireless transport systems	$6,214,900
Wireless last mile systems	$1,848,300
Project implementation	$2,070,000
Total	$21,817,595

Ongoing Yearly Maintenance	
Fiber optic system	$938,353
Wireless systems	$383,160
Network management	$160,000
Total	$1,481,513

The ongoing maintenance covers 85 healthcare locations and additional sites for network node equipment installation. Based upon these locations, we anticipate a monthly maintenance cost of $950 per month.

In the next part, we describe our approaches to include for-profit network participants, and the procedures to be used to capture their fair share of the network costs. These can be summarized thusly:

- Payment of initial costs for installation of a "lateral" fiber connection, and the associated equipment, to connect the for-profit participant location.
- Payment of initial costs for installation of a wireless connection, and the associated equipment.
- Payments of initial costs for services.
- Payment of ongoing costs for bandwidth, services, and maintenance.

Following that, we provide details on how we will obtain the revenues to pay for costs not covered by the pilot program fund. The critical element here is as follows:

- Payments by public and non-profits for connection to the IRHN Network. Many of these entities are paying for some level of connection to the Internet (such as T1 circuits). The intent of the IRHN is to re-allocate those payments to the IRHN, which can then be used to pay for costs not covered by the fund.

Finally, in this section we examine in detail the options and opportunities that we believe can be used to keep the network financially sustainable. We provide the key points in the Financial and Business Model, and then provide the strategies we will use to achieve the financial objectives. Key elements here include:

1. Use of public sector resources, such as MREN, NIUNet, and municipal fiber.
2. Selective use of private sector resources, such as IRU contracts for dark fiber.
3. Monthly service charges to non-profit entities.
4. Monthly service charges to for-profit entities (fair share).
5. Seeking additional funding to enable network expansion (but always use elements (1) through (4) described above to ensure sustainability as the first priority).
6. Marketing the IRHN services to additional non-profit and for-profit health care entities.

Questions addressed under Costs and Financial Model include:

Question 3) Estimate the network's total costs for each year.

Question 4) Describe how for-profit network participants will pay their fair share of the network costs.

Question 5) Identify the source of financial support and anticipated revenues that will pay for costs not covered by the fund.

Question 11) Indicate to what extent the network can be self-sustaining once established.

Project Plan

In this section, we present a number of items related to the project planning, management, and implementation.

We feel it is important to point out that, with our mix of medical and health care institutions, combined with participants that have extensive broadband network expertise, the Illinois Rural HealthNet Consortium brings together the complementary strengths that can accomplish the goals and objectives that the FCC has established.

We can make this happen!

Project Schedule for Network Construction

The first part of the section contains a preliminary but fairly detailed schedule of tasks, task durations, and timeline. The schedule shows most of Northern and Central Illinois being built out within 18 months, and then the rest of Illinois being completed within the next 6 months. We are still seeking fiber connectivity to the furthest southern tip of the state, which is one reason for the lag in construction to that area.

Project Leadership and Management Structure

The next part of the Project Plan section addresses the leadership and management model as outlined in detail in the draft agreement for the non-profit IRHN Consortium charter that is included in Attachment 5. We have presented an approach that works to keep the interests of health care entities paramount, that allows and encourages network growth and expansion, and that also protects the vested interests of the rural non-profit health care entities that are the focal point of the FCC pilot program.

This section describes the role of the 501(c)(3), membership and voting criteria, and management procedures that will be able to get things done. The work plan is then presented in detail, which includes the following categorization of Tasks (many of which will proceed in parallel):

1. Initial Steps and Confirmation of Partnering Agencies
    a. This focuses on aggregating the needs of health care providers in rural areas
2. Fiber Optic and Wireless Corridors
    a. This includes leveraging the value of existing infrastructure and technology
3. Establishing Links to Participating Members
4. Network Startup
5. Maintenance
6. Implementation of the Financial and Business Model
7. Establishment of the Illinois Rural HealthNet 501(c)(3) Organization

Question addressed under Project Plan:

Question 9) Provide a project management plan outlining the project's leadership and management structure, as well as its work plan, schedule, and budget.

Appendix Attachments

In the Appendix, we have included significant details of our proposal, including the following:

- Attachment 1: Participant Overviews
  - This includes descriptions of the hospitals, health care systems, educational institutions, and broadband participants
- Attachment 2: Technology Platforms
  - This includes technical details on the fiber and wireless equipment and services
- Attachment 3: Network Management Approach
  - This includes details on our approach and our experience in managing large complex networks
- Attachment 4: Personnel Biographies
  - This includes biographies of key personnel involved in developing and managing the Illinois Rural HealthNet
- Attachment 5: IRHN Consortium Agreement
  - This includes a detailed draft of the proposed agreement for a 501(c)(3) organization that will manage the IHRN. It also includes a copy of the work plan for project management.
- Attachment 6: Participating Health Care Facilities
  - This is the list of participating entities
- Attachment 7: RUCA Codes for Participating Health Care Facilities
  - This includes the detailed answer to Question 7, providing the address, zip code, RUCA code, and phone number for each health care facility participating in the IRHN
- Attachment 8: Wireless Costs
  - This provides a detailed description of the costs to implement the wireless links that form part of the network.
- Attachment 9: Fiber Optic Costs
  - This provides a detailed description of the costs to implement the fiber optic links that form the backbone part of the network.
- Attachment 10: Ongoing Fiber Optic Costs
  - This provides a detailed cost analysis identifying the maintenance costs for the fiber optic portion of the network
- Attachment 11: Ongoing Wireless Costs
  - This provides a detailed cost analysis identifying the maintenance costs for the wireless portion of the network
- Attachment 12: Implementation Management Costs
  - This shows the manpower required to manage the implementation of the system over a two year period
- Telehealth Overview References
  - These are the references from the Overview to the Telemedicine and Telehealth Programs Section.

CONCLUSION

In summary, we have tried to present the accumulated ambitions of medical and health care entities in Illinois to provide an improved level of service to rural areas of our state.

We believe we have medical experience and expertise worth sharing, and networking experience and expertise that can allow this sharing to occur at speeds which will help improve the quality of life in rural Illinois and, indeed, help to save lives.

We thank you for the opportunity to submit this proposal and, if we are successful, to work with the Federal Communications Commission and the Universal Service Administrative Company to improve medical and health care services in Rural Illinois.

Illinois Rural HealthNet

Question 1: Identify the organization that will be legally and financially responsible for the conduct of activities supported by the fund.

This application, if successful, will lead to the creation of the Illinois Rural HealthNet (IRHN) Consortium, which will be the 501(c)(3) organization that manages and oversees the operations and services to be provided. A draft of the Agreement is included in this application as Appendix Five.

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 will be included are:

- Hospitals, health care clinics, mental health facilities;
- Medical and nursing schools;
- Agencies of government;
- Educational institutions;
- Research and education networks.

The activities of the IRHN Consortium will include the following:

Advanced Communications

The Consortium will provide input to its members on issues pertaining to the availability of advanced telecommunications and information services to public and non-profit health care providers within the State of Illinois. We will focus particularly in areas designated as rural, and connect these health care providers to the Internet2 providing the advanced video communications that it can offer.

Our goals will include items including:

a. The identification of health care providers within the State that are interested in or that have need of advanced communications services.

b. The identification of specific services or applications that are required to take advantage of new approaches to healthcare the can be delivered using high-capacity communications.

c. The identification of individuals, organizations, and public or private entities that are interested in participating in the Consortium.

d. Working cooperatively within the Consortium to promote the implementation of advanced telecommunications services and information throughout the healthcare organizations within the State.

Our Approach

The Illinois Rural HealthNet (IRHN) Consortium is being 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 will be created as a 501(c)(3) organization to carry out the functions outlined for the Consortium in this Agreement.

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 fare 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.

Healthcare Goals and Objectives

Question 2: Identify the goals and objectives of the proposed network.

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

1. 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.
2. To utilize existing infrastructure, networks and technologies to leverage the value that has already been created.
3. To develop and implement a cost-efficient broadband network to link rural health care providers to:
   - advanced telecommunications services and information;
   - rural and urban sources of tele-health and tele-medicine expertise;
   - Internet2.
4. To improve the quality of health and medical care that can be made available in rural portions of Illinois.

Question 6: List the health care facilities that will be included in the network.

The health care facilities that will be included in the IRHN Network are listed in detail in Appendix 6. Included are eighty-five separate locations that are affiliated with eleven separate health care organizations. We expect the number of organizations and locations will continue to grow.

The organizations that are currently included are:

Initial Membership of the Illinois Rural HealthNet:

- Northern Illinois University
- Illinois Critical Access Hospital Network (ICAHN)
- Tri-Rivers Health Network
- Metropolitan Research and Education Network (MREN)
- Illinois State University (ISU)
- Janet Wattles
- Ben Gordon Center

- Sinnissippi Center
- Delnor Hospital
- University of Illinois College of Medicine
- Southern Illinois University School of Medicine
- The Carle Foundation

Question 7: Provide the address, zip code, Rural Urban Commuting Area (RUCA) code and phone number for each health care facility participating in the network.

This information is provided in Attachment 7.

Telemedicine and Telehealth: An Overview

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 [1,2,3]. 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 [4,5,6]. 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 [7].

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) [8] 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 [9]. The high bandwidth characteristics of Internet-2 (NIU-net is already conformant with Internet-2) now offers revolutionary real-time medical activities [10]. 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.

vii. All of these capabilities can be coordinated by several entities now called Regional Healthcare Information Organizations (RHIO's). Two or more RHIO's [11,12] may exchange patient information subject to the Health Information Privacy and Accountability Act (HIPAA) guidelines for Privacy, Security and Confidentiality within a state or nationally [13].

viii. These interacting and cooperating RHIO's can then form what the Bush Administration calls the National Health Information Network (NHIN) [14].

Telemedicine has proven to be extraordinarily effective in providing some form of healthcare in communities which are divorced from urban areas and isolated locations such as tribal communities found in Africa. This same phenomenon is now being seen in the provisioning of healthcare in Appalachia [15] in America, as well as, in the Scottish Highlands of Great Britain [16].

Telemedicine really functions as a consultative environment where the remotely located individuals are diagnosed and treated by medical professionals not found anywhere near the patient's immediate environment. Africa is now proving to be an interesting testing ground for asynchronous healthcare because the doctor and the patient do not both have to have real-time contact with each other [17].

Store-and-forward Telemedicine can be particularly effective in any medical situation where the patient and the medical professional do not have to interact together, immediately. Specializations which can make use of this healthcare approach are teledermatology, teleradiology, telecardiology, and tele-eeg for patients with either brain masses or enlarged veins in the brain, itself. An entirely new area has recently come into its own. This is tele-psychiatry. Tele-psychiatry can be either synchronous (the patient and the psychiatrist interact in real-time over an IP communication link), or asynchronous (the psychiatrist examines the patients responses to questions not in real-time). The psychiatrist then draws detailed conclusions about the patient from the answers the patient either verbalized or wrote down.

Consider the term *Medically Under-served Areas* (MUA's) in the state of Illinois. This term is used throughout the country by the federal government. There is a complete listing of all MUA's in Illinois [18] that is recognized by the state and federal governments. It is apparent that the MUA's seem to be rural areas. However, this is not entirely true. The community of Plainfield, Illinois in Dupage County has a section which has been designated as an MUA. DuPage County is one of the most expensive areas in the state of Illinois. Nonetheless, it has at least one living area within it which has very limited medical services. What we need to emphasize is that the effort of the IRHN will be to serve the communities of medically under-served (MUAA's) living groups in Illinois. These communities can be rural but they can also be isolated sections of a very rich and up-scale living area. All living groups that have concerns about the delivery, availability and cost of healthcare can now be placed under a new label called Rural/MUA.

Furthermore, within communities such as the collar counties which surround Chicago there are living groups which have highly restricted medical services. The most significant of these groups are the communities of the elderly who have limited financial resources but who often have the most critical needs for healthcare. These needs include both the physical well-being of the elderly and their psychological good health. In the report summary released in January 2007 which tabulated the results of healthcare surveys completed for the state of Illinois in fall 2006, one of the most asked for facilities in terms of rural/MUA healthcare was tele-psychiatry [19]. A critical need exists in terms of providing good mental health counseling around the state, particularly, in the MUA's of Illinois. Interestingly enough, the Northeastern Illinois Area Agency on Aging (NIAAA) has discovered the urgency of this need as they have served approximately 3000 meals per day to their elderly population who are homebound either because of illness, age or for financial reasons [20]. The most desperate need is for a form of "tele-companionship" which allows the homebound individual to continue to interact with members of his or her family, community, church and/or synagogue. The NIAAA serves the counties of DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry and Will.

There are 13 independent Area Agencies on Aging in Illinois which are federated but are run as individual entities. They report to the Illinois Department of Aging. The Director of the Illinois Department of Aging is Mr. Charles Johnson [21], a remarkably astute and far-sighted individual who is planning now for ways to meet the needs of

distributed “tele-companionship”. He receives his primary funding from the state of Illinois but also administers several million dollars in federal monies which are left to him to determine how they are assigned. The Illinois Rural Health Net (IRHN) should also address meeting the needs of the elderly in the state of Illinois. This should be done by treating this community of seniors as an MUA. Dr. Johnson could be used as a resource person in planning the facilities for the Illinois population of aging citizens.

The concept of an MUA particularly applies to the environments many of the elderly now exist in. They live on highly restricted incomes – many have only Medicaid to fall back on as they encounter the illnesses and infirmities of old age. They also represent a significant group where telemedicine is an ideal capability to enhance the quality of life and allow length of life to be extended in a graceful manner.

Telemedicine, including the area of tele-prescribing where the patient orders and receives his prescriptions from a pharmacist not located near the patient [22,23] will become a larger and larger factor in providing healthcare for remotely distributed patients who may have limited access to a clinic and no convenient access to a hospital or a pharmacist. The real ramification of the IRHN is that healthcare, in the area of Illinois where NIU-net is present, will become available at a reasonable cost to people from all sectors of society. Furthermore, the quality of healthcare should not be degraded even though these individuals are located in rural areas or medically underserved areas (MUA’s).

This translates immediately into providing quality healthcare to remotely located rural areas and/or MUA’s.

(See the Reference section at the end of this proposals for the list of references used in this section.)

Question 8. Indicate previous experience in developing and managing telemedicine programs.

The Illinois Rural HealthNet Consortium includes participants with significant experience in developing and managing telehealth and telemedicine programs. Following are several examples:

Southern Illinois University - TeleHealth Networks and Programs

SIU-TNP builds partnerships to expand healthcare capacity through the use of health information technology, particularly videoconferencing. In 2006, SIU-TNP brought together 104 organizations in 92 communities and 63 counties in Illinois to undertake 46 telehealth programs using videoconferencing (please see SIU attachment in Participant Overview). In addition, by the end of 2006, SIU-TNP had helped to connect Illinoisans with people in California, Massachusetts, Maryland, New Jersey, Rhode Island, South Dakota, Virginia, Wisconsin, Egypt and Nigeria.

SIU-TNP uses telehealth capabilities to partner with community organizations to bring needed healthcare services to veterans, adults and children with mental illnesses and intellectual and developmental disabilities, as well as patients recovering at home. The clinical telehealth programs (focusing primarily in dermatology, neurology and psychiatry) are with the Veterans Hospital in Marion, Chester Mental Health Hospital in Chester, state operated developmental centers in Jacksonville, Centralia, Anna, Tinley Park and Kankakee, and Shawnee Health Services in Murphysboro, Carterville and Marion.

In the area of healthcare educational programs, SIU-TNP partners with universities, health education programs, and healthcare organizations throughout the state to bring medical, nursing, allied health and community education programs to downstate Illinois. Within SIU, we work with the school of medicine in Springfield, Carbondale, Quincy and Decatur, along with the schools of nursing, pharmacy and dentistry in Edwardsville, and school of allied health and other health-related programs in Carbondale such as the Rehabilitation Institute and the Center for Rural Health and Social Services Development.

Other universities, state and local agencies, and community-based organizations have partnered with SIU to bring educational programs to southern Illinois. Western Illinois University, University of Illinois components in Chicago,

Urbana/Champaign, Rockford and Peoria, John A. Logan Community College, Illinois departments of human services and public health, and the Western Illinois Area Health Education Center and the Illinois Health Education Consortium are among SIU partners.

SIU-TNP helps leaders from across the state come together by videoconferencing to participate in health planning, policy and management meetings. By partnering with organizations such as the Illinois Rural Health Association and Illinois Critical Access Hospital Network, rural leaders have a voice at the table when decisions are made.

In 2006, SIU-TNP initiated two new programs with partners in southern Illinois – one focusing on children with mental health concerns and a second serving adults with intellectual and developmental disabilities (IDD). Partners for the child Tele-psychiatry project are Shawnee Health Services in Marion, Carterville and Murphysboro, Franklin-Williamson Human Services in Marion and SIU Family Practice Center in Carbondale. For the IDD project, the primary partner is the Illinois Department of Human Services in Springfield with sites in Anna, Murphysboro, Centralia, Charleston, Jacksonville, Galesburg, Kankakee, Tinley Park and Dixon (see attachment #2). Both of these projects build healthcare capacity in Illinois by bringing specialized healthcare resources, the latest medical knowledge and innovative management strategies.

SIU-TNP also provides multi-site video-conferencing connection services at no cost to its partners and users. Market rates for multi-site connections range from $50 to $325 per end point per hour. SIU-TNP's videoconference bridge allows for the interconnection of up to 30 videoconference sites per conference or an equivalent combination of multiple sites within multiple conferences. The system handles all of the common protocols for audio and video transmission over the Internet and ISDN phone lines. As well, people without videoconferencing are able to participate in videoconferences by telephone or cell phone.

The work that the SIU-TNP has undertaken since its inception in 2001 provides a solid foundation upon which to build and leverage the Illinois Rural HealthNet statewide initiative, and SIU-TNP has welcomed the opportunity to work with the IRHN to address the health workforce and healthcare access issues in Illinois through the application of health information technology.

University of Illinois Extension - University of Illinois at Urbana Champaign (UIUC)

University of Illinois Extension is the flagship outreach effort of the University of Illinois at Urbana-Champaign, offering educational programs to residents of all of Illinois' 102 counties, including the most rural areas of the state. Through learning partnerships that put knowledge to work, U of I Extension's programs are aimed at making life better, healthier, safer and more profitable for individuals and their communities. U of I Extension offers evidence-based health education programs in a number of areas:

- Nutrition and dietary health
- Food security and safety
- Environmental health
- Agricultural safety and injury prevention
- Consumer education -- long-term care and health care financing

Most Extension programs are offered on an informal, non-credit basis, and U of I Extension actively partners with local health care providers in rural areas, including Critical Access Hospitals (CAH) and local public health departments, to deliver health programs to rural audiences. Extension programs may be offered as hands-on workshops, field days, self-paced tutorials via the World Wide Web, or in other formats that are suitable for the audience and subject-matter.

More than 2 million Illinois residents take part in Extension programs each year, including nearly 300,000 who participate in 4-H youth programs. Each month, U of I Extension web pages draw more than 10 million page views,

and people in more than 200 countries access Extension's web-based information.

Communities are directly served by Extension staff in 77 unit offices located throughout Illinois. Extension educators located in 12 centers across the state and specialists located on the U of I campus develop and deliver in-depth programming locally, in regional venues, and through distance-learning technologies. Because U of I Extension has created a number of satellite offices, the organization staffs and maintains a total of 131 off-campus locations.

As part of the nationwide Cooperative Extension System, U of I Extension also is able to draw on research-based expertise from land-grant universities all across the country. Volunteers who serve on local advisory councils provide direction for U of I Extension programming, ensuring that programs continue to meet critical needs.

In terms of health education, University of Illinois Extension generates a significant impact through its nutrition and wellness programs. Almost 900,000 of Extension's face-to-face teaching contacts are related to health education (roughly one-third of Extension's 2.6 million face-to-face contacts during 2005) in areas including nutrition and wellness.

An example of such an Extension health education program, often offered jointly with local partners such as a CAH, is the Dining with Diabetes program. Illinois has the sixth largest prevalence of diabetes in the U.S., with approximately 567,000 adults having been diagnosed with diabetes. It is estimated that an additional 3 million people in Illinois are at increased risk of undiagnosed diabetes because of the risk factors of age, obesity, and sedentary lifestyles.

To address this, Extension staff developed an educational effort to improve the diets of people living with diabetes and thereby improve self-management of the disease. During 2005 1,617 people with diabetes and/or their caregivers participated in the educational series, Dining with Diabetes. All U of I Extension Nutrition and Wellness Team Educators have been involved in the state-wide implementation of this dynamic program. Not only have significant knowledge and behavior results been achieved, but coalitions have been forged with state and local agencies as well in order to improve the health and well-being of those with diabetes in Illinois.

The Dining with Diabetes program is one example of the wide number of health-improving programs University of Illinois Extension delivers through its local County Offices each year. Other health-related programs include AgrAbility Unlimited and agricultural safety and health education, Healthy Moves for Healthy Children, the Illinois Senior Wellness Initiative, Long-Term Care Financing: A Consumer Education Program, among many others.

University of Illinois Extension has a long tradition of helping introduce new educational technologies into rural communities and assisting with their utilization and adoption. As part of that, U of I Extension has spent over $700,000 per year in Information Technology that directly supports local Extension programming. That figure includes funds for field staff computer equipment; local office connectivity, and operation/management of a 96-port audio/web conferencing system.

University of Illinois School of Medicine, The Carle Foundation – Telemedicine Program

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.

Carle Telemedicine specialties that are currently available are:

- Neurology
- Certified Sleep Specialists
- Gastroenterology
- Cardiology
- Oncology
- Colon/Rectal Surgery
- Child & Adolescent Psychiatry

Illinois State University Telemedicine Program

1 – Background

Illinois State University's interest in telemedicine and the FCC rural telemedicine grant is the result of efforts currently undertaken by faculty of Mennonite College of Nursing (MCN). MCN took the lead in developing distance education at Illinois State University. Mission focused on addressing the health care needs of vulnerable and underserved populations; the College specializes in care of the elderly. Recognizing the underserved and aging demographics of rural Illinois, the College is increasing clinical operations via distance technology. Nursing Grand Rounds in rural long term care facilities, for example, greatly enhances the professional environment for the nurses working in rural long term care settings while providing the residents with the most up to date clinical assessment and evidence based practice. Distance monitoring of elder clients in their homes can enhance their ability to maintain independent living. In addition to educating students to care for rural populations, and providing clinical services to rural populations, the College faculty is engaged in externally funded research projects to enhance the clinical outcomes for elder clients.

2 – Programs

Several special initiative programs take student learning beyond the classroom while students and faculty provide much-needed health care and education to the community. Through geriatric initiatives, such as the Joe Warner Teaching Nursing Home and Extension, Hartford Heritage and modules, students and long term care staff learn more about providing quality long-term care. Students have the opportunity to reach out to their community by participating in service initiatives, such as teaching health issues and providing school physicals and immunization clinics to underserved elementary school students. The Transcultural Program provides students with a cultural experience in rural and urban settings, while providing health care in a setting that may be new to them.

3 – Accelerated Degree, Masters Degrees and PhD Program

MCN is now offering an Accelerated BSN Sequence for students with a previous non-nursing bachelor's degree. This degree aims to improve the severe nursing shortage and accelerate students' paths to obtaining a nursing degree. The masters family nurse practitioner program prepares students to provide primary care services to rural populations. To address the nursing faculty shortage, the college started a collaborative PhD program in aging with the University of Iowa. These programs employ distance technologies.

4 – Research and Instruction

MCN faculty are engaged in research and scholarship activities to address the nursing and health care needs of urban and rural populations and to identify effective strategies to reduce health disparities in vulnerable and underserved populations. Faculty strive to engage the community served through research in a reciprocal relationship to assure research practices are attentive to the special needs of vulnerable populations during all phases of the research

process, including study planning, recruitment, obtaining consent for research, data collection and reporting findings. These include:

- Clinical Lab Simulations; Students and practicing staff nurses participate in multiple types of complex case studies using simulated mannequins and equipment;
- Video conferencing for the purpose of making content experts such as diagnostic specialist available to students and patients when and where time and distance constraints exist.
- Distant Learning designed to remove travel and time barriers for RN/BSN, MSN and PhD students allowing them to continue working as a RN while pursuing their degrees.
- The examination of HD (high definition) video is an area of interest to further enhance the quality of demonstrations or instruction.
- Sharing nursing faculty resources through a collaborative distance education PhD program with the University of Iowa, College of Nursing

5 – Grants

Our Faculty has received several million dollars in external funding for these initiatives. The following are externally funded research initiatives currently under investigation:

- JOHN A. HARFORD FOUNDATION/ATLANTIC PHILANTHROPIES CLAIRE M. FAGIN FELLOW
- EXPANDING THE TEACHING-NURSING HOME CULTURE IN THE STATE OF ILLINOIS
- NURSING LEADERSHIP INTERVENTIONS AND WEIGHT LOSS IN NURSING HOMES
- JOHN A. HARTFORD FOUNDATION BUILDING ACADEMIC GERIATRIC NURSING CAPACITY SCHOLAR
- COLLABORATIVE DOCTORAL PROGRAM – CARING FOR OLDER ADULTS (WITH THE UNIVERSITY OF IOWA COLLEGE OF NURSING)
- BLUE SKIES: A WEB-BASED SELF-MANAGEMENT FOR TEENS WITH DEPRESSION
- MULTITHEORETICAL APPROACH TO PREVENT HIV AMONG WOMEN
- RISK OF HIV AMONG MIDDLE AGE AFRICAN AMERICAN WOMEN
- IMPLEMENTING EVIDENCE-BASED PRACTICE
- BIOBEHAVIORAL NURSING RESEARCH GRANT

Illinois Critical Access Hospital Network (ICAHN)

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.

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 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.

TriRivers Health Partners

TriRivers Health Partners is a joint venture organization of SwedishAmerican Health Systems in Rockford, IL and FHN in Freeport, IL. Created in 2004 TriRivers Health Partners provides opportunities for the development of Information Systems Technology capabilities in the area of shared health care information systems. For the last two years, TriRivers has been evaluating the development of a shared high speed regional health care information network that would allow TriRivers to establish a high speed broadband network between its Rockford and Freeport location. This would allow for the sharing of technical infrastructure for both of its parent facilities through the development of two parallel data processing centers establishing a business continuance capability between these two facilities. As a result of this high speed broadband capability, TriRivers would establish a Replicated Content

Management Architecture for its Picture Archiving Computer Systems that would reduce the cost of this technology by sharing the infrastructure established by each facility. In addition this capability establishes a high-speed network architecture that allows disaster recovery capabilities to be leveraged across to physical locations 28 miles apart.

Question 10. Indicate how the telemedicine program will be coordinated throughout the State or region.

The Illinois Rural HealthNet Consortium (IRHC) will 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 will 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.
- 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.
- One of the IRHN's strengths is complementary capabilities.
    - Some members have strong experience in telemedicine and health, such as Southern Illinois University, the University of Illinois Urbana-Champaign, and TriRivers.
    - Other members have strong experience in broadband networking for research, educational, and healthcare purposes, such as the Municipal Research and Education Network (MREN) and NIUNet. Via MREN, the IRHC communicates at lightspeed with sources around the world.
- The IRHN agreement provides the vehicle and procedures for our member institutions to actively coordinate the network's services, applications, and assistance to rural health hospitals, clinics, and organizations.

Following are examples of how the telemedicine programs would be coordinated, as provided by some of our member institutions:

The Illinois Critical Access Hospital Network (ICAHN) described how the Illinois Rural HealthNet would help them coordinate telemedicine programs as follows:

The Illinois Critical Access Hospital Network (ICAHN) is pleased to provide a letter of support for the development and implementation of the new **Illinois Rural HealthNet**. This new network will combine elements of existing fiber networks, commercial networks, new fiber or other network construction (including wireless) and the use of existing resources under the control of us as organizational members and partners.

The Illinois Rural Health Net project will assist ICAHN's 51 small critical access hospital members to expand their current broadband capabilities of a T-1 line (1.5 mega bytes) to connect with either wireless at 100 times current capacity or fiber at 1000 times current capacity depending on the hospital's location. The Illinois Rural Health Net project will build on existing resources to make these new connections for our Illinois critical access hospitals as well as other rural and resource hospitals, mental health facilities and providers of health and social services throughout Illinois. This is a most important project for our small critical access hospitals located in very rural communities across Illinois and which have limited technological and human resources. Our small hospitals will then be able to

connect with other facilities for tele-medicine services and other tele-health type projects. Potentially, the small critical access hospitals could connect their operating rooms with larger hospital operating rooms for consultation or even mechanical type surgery – bringing access to greater resources to our Illinois rural communities.

ICAHN looks forward to the opportunity to be a part of the Illinois Rural HealthNet project as an organizational member and once again offers its support of this most vital and essential grant project that will help eliminate the digital divide for our rural communities.

Pat Schou, Executive Director
Illinois Critical Access Hospital Network
www.icahn.org

The TriRivers Partners described how the Illinois Rural HealthNet would help them coordinate telemedicine programs as follows:

(a) Sharing of Technical Infrastructure
Technical infrastructure associated with common healthcare business applications, such as email, Internet appliances, Internet security tools and support, and Storage Area architectures have been targeted for consolidation. Each facility will invest based upon its relevant size, and a common group of support staff will support technical infrastructure on behalf of the two parent organizations.

Sharing of Technical Infrastructure is particularly important in the area of Picture Archiving Information Systems (PACS). PACS is a method by which Radiology studies are archived using digital means. By sharing the technical infrastructure associated with PACS on the Illinois Rural HealthNet high-speed regional broadband network, TriRivers Health Partners can leverage existing capabilities using common approaches with the high-speed network as the transport means to replicate Radiology studies on common hardware. Other systems that use storage area networks can also be leveraged to support improvements in disaster recovery through this process.

(b) Regional Health Information System Development

Regional Health Information Systems (RHIO) development can be better realized when a regional broadband network exists that supports the transport of system information across multiple providers. TriRivers is currently implementing a shared Health Information Systems Network between FHN and SwedishAmerican that will result in a regional Electronic Medical Record. This system will allow for access of critical patient information across multiple facilities. The system is best supported through a regional high-speed network.

(c) TeleHealth and TeleMedicine Capabilities

FHN and SwedishAmerican Health System will utilize the Illinois Rural HealthNet regional broadband network to support TeleRadiology evaluation by accessing Radiology and Cardiology studies from each organization's PACS system. This will allow for access to critical study information by specialists at SwedishAmerican for patients that have been seen at FHN in Freeport. This collaboration among specialists will support the development of better quality for the patient through collaboration and referral processes for the more critical procedures that can be done by each facility. In addition, SwedishAmerican through its connectivity will be able to better assist FHN in its Radiology overread process, which is needed by FHN for Radiology interpretation in Freeport. In addition to the transfer of Radiology and Cardiology studies, the participating facilities will also use Video Conferencing to support collaboration, education, and joint health system planning.

The University of Illinois Urbana-Champaign, Extension, described how the Illinois Rural HealthNet would help them coordinate telehealth and telemedicine programs as follows:

The University of Illinois Extension just committed to a $525,000 major upgrade and expansion of the current audio/web conferencing system. Through a partnership with CITES, both U of I Extension and CITES will each purchase a new Cisco Meeting Place 6 Distance Learning System that will provide 192 ports of audio conferencing; 192 ports of web conferencing; and 48 ports of video conferencing. In instances where it is desired, Extension's new

Meeting Place 6 System will be able to be partnered with the campus/CITES Meeting Place system to create a total capacity of 384 ports of audio/web and 96 ports of videoconferencing. All of this investment can be leveraged and put to better and greater use in support of health education programming if local Extension offices can upgrade their network infrastructure.

Participation in the Illinois Rural HealthNet will allow local University of Illinois Extension Offices to better reach their communities with research-based health education messages and programs as well as to better partner with their local rural health colleagues, such as CAHs and local Departments of Public Health. Through the provision of infrastructure upgrades to connect the local County Extension Offices into the statewide network at much higher speeds, the rural County Offices will have the new capability of offering enhanced real time Internet delivered conferences and health education events. Such events will originate from the Champaign-Urbana campus or from any other suitable provider.

The University of Illinois College of Medicine, Carle Foundation – Telemedicine Program, described how the Illinois Rural HealthNet would help them coordinate telemedicine programs as follows:

Our Regional Outreach Services Department connects with several additional Critical Access Hospitals to provide continuing education via videoconferencing with professional credits provided for medical and nursing. This enables the professional members of health care to remain in their local community while keeping their knowledge base up to date with current trends in a wide variety of disease states, diagnosis and current treatment strategies.

Carle Foundation Hospital receives communications from small, rural hospitals asking for assistance with providing specialty care to the members of their communities and counties. Telemedicine is an obvious solution to this need, but it requires broadband internet access over a protected network for privacy and quality of service. These rural facilities do not have the funding or the staff to attain access to the technology that would make this service a possibility. In some locations, there is no hardwire laid to the last mile, making the high speed internet connections that are necessary impossible to find.

Carle Foundation Hospital's goal is to expand the telemedicine program to sites in many rural locations throughout downstate Illinois to better serve the rural population through education, research and quality patient care. Many of these small, rural hospitals are in the precarious situation of trying to keep not only their hospitals viable, but to maintain the very existence of their small, rural communities. The Illinois Rural HealthNet would allow us to better attain our goal.

The Illinois State University Telemedicine Program described how the Illinois Rural HealthNet would help them coordinate telemedicine programs as follows:

Due to the current efforts of Mennonite College of Nursing at Illinois State University, students and faculty already benefit the surrounding the communities by producing graduates with exposure to more than just what is available on campus. Partnerships have increased the quality of these offerings in addition to enhancing research efforts.

With funding from the FCC telemedicine grant, MCN can greatly improve and expand the quality of these experiences that benefit the University, participating health providers, and communities. By connecting the many healthcare providers throughout central Illinois, MCN students will have the opportunity for greater exposure to real-world healthcare issues. Additionally this connection will provide an avenue for healthcare providers throughout central Illinois to access a wider range of diagnostic support by leveraging the combined personnel resources at the many local hospitals, long term care facilities, and health research organizations throughout central Illinois.

Proposed Network Approach

Network Overview

The main backbone network will be composed of a ten 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. Municipal fiber, such as the fiber supplied by the City of Naperville.
3. Long term IRU for fiber, such as the fiber run from Collinsville to Kankakee.
4. Fiber owned by our partners, such as the fiber between Rockford and Dubuque.

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

To complement the fiber optic system, a wireless network will be built to provide service to those healthcare organizations that are not along the fiber optic path. At key points along the fiber path access points will be established where Gigabit Ethernet connections can provide service to a high-performance wireless network. This wireless network will be established as a trunk and tributary system.

The trunk section of the wireless network will connect directly to the local interface on the fiber optic network at a speed of one gigabit per second. The radios used in the trunk system area capable to transporting voice, video and data traffic at about two hundred megabits per second using a full duplex type of connection (an aggregate speed of four hundred megabits per second). The trunk will be constructed using existing public facilities such as water towers to support the radio equipment. The tributary links will connect local facilities at a speed of one hundred megabits per second using a full duplex type of connections (an aggregate speed of two hundred megabits per second). Each local link(s) will connect from the local point-of-presence (trunk radio) to each of the local facilities that are participating in the Consortium.

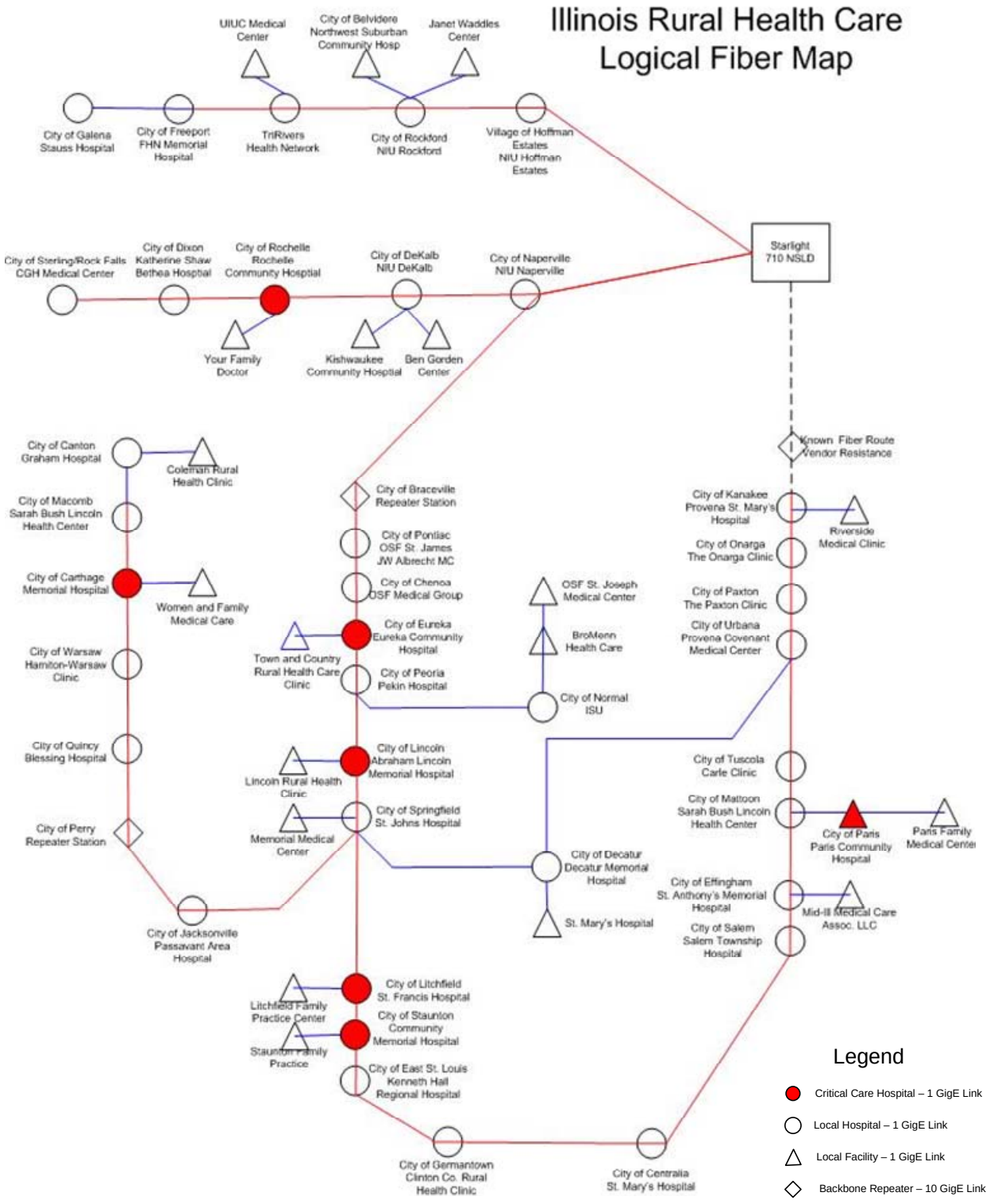
This system will transport services between each of the participants of the Consortium in a manner that best meets their technical and business needs. The system will also provide each organization with access to the Internet and the resources and technology of the Internet 2.

Overtime 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. On the companion map of the State of Illinois is the full diagram of the fiber optic and wireless network. Notice that the resources for the fiber optic network currently extend beyond the State of Illinois providing links to Wisconsin, Iowa, Missouri and Indiana. As future resource become available, the proposed fiber optic system can be extended to create a region healthcare network.

One note on procurement, some elements of this network will be provided by the participating members of the IRHN Consortium. All network elements that need to be purchased will be publicly advertised for bid.

Following is a logical representation of the proposed fiber optic network:

Proposed Network Approach



3. Estimate the network's total costs for each year.

The total cost of the network implementation is as follows:

Initial Implementation		
Fiber optic network system		$8,014,395
Fiber optic hardware		$3,670,000
Wireless transport systems		$6,214,900
Wireless last mile systems		$1,848,300
Project implementation		$2,070,000
	Total	$21,817,595

Ongoing Yearly Maintenance		
Fiber optic system		$938,353
Wireless systems		$383,160
Network management		$160,000
	Total	$1,481,513

This network will be constructed in an incremental manner. Over a two year period the expenditures for this project are projected to be:

Year 1

Project Implementation	$2,070,000
Fiber and Wireless Systems	$9,873,797

Year 2

Fiber and Wireless Systems	$9,973,798

The project implementation will need to be funded in year one for the entire project. This will allow for continuity of staffing throughout the entire project implementation.

4. Describe how for-profit network participants will pay their fair share of the network costs.

Private and for-profit network participants will pay their fair share of the network costs in one or more of the following ways, as may be applicable to for-profit participant locations:

- Payment of initial costs for installation of a "lateral" fiber connection, and the associated equipment, to connect the for-profit participant location to the IRHN Network.
- Payment of initial costs for installation of a wireless connection, and the associated equipment, to connect the for-profit participant to the IRHN Network.
- Payments of initial costs for services (fiber, copper, wireless, etc.), and the associated equipment, to connect the for-profit participant to the IRHN Network.
- Payment of any ongoing costs for bandwidth, services, and/or maintenance to continue the successful connection of the for-profit participant to the IRHN Network.

Payment of the above costs (as may be appropriate) will ensure that the private and for-profit participants are paying their fair share, while at the same time providing the benefits of connection to the IRHN to rural health care entities.

At this point, we do not have any for-profit participants in our application. At such time as this changes, we will be able to describe the specific costs for these participants to connect to the IRHN, depending upon their geographical location and proximity to the IRHN Network.

5. Identify the source of financial support and anticipated revenues that will pay for costs not covered by the fund.

Sources of financial support and anticipated revenues will include the following:

- Payments by public and non-profits for connection to the IRHN Network. Many of these entities are paying for some level of connection to the Internet. The intent of the IRHN is to re-allocate those payments to the IRHN, which can then be used to pay for costs not covered by the fund.
- Selected public or non-profit entities of the IRHN are expected to provide funding because of the value that will be able to be achieved at an affordable cost.
- Private or for-profit users of the IRHN may be willing to pay more than their fair share of costs, because of the value that will be able to be achieved at a more affordable cost than might otherwise be available.

11. Indicate to what extent the network can be self-sustaining once established.

The IRHN Network Consortium will seek to become self-sustaining by utilizing a number of approaches to continued funding. Item A below, excerpted from the IRHN Work Plan, describes the steps to be taken to achieve self-sustainability:

A. Implementation of the Financial and Business Model

1. Finalize partnership and financial arrangements for IRHN network users and for public sector entities providing network resources.
2. Finalize cost structures for equipment purchases and for purchasing telecommunications services to be provided by private sector.
3. Establish structures to fulfill FCC and USAC requirements for network and financial reporting.
4. Finalize budget and cash flow requirements.
5. Assign responsibilities for conducting cost reimbursement, cost tracking, and for billing any for-profit users of the IRHN.
6. Seek additional funding as may be made available.
7. Seek to establish the financial sustainability of the IRHN, by aggregating Network users and re-allocating their communications costs to provide operating funds for the IRHN, and by marketing the IRHN to eligible entities within the State of Illinois.

STRATEGIES TO ACHIEVE NETWORK SUSTAINABILITY

B. Use of Public Sector Resources

One of the important strategies for long-term sustainability is to use public-sector resources that require very low cost to keep in place. The public sector entities that are included in this application are providing resources that provide high value with very little initial or annual expense. These resources include, most importantly, fiber and fiber-related bandwidth, and the related equipment.

The IRHN will be able to make low-cost use of fiber services provided by:

- Northern Illinois University (NIUNet)

- Metropolitan Research and Education Network
- University of Illinois at Urbana Champaign

The IRHN will also attempt to utilize public-sector resources such as towers, poles, and the like, for wireless equipment location.

C. Use of Cost-Efficient Private Sector Resources

The IRHN will arrange for long-term use of low-cost private sector resources, such as leasing dark fiber.

D. Sources of Financial Support:

Sources of financial support and anticipated revenues will include the following:

1. Payments by public and non-profits for connection to the IRHN Network.
    a. Many of these entities are paying for some level of connection to the Internet. The intent of the IRHN is to re-allocate those payments to the IRHN, which can then be used to pay for costs not covered by the fund, and to pay for costs after the FCC funding has been depleted.
    b. Selected public or non-profit entities of the IRHN are expected to provide funding because of the value that will be able to be achieved at an affordable cost. The objective of the IRHN is to provide the lowest-cost service available to health care entities in Illinois. If this is achieved, we will retain our "customer" base.
    c. Private or for-profit users of the IRHN may be willing to pay more than their fair share of costs, because of the value that will be able to be achieved at a more affordable cost than might otherwise be available.
2. Private and for-profit network participants will pay their fair share of the network costs in one or more of the following ways, as may be applicable to for-profit participant locations. This will provide funding to help keep the IRHN sustainable over the long term.
    a. Payment of initial costs for installation of a "lateral" fiber connection, and the associated equipment, to connect the for-profit participant location to the IRHN Network.
    b. Payment of initial costs for installation of a wireless connection, and the associated equipment, to connect the for-profit participant to the IRHN Network.
    c. Payments of initial costs for services (fiber, copper, wireless, etc.), and the associated equipment, to connect the for-profit participant to the IRHN Network.
    d. Payment of any ongoing costs for bandwidth, services, and/or maintenance to continue the successful connection of the for-profit participant to the IRHN Network.

Payment of the above costs (as may be appropriate) will ensure that the private and for-profit participants are paying their fair share, while at the same time providing a portion of the funding to keep the IRHN sustainable.

E. Seek Additional Funding

The IRHN will seek funding from a variety of local, state, and federal sources. Among the possible sources, once the FCC grant is retired, would be to apply for federal funding for rural health care networks.

F. Marketing the IRHN to Health Care Entities within Illinois

Marketing the IRHN to potential new users will allow for economies of scale in adding new locations, many of which would be very cost-efficient to activate because of the infrastructure that the initial phase of the IRHN will have already put into place.

G. State May Allocate Funding

Discussions with executive and legislative branches of State government are ongoing at this time in the event there needs to be additional funding.

Project Plan

Question 9. Provide a project management plan outlining the project's leadership and management structure, as well as its work plan, schedule, and budget.

The following project plan are proposed for the Illinois Rural HealthNet:

Illinois Rural HealthNet
Project Schedule for Network Construction

Task Name	Duration	Month
Overall Project Duration	24 Months	1-24
Committee Formation	30 days	1
Formation of Legal Organization(s)	90 days	2 & 4
Contracts Processed	TBD	4
Contracts Complete	TBD	4
Design Functions Northern Illinois		
Verification of obtainable long haul fiber routes	30 days	5
Verification of Municipal Resources for wireless	30 days	5
Municipal Contracts for wireless	60 days	6 & 7
Network Design Approach	60 days	6 & 7
IRU contracts	60 days	7 & 8
Dark Fiber Lateral Design Northern Illinois	60 days	7 & 8
Bid and Processing	30 days	8
Fiber Installation Northern Illinois		
Design Locates	20 days	9
Drafting Design	10 days	9
Permits and Approval	30 Days	10
All Permits Available	10 Days	10
Duct/Fiber Cable Installation	120 days	10-14
Equipment Installation Northern Illinois		
Equipment Selection	30 days	7
Equipment Bid and Processing	60 days	7&8
Equipment Delivery	60 days	9-10
Wireless Equipment Installation	120 days	11-14
Fiber Equipment Installation	150 days	11-16
Final Completion and Documentation	30 days	17
Design Functions Central Illinois		
Verification of obtainable long haul fiber routes	30 days	8
Verification of Municipal Resources for wireless	30 days	8
Municipal Contracts for wireless	60 days	9 & 10

Network Design Approach	60 days	9 & 10
IRU contracts	60 days	9 & 11
Dark Fiber Lateral Design Northern Illinois	60 days	9 & 11
Bid and Processing	30 days	11
Fiber Installation Central Illinois		
Design Locates	20 days	12
Drafting Design	10 days	12
Permits and Approval	30 Days	13
All Permits Available	10 Days	13
Duct/Fiber Cable Installation	120 days	13-17
Equipment Installation Central Illinois		
Equipment Selection	30 days	10
Equipment Bid and Processing	60 days	10&11
Equipment Delivery	60 days	12-13
Wireless Equipment Installation	120 days	14-17
Fiber Equipment Installation	150 days	15-19
Final Completion and Documentation	30 days	20
Design Functions Southern Illinois		
Verification of obtainable long haul fiber routes	30 days	11
Verification of Municipal Resources for wireless	30 days	11
Municipal Contracts for wireless	60 days	12 & 13
Network Design Approach	60 days	12 & 13
IRU contracts	60 days	12 & 14
Dark Fiber Lateral Design Northern Illinois	60 days	12 & 14
Bid and Processing	30 days	14
Fiber Installation Southern Illinois		
Design Locates	20 days	15
Drafting Design	10 days	15
Permits and Approval	30 Days	16
All Permits Available	10 Days	16
Duct/Fiber Cable Installation	120 days	16-20
Equipment Installation Southern Illinois		
Equipment Selection	30 days	13
Equipment Bid and Processing	60 days	13&14
Equipment Delivery	60 days	15-18
Wireless Equipment Installation	120 days	17-20
Fiber Equipment Installation	150 days	18-23
Final Completion and Documentation	30 days	24

A. Project Leadership and Management Structure

The broadband network that is being established with the benefit of funding from the Federal Communications Commission (FCC) will be known as the Illinois Rural HealthNet Consortium.

LEADERSHIP STRUCTURE:

1. Voting: Each Member of the Consortium shall have one (1) representative and a designated alternative as needed, to be selected by a governing or appropriate body of each Member.

2. Voting by Members: Each Member shall have one (1) vote. The Public and Non-Profit Committee and the User Committee shall select representatives for the Steering Committee, as described in Article II, Section 2.1.

1. Each Member of the Steering Committee shall have one vote, and all votes shall be by a majority of the Public and Non-Profit Members of the Steering Committee. A majority of Steering Committee Members shall constitute a quorum and a majority of the Steering Committee representatives present and voting shall be necessary for any action by the Consortium. If one-third (1/3) or more of the Steering Committee representatives present and voting indicate that the topic in question should be directed to the Consortium as a whole for a vote, the Consortium Members will be so notified.
2. All the members of the Public and Non-Profit Committee and the User Committee shall be notified of proposed actions that have been approved by the Steering Committee. If a majority of either the Public and Non-Profit Committee or the User Committee feels that a proposed action by the Steering Committee should be put to a full vote of the Consortium Members, the Steering Committee will take the appropriate steps to call for such a vote.
    i. A roll call vote of the Voting Members of the Consortium will be required for approval of the annual budget, which shall require an affirmative vote of two-thirds (2/3) of the Members.
3. The Public and Non-Profit Committee shall retain veto power over any proposed actions that, in the opinion of a majority of the Members of the Public and Non-Profit Committee, would detract from the ability of public and non-profit health care entities to provide critical services to their health care constituents.

3. Elected Officers: There shall be a President, Vice-President and Secretary/Treasurer nominated and elected by the Consortium, who shall constitute the elected officers of the Consortium, and who shall also serve as the elected officers of the Steering Committee. Such officers shall be selected from among the representatives of the Members of the Consortium. All officers shall be elected for two-year terms and shall serve until their successor is elected and takes office. The officers shall have the duties and authority stated as follows:

A. President. The President shall be the chief executive officer of the Consortium and shall preside at all meetings of the Steering Committee and the Consortium. The President shall also sign all resolutions and policy statements adopted by the Consortium and shall also execute contracts entered into by the Consortium with public and non-profit entities, private business enterprises, or individuals.

B. Vice-President. The Vice-President shall serve as presiding officer in the absence of the President and shall represent the Consortium as directed by the President or in the President's absence.

C. Secretary/Treasurer. The Secretary/Treasurer shall be responsible for maintaining all the official records of the Consortium, taking minutes of Steering Committee and Consortium meetings, and attesting to the signature of Consortium officials as required on necessary documents. In addition, the Secretary/Treasurer, or a designated agent approved by the Consortium, shall be responsible for overseeing all financial operations of the Consortium, including accounting for all revenues and expenditures, preparation of annual budgets, and authorization of payments of all goods and services acquired by the Consortium.

MANAGEMENT STRUCTURE:

To carry out the objectives of the IRHN, the above-listed leadership structure, acting through the IRHN Consortium, will have the following powers:

(1) To make, amend and repeal bylaws, rules, regulations, rates, charges and other rules of service.

(2) To invest funds not required for immediate disbursement in properties or securities as permitted by Illinois law.

(3) To acquire, purchase, hold, lease and use any property, real or personal or mixed, tangible or intangible, or any interest in such property, necessary or desirable for carrying out the purposes of the Consortium, and to sell, lease, transfer or dispose of any property or interest in such property.

(4) To sue and be sued, complain and defend in all courts, and to appear in or before all applicable federal, state and local governmental agencies.

(5) To enter into joint venture and/or other appropriate business agreements to enable third parties, including individual IRHN Consortium members, to build or improve or procure local distribution systems and/or provide high speed communications services to health care entities in historically rural or underserved areas in Illinois and to connect these entities to sources of medical and health expertise in rural and urban areas in Illinois and to Internet2.

(6) To make and execute contracts and other instruments of any name or type necessary or convenient for the exercise of the powers stated in this Agreement.

(7) To establish the design, plans, and specifications for the IRHN Network Facilities, as well as to conduct or contract for studies and planning concerning the operation and management of the IRHN Network Facilities.

(8) To review and approve budgets and expenditures for the IRHN Network Facilities and related services.

(9) To borrow money and issue evidences of indebtedness pursuant to Illinois law.

(10) To obtain insurance for the IRHN Network Facilities.

(11) To obtain necessary, easements, permits and other approvals for the construction and operation of the IRHN Network Facilities, as may be needed.

(12) To apply for and administer grant proceeds and other funding opportunities received from government and other sources and to accept contributions of capital from member agencies and/or from other public and private sources.

(13) To hire consultants and/or employees and/or to contract for the operation and management of the IRHN Network Facilities and related services.

(14) To form a non-profit corporation under Illinois law, if necessary or convenient to conduct its business and otherwise achieve the purposes set out by this Agreement.

(15) To do all acts and things necessary or convenient for the conduct of its business and the general welfare of the Consortium and its members and to carry out the purposes and powers granted to it by this Agreement and permissible under Illinois law.

MANAGING AGENT:

In order to carry out the activities of the IRHN, the Consortium may wish to enlist the aid of a Managing Agent, which would have the following responsibilities:

Duties: The Managing Agent shall supervise the procurement, acquisition, and implementation of the improved broadband IRHN services. The Managing Agent shall also develop and oversee implementation of appropriate contracting procedures for equipment, services, maintenance, operation, and billing for the improved broadband

IRHN network services. The Managing Agent will not be in the position of providing communications capabilities or services. The Managing Agent will perform duties, including those listed below, to enable the process by which telecommunications services and information are enhanced for health care entities located in rural areas of Illinois:

1. Gather input on broadband needs for rural health care entities.
2. Identify public sector assets and resources that can be used in project implementation.
3. Assist in the creation and functioning of the IRHN Consortium.
4. Develop technical specification and procurement documents.
5. Develop business models for network outsourcing and oversight.
6. Provide recommendations on distribution and oversight of funding.
7. Provide recommendations on contractual arrangements and on parties to the contract(s).
8. Provide oversight and management of implementation, as appropriate, including designation of milestones and deliverables, and recommendations for payment to outsourced network vendors.
9. Provide recommendations on strategic direction and growth, including health care community awareness and development of applications.

Authority: The Managing Agent shall have the general authority to incur such expenses, execute such contracts and take such other actions as it determines necessary or desirable in carrying out its duties, including but not limited to:

(a) Subject to the budget adopted by the Members, purchasing, renting or leasing such real property, facilities, equipment, and materials as may be necessary or desirable for acquiring, constructing, operating, maintaining, and repairing the IRHN Network.
(b) Administering the construction, maintenance, and operation of the IRHN Network.
(c) Acting as the fiscal agent for the Consortium by preparing budgets and approving expenditures for the IRHN Network; preparing annual financial reports for the operation of the IRHN Network; preparing fees and expenses incurred in the acquisition, construction, leasing, operation, and maintenance of the IRHN Network; billing and collecting from each party its respective share of the costs and expenses of the IRHN Network; and generally handling the financial matters affecting the IRHN Network.
(d) Obtaining insurance, if necessary, for the IRHN Network facilities and the Members' activities relating to the IRHN Network.
(e) Obtaining necessary easements, permits, and other approvals for construction and operation of the IRHN Network facilities.

B. Projected Work Plan for the Illinois Rural HealthNet

The work plan for this project has been included earlier in this section.

Note: Some of the following phases and tasks will occur in parallel, and/or on an ongoing basis.

Phase 1

Initial Steps

1. Confirm each of the participating health care organization's and location's communications systems, needs, and procedures.
2. Finalize documentation of the areas of Illinois that must be linked by the initial IRHN.
3. Confirm the fiber optic, public, and private infrastructure resources that are available to be used to offer fiber, wireless, or other connectivity within each of the regions.
4. Identify the specific points of connectivity for each participating organization and location.

Confirm Partnering Agencies

5. Confirm the partnering non-health care agencies (such as the Municipal Research and Education Network) and identify any new agencies that may express interest in participating in the network.
6. Work with public sector entities to document their plans to install fiber along selected routes.
7. Finalize budget estimates for the fiber optic and wireless connectivity of the project to link the participants in the network to public sector fiber.
8. Working with each participant, develop the needs and costs for data connectivity, bandwidth requirements, logical connectivity, and security needs for each participant.
9. Develop and recommend technical and operational procedures to define the relationship between original members of the IRHN and any new participants.

Phase 2

Fiber Optic and Wireless Corridors

1. Provide coordination between public sector fiber and wireless resources and the needs of the IRHN topology.
2. Finalize the routes, fiber optic and wireless characteristics, technology and construction standards to allow interconnection between all segments.
3. Work with equipment vendors and service providers (as appropriate) throughout the implementation process in an oversight role. This will require evaluation of the vendors' project plans, periodic visits to the job sites to inspect installation processes and to monitor progress.
4. Provide periodic monitoring of the final testing and certification processes for fiber and wireless network elements and/or services elements. Insure that the final system characteristics will meet the needs of the IRHN organization.
5. Gather and review all as-built documentation and integrate into a package suitable for future reference by IRHN to support plans for expansion to the current and future members of the organization.

Phase 3

Establish Member Links

1. Provide coordination and guidance (as may be needed) for each participant in the IRH.
2. Provide advice on last mile links and terminating equipment.
3. Aggregate the needs of all organizations and locations by technology platform and develop procurement vehicles.
4. Work with the appropriate procurement organizations to issue the procurement documents.
5. Provide a leadership role in the procurement process, including vendor meetings, receiving questions, and providing vendor feedback.
6. Develop the evaluation procedures, facilitate the evaluation process, and assist in preparation of a brief report outlining the decision of the selection committee.
7. Work with the selected vendor(s) throughout the implementation process in an oversight role.
8. Provide periodic monitoring of the final testing and certification processes. Gather all test results, perform final reviews, and integrate into a package suitable for future reference.
9. Gather and review all as-built documentation and integrate into a package suitable for future reference.

Phase 4

Illinois Rural HealthNet Startup

1. Coordinate the startup processes between the technologists within each of the member organizations. This includes the development of specifications for link characteristics, addressing, protocol, and security requirements that will allow seamless connectivity between the participants and their specific target locations while also providing appropriate levels of security.
2. Document the overall configuration of the network, and also the configurations of the separate sub-networks, for establishing operational procedures.

Phase 5

Maintenance Phase

1. Document maintenance responsibilities for all logical segments of the network. This will include name, contact, contact number, area of responsibility, contract coverage hours, emergency response commitments, and escalation procedures.
2. Service Level Agreements will be established for the IRHN as a whole, and with individual equipment and service providers, as needed.

Phase 6

Implementation of the Financial and Business Model

1. Finalize partnership and financial arrangements for IRHN network users and for public sector entities providing network resources.
2. Finalize cost structures for equipment purchases and for purchasing telecommunications services to be provided by private sector.
3. Establish structures to fulfill FCC and USAC requirements for network and financial reporting.
4. Finalize budget and cash flow requirements.
5. Assign responsibilities for conducting cost reimbursement, cost tracking, and for billing any for-profit users of the IRHN.
6. Seek additional funding as may be made available.
7. Seek to establish the financial sustainability of the IRH, by aggregating Network users and re-allocating their communications costs to provide operating funds for the IRH, and by marketing the IRHN to eligible entities within the State of Illinois.

Phase 7

Establishment of the IRHN Consortium 501(c)(3) Organization

1. Finalize language for the IRHN Consortium Agreement.
2. Prepare and submit application documents.
3. Elect and/or appoint officers and Steering Committee, as appropriate.
4. Establish requirements for ongoing staff assistance, as appropriate.

Attachments

1. PARTICIPANT OVERVIEWS
   - NORTHERN ILLINOIS UNIVERSITY
   - BEN GORDON CENTER
   - METROPOLITAN RESEARCH AND EDUCATION NETWORK (MREN)
   - JANET WATTLES CENTER
   - SINNISSIPPI RURAL HEALTHCARE
   - UNIVERSITY OF ILLINOIS
   - THE CARLE FOUNDATION
   - DELNOR COMMUNITY HOSPITAL
   - TRIRIVERS HEALTH PARTNERS
   - ILLINOIS RURAL HEALTH ASSOCIATION
   - ILLINOIS CRITICAL ACCESS HOSPITAL NETWORK
   - SOUTHERN ILLINOIS UNIVERSITY SCHOOL OF MEDICINE
   - ILLINOIS STATE UNIVERSITY
2. TECHNOLOGY PLATFORMS
3. NETWORK MANAGEMENT APPROACH
4. PERSONNEL BIOGRAPHIES
5. IRHN CONSORTIUM AGREEMENT
6. PARTICIPATING HEALTH CARE FACILITIES
7. RUCA CODES FOR PARTICIPATING HEALTH CARE FACILITIES
8. WIRELESS COSTS
9. FIBER OPTIC COSTS
10. ONGOING FIBER OPTIC COSTS
11. ONGOING WIRELESS COSTS
12. IMPLEMENTATION MANAGEMENT COSTS

TELEHEALTH OVERVIEW REFERENCES

NORTHERN ILLINOIS UNIVERSITY

Northern Illinois University – NIU Outreach

NIU has long believed in the mutual benefits of engagement with its region. To underscore its commitment to serve the region with its wide range of available resources, the university established a new division called NIU Outreach in 2002. The goal of NIU Outreach is to organize the many activities of the university that touch the region and make them more easily accessible.

NIU's history has always been tied to the needs and the growth and the complexity of the Northern Illinois region. NIU Outreach represents the University's commitment to help the region continue to grow and prosper.

NIU OUTREACH - REGIONAL DEVELOPMENT INSTITUTE

The Regional Development Institute at Northern Illinois University is a public service, applied research, and public policy development organization. Its mission is to be a leader in providing services that contribute to the economic well being of the State of Illinois, to be a leader in advancing the capabilities of government at all levels, to develop policies, and to manage and evaluate government programs and services. The Institute was founded in 1969 and is part of NIU's Division of University Outreach.

The Regional Development Institute creates innovative solutions to improve civic engagement in communities, governments, and nonprofit organizations. Areas of expertise include association management, economic, community, and workforce development, strategic planning, health care policy research, educational planning and performance studies, connectivity and information technology, and survey research.

NIU OUTREACH - REGIONAL DEVELOPMENT INSTITUTE, BROADBAND DEVELOPMENT GROUP

Founded in 2001 and affiliated with NIU in 2005, the Broadband Development Group (BBDG) serves clients in Illinois, the Midwest, and across the country. Specialties include improving the efficiency of IT operations, formulating broadband and other connectivity strategies, and assisting communities in implementing high-speed connectivity services and infrastructure.

With every organization feeling pressure to do more with less, especially in the public sector, innovative approaches to addressing connectivity needs have become essential. The Broadband Development Group, along with other units of NIU Outreach, help all elements of the public sector capitalize on existing strengths, aggregate resources, and leverage purchasing power to meet their needs for connectedness. This group is working in partnership with our internal ITS group on the NIUNet and the Illinois Rural HealthNet systems.

NIU - Information Technology Services

NIU Information Technology Services, ITS, designs, installs, maintains and operates the voice, video and data systems to provide the services required by our user community of over forty thousand students and staff. We currently have our own telephone central office that supports both traditional circuit switched services and the emerging Voice over IP based services. We distribute these services to nearby schools and governments as-well-as supporting our remote campus locations. Using NIUNet, we distribute our services, the Internet and Internet 2, to all of our campus locations throughout northern Illinois.

We provide video based services through our CATV system to each of our residence halls. Video programming is distributed in the traditional analog format, but is increasing moving to a video on demand format over our IP based data network. We also provide production facilities that allow the creation of education oriented video that can be viewed by our students in an on-demand manner.

NIU Health Programs

Northern Illinois as a rich tradition in health care programs that include academic programs leading to undergraduate and graduate degrees, clinical programs providing services to residents of the region, specialized cancer treatment programs, and research and technical services for regional health care organization.

Academic programs

The College of Health and Human Science at Northern includes the: School of Allied Health Professions; Department of Communicative Disorders; School of Family, Consumer, and Nutrition Sciences; Gerontology Program; and School of Nursing. The six schools and departments offer nine undergraduate degrees and seven master's degrees. These programs graduate over 400 students with undergraduate degrees and 150 with masters degrees annually.

Clinical Programs

Northern Illinois University also has a number of health clinics that serve area residents. These include the Tri-County Health Center, the Speech and Hearing Clinic, the Institute for deafness, the Family Center, and the Child Development Laboratory. These programs provide internship opportunities for students as well as services to community residents. The Tri-County Health Center is a rural health center that provides services to underserved populations in the county and is the only local health care provider in the county that is accepting new Medicaid patients.

Specialized Cancer Treatment

Since 2005, NIU Outreach (NIUO) has managed the Northern Illinois Institute for Neutron Therapy at Fermilab. This facility provides neutron therapy for treatment of a limited number of cancers. The facility is currently treating approximately 35 patients per year. The project is funded with a grant from the Department of Defense and patient revenue.

Since 2006 NIUO has also been involved in the planning for a new proton therapy center. Current plans are for the proton therapy center to open in the spring of 2011. The planning phase of this project is also being funded from a Department of Defense Grant.

Research and Technical Assistance in Health Care

NIU Outreach has been involved in providing services to segments of the health care sector for a number of years, initially through the Center for Governmental Studies. These services have included market research, board development, strategic planning, and economic impact analysis. A market research study is currently being conducted to identify other services that might be part of the health care initiative of NIUO.

NIUNET

NIUNet is dark fiber project initiated in 2003 by the Department of Information Technology Services at Northern Illinois University to connect organizations, build relationships and share services between research, education, communities and hospitals. NIUNet is designed using state-of-art networking equipment that provides a variety of connectivity from 100Mb to 10 Gigabit. The NIUNet design is based on Dense Wave Division Multiplexing (DWDM) and offers the opportunity for the delivery of lambdas (light waves) between any of the NIUNet GigaPOP locations. With an advanced research network and the strength of NIU's activities in building relationships, NIUNet is accelerating Northern Illinois into the forefront of networking technologies.

SUPPORT STRATEGY

NIUNet's approach to providing support is organized into teams of trained individuals. Through a trained helpdesk, problems are documented and delegated to assigned support personnel specific to the problem. The network is actively monitored 24/7, immediately notifying network engineering personnel of problems within the network.

In the event of a hardware failure within the network, NIUNet has contracted with its equipment vendor a four hour same day response time for equipment replacement. NIU utilizes central office grade equipment for NIUNet to avoid any unplanned outages. The equipment is hardware redundant with dual processors. The design of the network is a ring architecture, however the loop between Hoffman Estates and Rockford has not been closed. Our short term plan is to complete a fiber optic ring around Northern Illinois before 2009. This ring architecture will provide redundant line fail-over in the event of an equipment failure or fiber cut.

NIUNet has maintenance contracts for the physical support of the network. Most of the fiber used to create the NIUNet ring has been obtained via an IRU agreement with the Toll Road Authority, with Adesta as the maintenance contractor. In the event of a fiber optic break along the toll road fiber, Adesta is dispatched immediately to resolve the problem. NIU has constructed lateral fiber routes adjacent to the I-88 fiber to allow NIU to add key locations onto the NIUNet ring. Currently there are three partners that assist NIU in maintaining and repairing the fiber in the event of a break. The following list shows our current maintenance partners:

DeKalb Fiber Optics (DFO) – In partnership with a local fiber optic company, NIU and DFO share duct space on a lateral fiber run in DeKalb, Illinois. In the event of a break in this fiber, DFO is dispatched immediately to repair the fiber break. The local fiber company has all of the equipment and personnel to complete this task in a short time. The fiber is registered with J.U.L.I.E, with the fiber being located by DFO.

City of Batavia. – In a partnership with the City of Batavia, NIU shares the cost of installation, use, and maintenance on fiber that is maintained by the City of Batavia. In the event of a fiber break, the City owns its own utility company and can dispatch personnel immediately. The City owns the equipment necessary to complete the repair. The fiber is registered with J.U.L.I.E and located by the City of Batavia.

City of Naperville – As part of an agreement with the City of Naperville, NIU uses a steel duct that is part of the City's high voltage system to run the fiber through to our facility on Diehl Road. As a result of the fiber lying between two high voltage ducts, this fiber is located and maintained by the City of Naperville.

Fermilab - NIU has a partnership with Fermilab to provide NIU with a connection to Starlight at Northwestern University. In partnership with COMED, Fermilab has a direct fiber link that is maintained by COMED. In the event of problems with the Fermilab link, NIU has support through Fermilab to assist in resolving problems that may occur.

System Architecture

NIUNet is built as a DWDM based network with a ring architecture. The current network installed can provide up to thirty-three lights waves, lambdas, over a pair of fibers. The carrier grade equipment is capable of providing many methods for connectivity. Currently NIUNet offers one gigabit, ten gigabit or an independent lambda as part of the connection suite. NIUNet can offer large capacities of connections between GigaPOP sites to meet the needs of high capacity to support the user community.

Our construction for the current year includes fiber constructed along the I-39 corridor to Rockford where we are working with the Illinois Department of Transportation. The anticipated completion time for the I-39 link is November 2007. The design of the NIUNet network is a ring architecture, however the loop between Hoffman Estates and Rockford has not been closed. The fiber currently exists along the path between the two cities and is

available for our network. It is the plan for NIU to close our network into a full ring before 2009 so that NIUNet can provide our user community a full redundant ring and offer diverse paths. Further redundancy is provided with all equipment having battery backup with standby motor generators for key facilities. Currently the NIU DeKalb and Fermilab sites have large building generators to maintain the power to the equipment in event of a power failure.

Outside of scheduled maintenance, NIUNet has not experienced an outage since it entered production. NIU is confident that the equipment installed for NIUNet is reliable, dependable, and can provide continuing reliable service in the future.

SCOPE OF SERVICES

NIUNet offers flexible options for services in layer 1 and layer 2 network transports. With NIUNet built on carrier class network architecture using DWDM equipment, the network can offer several options to NIU partners. The following Figure A represents a conceptual drawing of the network architecture showing the addition of a light wave to support the Gigabit connection for the support of the Illinois Rural HealthNet initiative.

NIUNet proposes to provide dedicated lambda links in support of the Illinois Rural HealthNet mission. The network will form the gigabit backbone between the Internet and Internet 2 access points and the distribution to our health care participants.

The NIUNet system use government owned fiber optic links between all of our facilities and the Internet and Internet 2 providers in downtown Chicago.

Optional Services

Working with stakeholders in our area, we have identified additional services that meet the needs of government, education and healthcare. These functions build upon the transport services we have created to provide the ability to support high-performance computing applications, backup and redundancy.

1. Ultra-High-Performance Light-Path Transport Services

The NIUNet network supports the establishment of Light-Path service for our customers between any of our node locations. Each Light-Path is an independent lambda, or light wave, service that allows our customer a layer one link allowing them an independent connection where they can use their own protocols or speeds using NIUNet as a reliable transport.

2. Transport Services

NIUNet can offer a range of transport services at standard Ethernet speeds up to one and ten Gigabit layer two based links. We work with each customer to tailor the service to meet their specific needs. This allows end-to-end circuits to be created, linking sites around the northern Illinois region for such applications as offsite data storage or system redundancy.

3. Services from 710 North Lake Shore Drive to the NIU DeKalb Central Office

NIU has a one gigabit connection from Starlight at 710 North Lake Shore Drive in Chicago to the NIU DeKalb Central Office. The service offered is a full layer 2 dedicated Gigabit connection between Starlight and our GigaPOP. This path is based upon an established connection path that NIU has created to downtown Chicago in partnership with Fermilab.

FIBER PATH OVERVIEW

Service between NIU DeKalb and downtown Chicago

NIU will establish a one Gigabit connection between the NIU DeKalb Central Office and downtown Chicago. The service proposed between the facilities is a full layer 1 dedicated Gigabit Ethernet connection supported by a dedicated lambda. The physical fiber route for this connection uses a fiber lateral owned by NIU from our Central Office at the DeKalb campus to the I-88 Toll Road. At the toll road we connect to fiber we have procured from the Illinois State Toll Highway Authority. NIU has established a twenty year IRU with the Toll Highway Authority for fiber that currently extends to the intersection of Mitchell Rd at I-88 to Batavia, Illinois. We have a partnership with the City of Batavia where NIU owns fiber from the I-88 Toll road to the Fermilab facility. NIU has established a pass-through of light waves between the Fermilab facility to downtown Chicago. Because a non-disclosure agreement between Fermilab and the fiber provider, the physical route of the fiber route to downtown Chicago is considered to be confidential information by this provider.

See Figure A below for a logical representation of the fiber link between NIU DeKalb and the bandwidth providers in downtown Chicago.

See Figure B for the path of the fiber path between the NIU Central Office in DeKalb and the Fermilab facility.

Figure A

Gigabit from NIU DeKalb to Chicago/Starlight

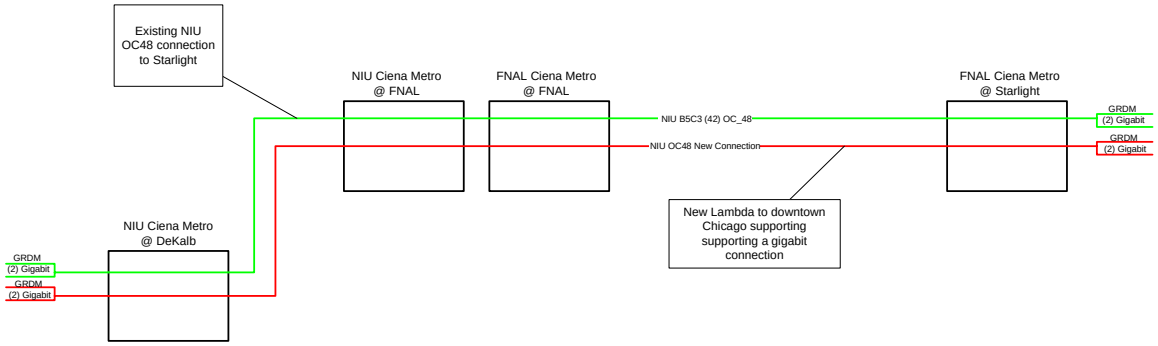
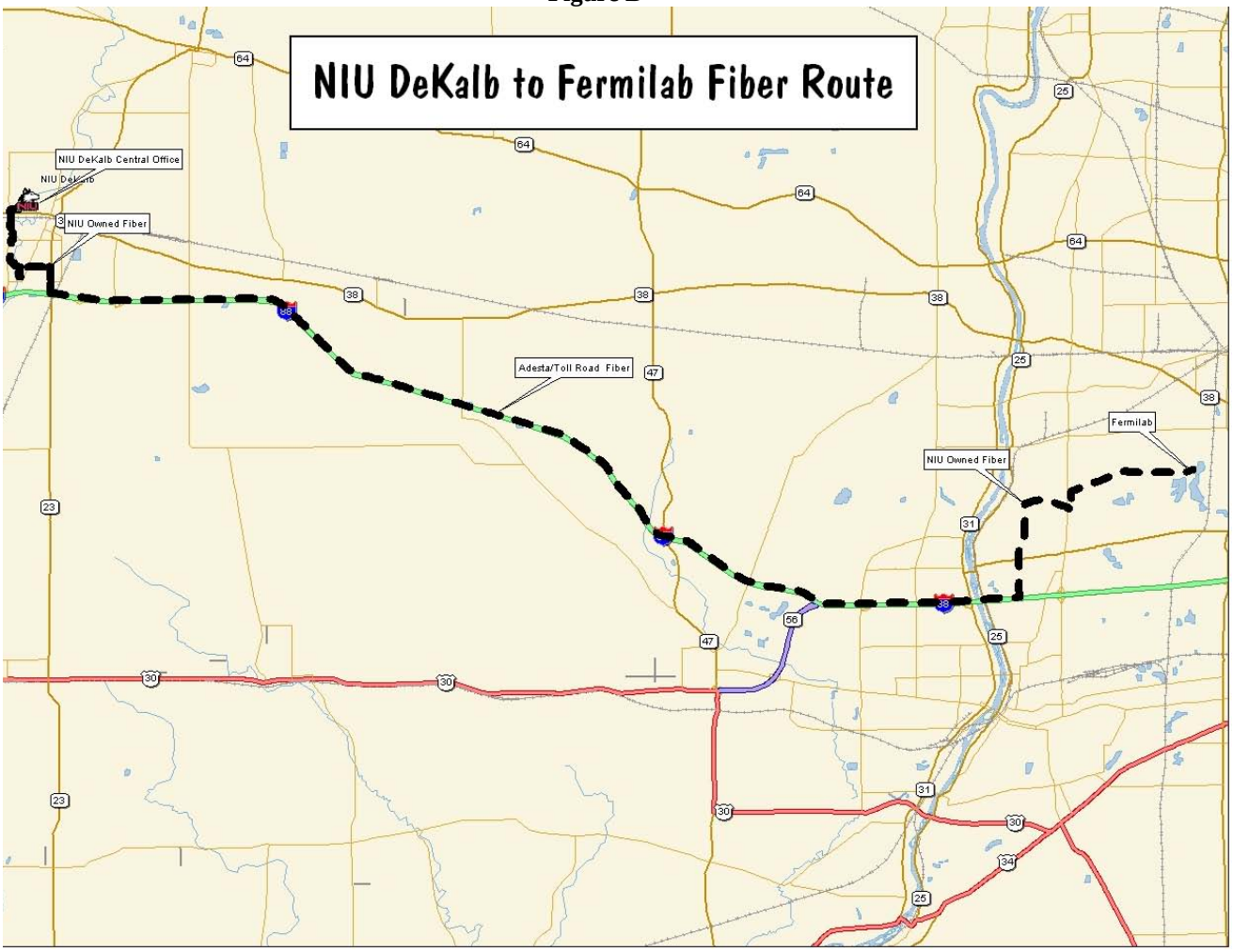


Figure B

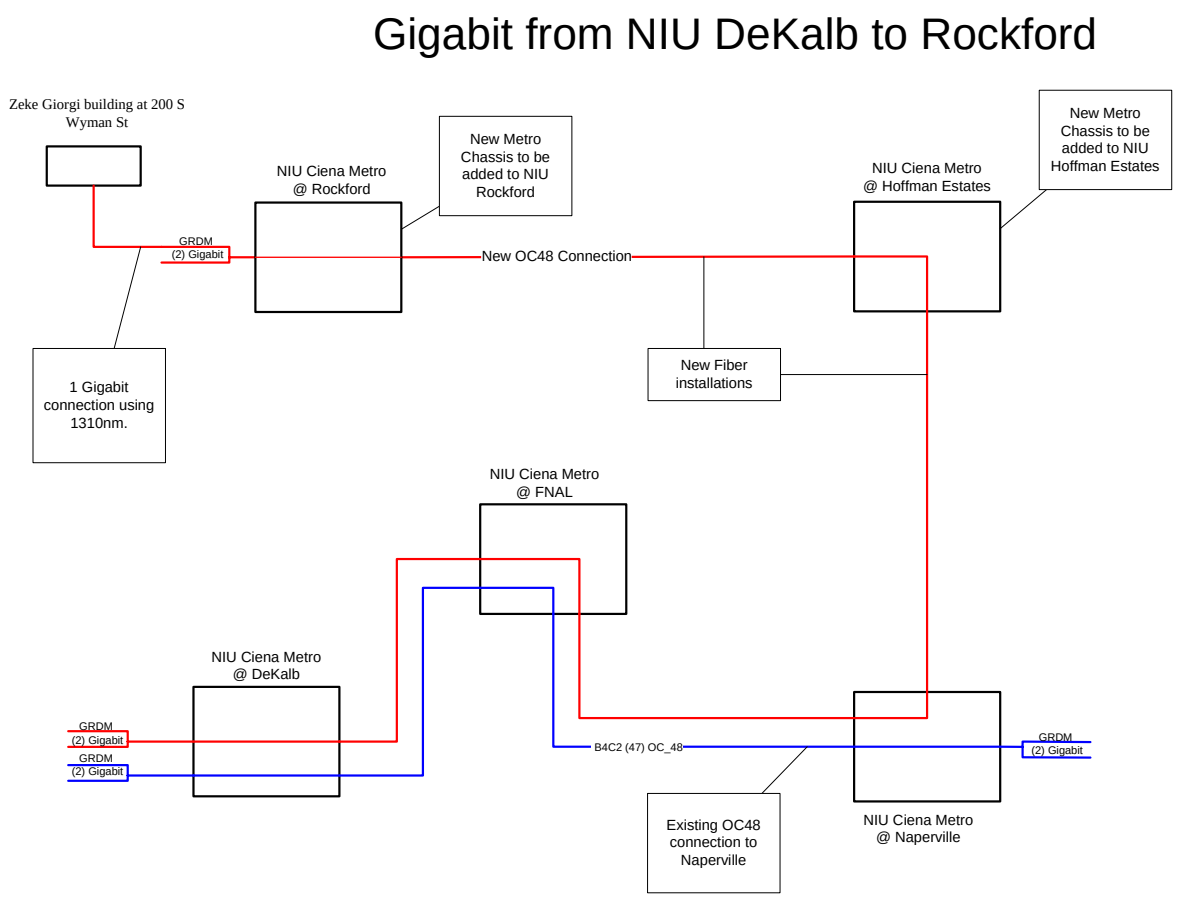


Service from NIU DeKalb Central Office to Zeke Giorgi building at 200 S Wyman St Rockford Il

NIU will establish a one Gigabit connection between the NIU DeKalb Central Office and the Zeke Giorgi building at 200 S Wyman Street in Rockford, Illinois. The service proposed between the facilities is a full layer 2 dedicated Gigabit Ethernet connection. The path will be a combination of an existing path through the current NIUNet infrastructure plus the construction of a new route of fiber in Rockford to link our Rockford Campus to the building in downtown Rockford. Additional fiber will be procured from the Illinois State Toll Highway Authority to link the NIU Hoffman Estates campus and the NIU Rockford campus. This will become a fully redundant ring topology for NIUNet when the I-39 fiber is completed later this year.

The following Figure C represents a conceptual drawing of the network architecture with the addition of a light wave to establish a one gigabit connection for the State of Illinois.

Figure C

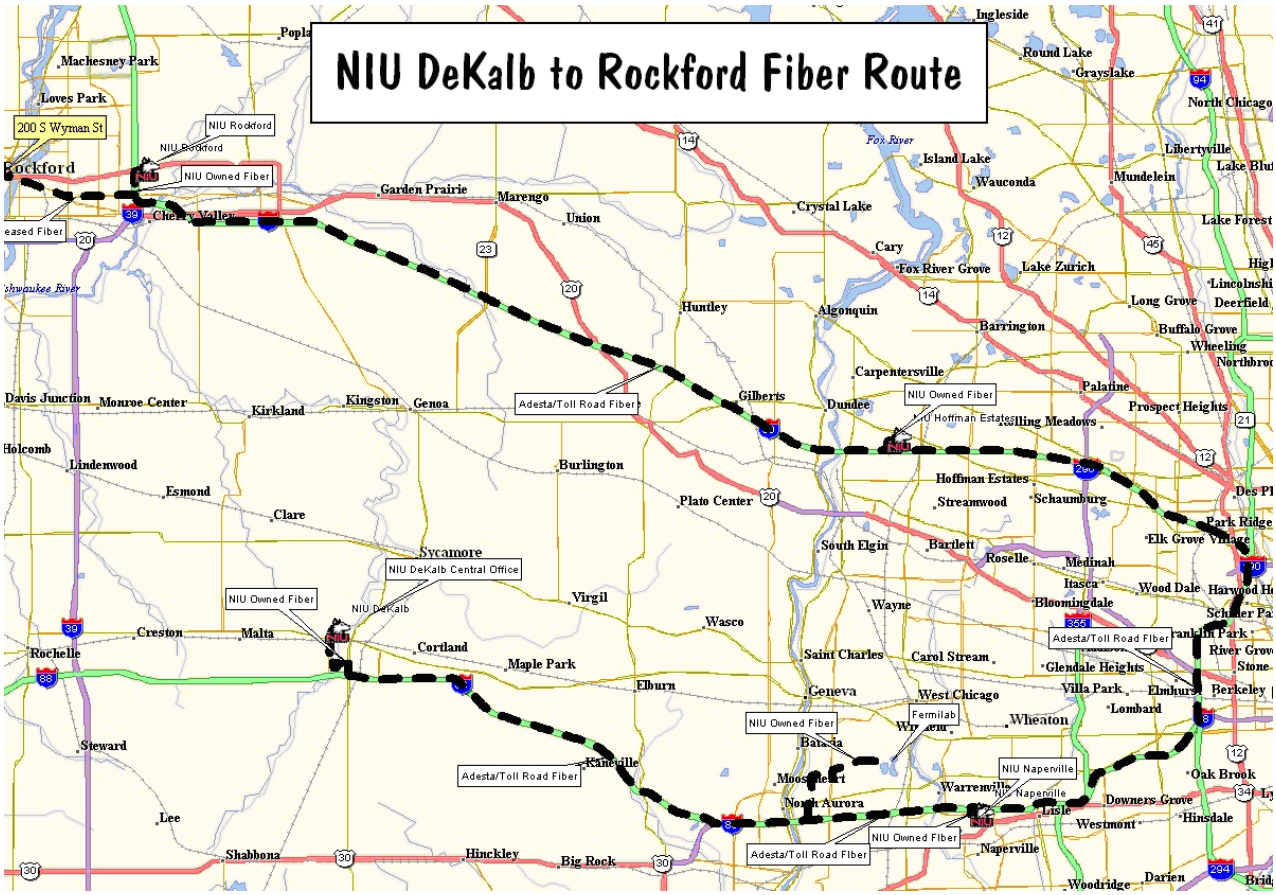


The physical fiber route for the connection includes a fiber lateral owned by NIU from the NIU DeKalb Central Office to the I-88 Toll Road fiber. NIU has established a twenty year IRU with the Toll Road for fiber that currently extends to the intersection of Mitchell Rd at I-88. In partnership with the City of Batavia, NIU owns fiber from the I-88 Toll road to Fermilab. The route continues east on the I-88 Toll Road fiber to Washington Street in Naperville, Illinois. In partnership with the City of Naperville, NIU owns fiber in a Naperville conduit system that connects into the NIU Naperville campus where one of the NIUNet GigaPOPs is located.

To establish a path into Rockford, NIU will obtain an IRU for a fiber from the Illinois Toll Highway Authority. The fiber link runs east on I-88, north on I-294 and west on I-90 to Beverly Rd in Hoffman Estates. NIU will construct a fiber lateral from I-90 to the NIU Hoffman Estates campus. A GigaPOP will be located in the NIU Hoffman Estates facility to amplify the signal for the light wave to Rockford. NIU will obtain an IRU fiber from the Toll Road Authority that will run west on I-90 to Highway 20 (State Street) in Rockford, Illinois. NIU will construct a fiber lateral from I-90 to the NIU Rockford Campus. Our GigaPOP will be located in the NIU Rockford facility, where a gigabit interface will be established for the State of Illinois.

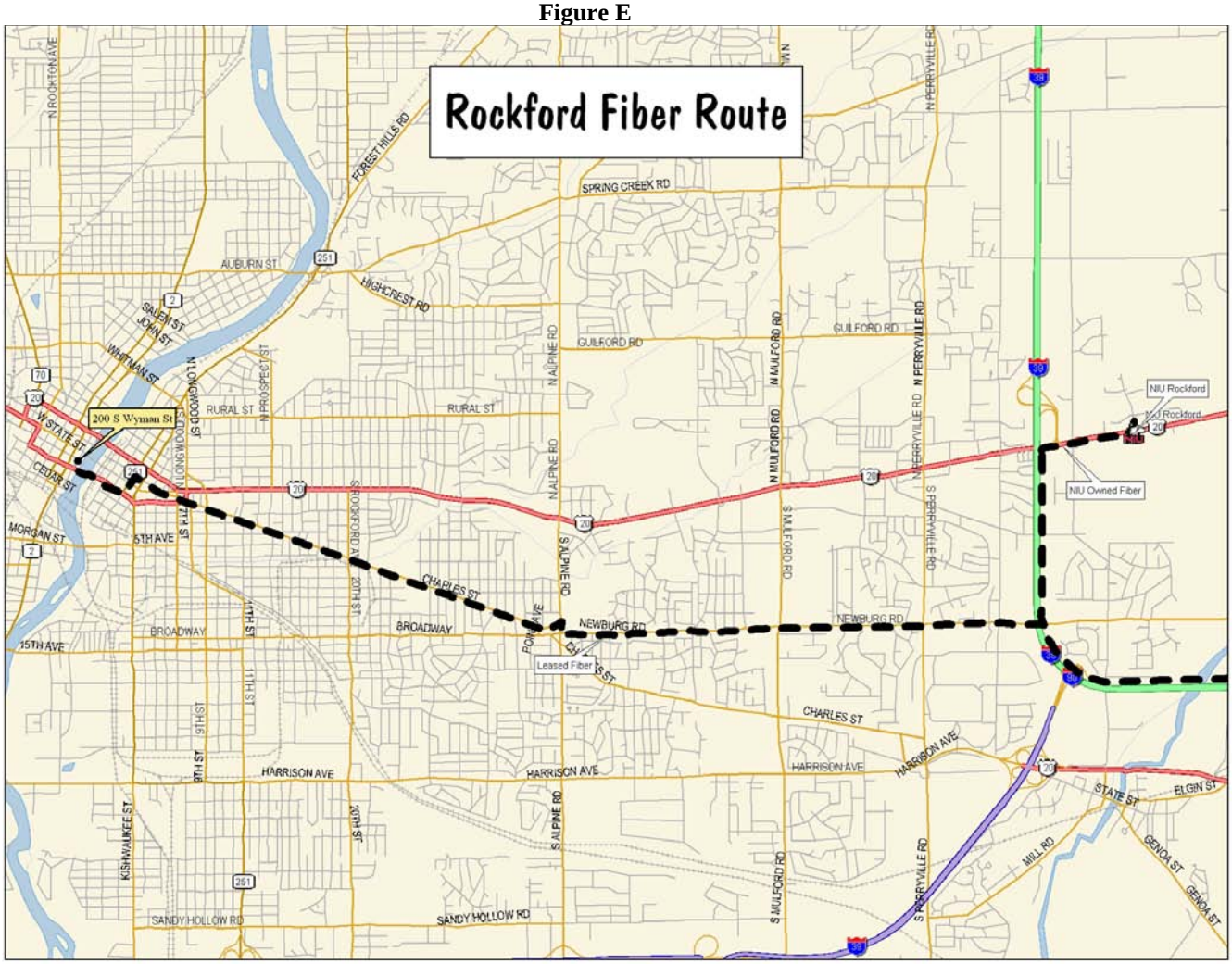
Fiber from the NIU Rockford facility to the Zeke Giorgi building at 200 South Wyman Street will be leased to establish a dark fiber connection. Construction of approximately three blocks of fiber will be required from the fiber provider to the Zeke Giorgi building at 200 South Wyman Street. The fiber construction will be part of the lease from the fiber provider. The anticipated route of the fiber will be along Newburg Road, to Charles Street and to Main Street. See Figures D and E that follow for the path of the fiber optic facilities.

Figure D


NIU DeKalb to Rockford Fiber Route
200 S Wyman St
NIU Rockford
NIU Owned Fiber
Adesta/Toll Road Fiber
NIU DeKalb Central Office
NIU DeKalb
Fermilab
NIU Naperville
Machesney Park
Loves Park
Rockford
Garden Prairie
Marengo
Union
Cherry Valley
Crystal Lake
Cary
Fox River Grove
Lake Zurich
Huntley
Algonquin
Barrington
Carpentersville
Gilberts
Dundee
Hoffman Estates
Palatine
Prospect Heights
Davis Junction
Monroe Center
Kirkland
Kingston
Genoa
Holcomb
Lindenwood
Esmond
Clare
Burlington
Plato Center
Streamwood
Schaumburg
Sycamore
Virgil
Wasco
South Elgin
Bartlett
Roselle
Medinah
Itasca
Bloomingdale
Wood Dale
Wayne
Creston
Malta
Rochelle
Cortland
Maple Park
Elburn
Saint Charles
Carol Stream
Glendale Heights
Villa Park
Geneva
West Chicago
Wheaton
Lombard
Steward
Kaneville
Batavia
Oak Brook
Lee
Shabbona
Hinckley
Big Rock
North Aurora
Lisle
Downers Grove
Westmont
Hinsdale
Naperville
Woodridge
Darien
Ingleside
Round Lake
Grayslake
North Chicago
Libertyville
Island Lake
Wauconda
Mundelein
Lake Forest
Long Grove
Deerfield
Buffalo Grove
Wheeling
Elk Grove Village
Park Ridge
Harwood Heights
Schaumburg
Berkeley
Elmhurst
Oakbrook Terrace
Fox River
Rock River

Attachment 1 – Participant Overviews

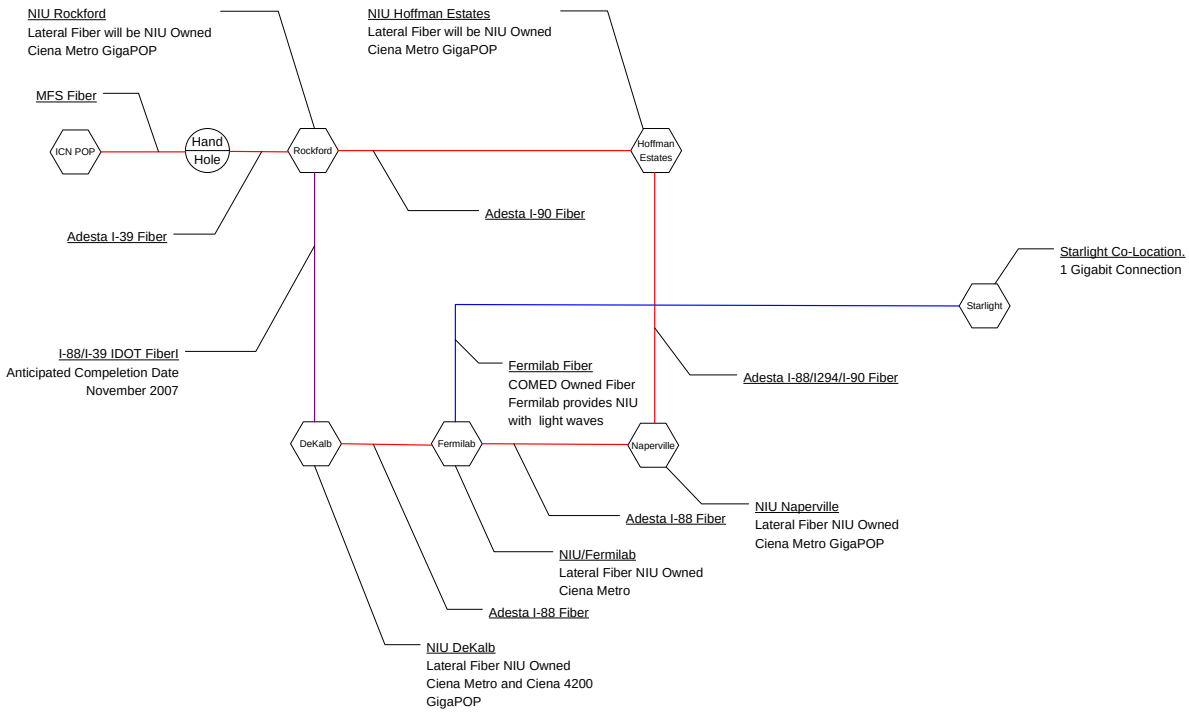
Figure E



The following Figure F provides a logical representation of the NIUNet fiber optic network.

Figure F

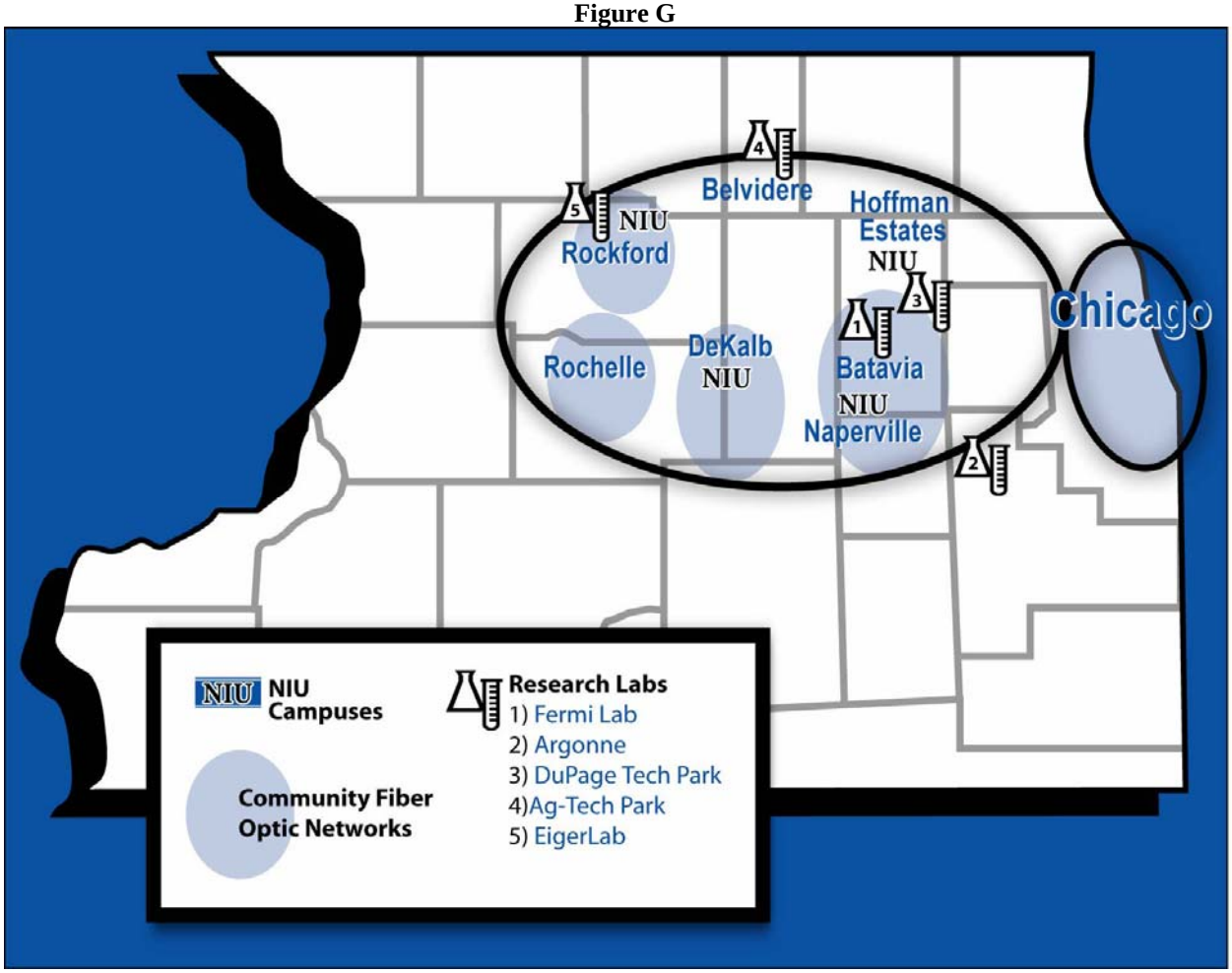
Fiber Topology Map



The Future of NIUNet

Northern Illinois University, in partnership with area communities, schools and hospitals, will continue to complete and expand the plan for NIUNet. It is the goal of NIU to complete a ring around Northern Illinois before the year 2009. Figure G demonstrates the overall concept of the completed ring for NIUNet. NIU understands the need for ultra high speeds in the Northern Illinois region but also the need for diversity in routes. NIU anticipates that a critical fiber route between I-88 and I-90 will run along the I-39 highway and will be completed before the year 2008. This will give NIUNet the ability to offer multiple paths from locations along the ring.

Figure G



Attachment 1 – Participant Overviews

BEN GORDON CENTER

BGC Overview

The Ben Gordon Center, or BGC, is a private, non-profit corporation that provides behavioral healthcare services to persons affected by mental health, alcohol and other drug abuse, child welfare, or other behavioral health problems. We operate four outpatient counseling offices located in DeKalb, Genoa, and Sandwich, Illinois. In addition to providing services at our central and satellite locations, we also provide services on an outreach basis in client homes, schools, area hospitals, and nursing homes when clients are unable to leave these settings or when otherwise indicated. The Ben Gordon Center will provide care to over 4000 adults and children in our community.

BGC's staff is comprised of psychiatrists, psychologists, registered nurses, licensed clinical professional counselors, licensed clinical social workers, case managers, vocational specialists, certified addictions counselors, and administrative and support personnel. Interns from Northern Illinois University, Kishwaukee College, and other higher educational institutions also regularly work with us.

Over the past several years, similar to other behavioral health organizations, we have reviewed our market position in light of significant changes in our state. Four years ago, Illinois began a transition from grant funding toward a fee-for-service payment methodology. In order to thrive in this new environment, we needed to change our culture.

Need for Technology and Connectivity to improve Client Outcomes and access to care:

The challenges of community behavioral healthcare providers are increasing. Staff shortages in the areas of counseling, social work, nursing and psychiatry create human resource challenges for many providers across the state, as the state of Illinois moves to a fee for service environment access to care is critical to organizations thriving in the new environment. This access to care will be enhanced though this proposal. Advances in tele-psychiatry and counseling will allow remote and rural providers to access needed clinical resources such as psychiatry and bi-lingual providers.

Electronic Medical Records will also provide greater access to care, the need for Building regional or state networks; Connecting those networks to the public Internet, to Internet2 or to National Lambda Rail; and advanced telecommunications and information services that will ride over those networks will allow rural behavioral health care providers to not only provide better care with greater outcomes , but connect to larger healthcare for enhanced integration of care between rural primary care providers and behavioral healthcare providers.

METROPOLITAN RESEARCH AND EDUCATION NETWORK

MREN—Advanced Networking for Advanced Applications

The Metropolitan Research and Education Network (MREN) is one of the world's most advanced high-performance regional networks, serving seven states in the upper Midwest. MREN's mission is to create advanced, innovative networking architecture, to implement state-of-the art infrastructure, and to provide for a wide range of advanced digital communication services in support of leading-edge research and educational applications. MREN provides regional connectivity to national and international advanced research networks. Although MREN's primary focus is on providing advanced digital communications for leading-edge research and educational applications, it also addresses more general networking requirements. MREN is a collaborative effort undertaken as an interdisciplinary, interorganizational, cooperative partnership. MREN is based on the premise that, in the future, the core foundation and enabling technology for most research and education activities will be high-performance, broadband digital networks. The MREN consortium believes that its research community will continue to drive advanced networking technologies for the foreseeable future. MREN was developed to support a wide range of advanced research applications requiring high-performance and high bandwidth, especially large-scale e-Science. Research applications that utilize MREN include high performance computing, advanced digital video, advanced medical imaging, computer-aided diagnostics, high energy physics, computational biology and chemistry, astronomy and astrophysics, and advanced networking research. MREN also provides access to remote instrumentation, such as those at national research labs.

The MREN community is at the forefront of advanced Internet technology development and implementation. All information technologies require on-going renewal, and a wide range of initiatives have been established to ensure that Internet technologies continue to evolve. Collectively, many of these efforts are developing what has been referred to as the "Next Generation Internet." Many recent researched and development initiatives have focused on advanced optical networking, based on dynamic wavelength switching. In 1993, MREN was designed as one of the first "next generation Internet" projects; production began in 1994, when MREN created the world's first GigaPOP. MREN's technical design has always been based on extensive analysis of multiple requirements of those leading-edge applications. MREN allows real-time, state-of-the art applications to actively use the latest, multi-site advanced networking technologies. MREN has been widely recognized as a prototype for the development and promotion of existing and future, digital, communication services, utilizing high performance networks. MREN related regional, national, and international projects range from designing and implementing new services, technologies and techniques aggressive bandwidth-utilizing applications to research and development.

Many of these research and development projects center on advanced network architecture, methods, experimentation, and tools. These projects are undertaken with research partners world-wide. MREN is a cooperative partnership, consisting of a consortium of organizations that undertakes mutually beneficial projects in order to provide advanced networking services and infrastructure to its constituencies.

One of the defining principals of MREN is that its membership believes in supporting advanced applications with advanced networking as a priority. These organizations believe in providing the highest level of quality services to their constituencies. Many of these organizations have been working together on advanced networking initiatives since the early days of the first upper-Midwest regional Internet, which provided connectivity to the national NSFnet. Consequently, its membership also includes international advanced networking research organizations, federal agency networks, state-wide networks, and corporate research labs.

To provide a means for corporations to participate in MREN research and development projects, the Enterprise Research and Education Network program has been established as an MREN project. Participating corporations must be sponsored by an MREN member organization, adhere to MREN policies and procedures, and use the provided network connectivity only for research and development rather than for commercial purposes. Beyond working cooperatively to provide advanced communication services, MREN is working with multiple providers on ongoing, mutually beneficial, cooperative research and development efforts related to high performance interorganizational networking. MREN also works in close partnership with corporate research and development organizations and technical staff who have expertise in advanced applications. These activities include technical meetings and joint

projects centering on advanced technologies, new services, interoperability testing and performance evaluation, routing schemes, emerging technologies and services, including those based on advanced optical networks, migration strategies, inter-LATA services, links to testbed networks, and connectivity to gigabit and multi-gigabit networks. Almost all networks now connect to MREN with 10 Gbps circuits.

MREN was originally developed by its charter members: the University of Chicago, Argonne National Laboratory, the University of Illinois at Chicago, Fermi National Accelerator Laboratory, Northwestern University, and the National Center for Supercomputing Applications (NCSA). These organizations were joined by CANARIE, the Canadian research and education network (the Canadian Network for the Advancement of Research, Industry and Education), the University of Wisconsin (Madison and Milwaukee), the University of Illinois at Urbana-Champaign, the University of Minnesota, Merit, the University of Michigan, Michigan State University, Notre Dame, the Ohio Academic Research Network (OARnet, includes Ohio State University), Indiana University, Purdue University, the University of Iowa, Iowa State University, the Illinois Institute of Technology, De Paul University, Bradley University, Loyola University of Chicago, Northern Illinois University, the Illinois Century Network, WiscNet, and Illinois State University. Other members are NGI network entities, such as NREN (NASA, NISN), the National Institutes of Health (NIH), and ESnet and DREN (DOD). The European Particle Physics Laboratory (CERN), SURFnet, and other international networks are also members.

For further information, reference www.mren.org

Joe Mambretti, Director
International Center for Advanced Internet Research
750 North Lake Shore Drive, Suite 600
Northwestern University, Chicago, Illinois 60611

telephone 312-503-0735
fax 312.503.0745
www.icair.org

JANET WATTLES CENTER

Janet Wattles Center is dedicated to providing caring, personalized solutions for individuals and families living with emotional disorders and mental illness. Our mission is to improve lives through high quality, efficient and effective mental health services and education. Our array of coordinated services is readily accessible and well connected to a local network of premier healthcare agencies.

Janet Wattles Center provides an array of assessment, treatment, and rehabilitation for adults, children and adolescents. The professional staff at Janet Wattles Center treats a variety of mental illnesses…from anxiety disorders and depression…to schizophrenia and bi-polar disorder…to A.D.D. and emotionally disturbed children. Janet Wattles Center offers board certified psychiatrists and a board certified child psychiatrist. The clinic provides group and individual therapy, financial assistance, living assistance and vocational help.

Janet Wattles also operates the Mildred Berry Center dedicated to providing family centered solutions for children and adolescents who suffer emotional disorders. The mission is to improve young lives through high quality, and effective mental health services and education.

Janet Wattles also supports community mental health services with a speakers bureau, training, and educational experiences for nurses, interns, medical students, social workers and professionals.

The delivery of this content could be enhanced by access to a regional based community health network.

Janet Wattles Center
526 West State Street • Rockford, IL 61101
475 Southtowne Drive • Belvidere, IL 61008
phone: 815-968-9300 • fax: 815-968-5314 • TDD: 815-968-2648

Attachment 1 – Participant Overviews

Sinnissippi Centers

Sinnissippi Centers, Inc. received the 2002 Ernest A. Codman Award from JCAHO and the American Psychiatric Association's Psychiatric Services Award in 2003. These national honors recognized excellence in the use of outcomes measurement by health care organizations to achieve improvements in quality and safety of health care.

The beginnings of Sinnissippi Centers, Inc. (SCI) are traced to the early leadership of the Lee County Mental Health Association and the Lee Mental Health Clinic. In 1964 a part-time clinic was begun, initially located at the Lee County Health Department and later at rented space on Galena Avenue in Dixon.

In 1965 the demands for additional space and the absence of any viable mental health resource in the entire area mandated an expansion of the initial clinic efforts. Also, as a result of the 1963 federal legislation creating a national public policy for the establishment of community mental health centers, citizens from around the four county area were actively engaged in initial community mental health planning.

Similarly, the Illinois Department of Human Services - Office of Mental Health and Developmental Disabilities (DHS-OMHDD) began recognizing the need to move away from an institutional-based system of care to one oriented within the community. Through the "zone centers" organized by DHS-OMHDD, which were the service areas surrounding the state psychiatric hospitals, the state encouraged communities to ban together in keeping with the original federal concept of a "catchment area" to assure and sanction the development of local delivery systems. Also, the General Assembly caste various enabling legislation which, by referendum and other means, made local taxation for community mental health programming a reality.

Out of the dynamics and the efforts of hundreds of area citizens, the Sinnissippi Mental Health Center (renamed Sinnissippi Centers, Inc. in 1988) became a reality on May 31, 1966, serving Carroll, Lee, Ogle, and Whiteside Counties. A Board of Directors was established with representation from each of the four counties.

Sinnissippi started by providing professional, short-term outpatient evaluation and treatment services. The goal was to get people back on their feet as quickly as possible with the least interference to their daily living. Later, a 24 hour emergency service was begun to address the immediate needs of those whose problems had reached acute (suicidal, homicidal, or significantly disturbed) proportions. Again, a network of services was developed to help persons return to and become well integrated in the community once they had been discharged from either a public or private psychiatric hospital. Similarly, a program was created to take into account the special needs of those individuals and families with alcohol and other drug abuse related problems.

The expansion of programming over the past two decades has been the result of cooperation between Sinnissippi and a variety of community resources. With the expansion of programming, there has also been focus on making services more accessible to people and communities Sinnissippi serves. Initially, part-time "outpost" offices were established in several communities throughout the four county area. In 1981, SCI established permanent full time offices in Oregon and Mt. Carroll. In 1983 a office was established in Rochelle to serve those citizens from the eastern part of Ogle County and the northeastern portion of Lee County. In 1990 SCI opened its fourth office in Sterling to serve those individuals and families in Whiteside County.

Presently, SCI provides services at Dixon, Sterling, Oregon, Rochelle, Mt. Carroll, Amboy, Morrison and through designated schools and work sites in the four county area.

Sinnissippi's Telehealth Initiative:

Initiated by our desire to ensure that all of our offices have timely access to psychiatrist services, in November 2006 Sinnissippi developed a performance improvement initiative focused on implementing Telepsychiatry Services. We were fortunate to receive a $1,000 grant from the Rochelle Area Community Foundation. This grant enabled us to purchase the equipment needed to pilot this service between our Rochelle and Dixon offices. We have spent the past three months, in conjunction with our MIS consultant, working through some of the technological problems of teleconferencing between two rural areas. We have been able to maintain an adequate signal between our Rochelle and Dixon offices, however, when we tried to include another office—Mt. Carroll—into our pilot project we were unable to maintain adequate video or audio signal through the internet service that we have available.

Our Rochelle/Dixon telepsychiatry project is "on hold" pending passage of Illinois Senate Bill 0006 which will allow for us to bill Medicaid for mental health services that are provided by telemedicine. It is our goal to establish excellent telecommunication capability between all of our five main offices to ensure that our clients may access psychiatric services in a timely and convenient manner.

For more information, please contact:

DeAnne R. White, SPHR, Director of Operations/HR
Sinnissippi Centers, Inc.
325 IL Route 2
Dixon, IL 61021
815-284-6611
deannewhite@sinnissippi.com

University of Illinois

University of Illinois at Urbana-Champaign Overview

Chartered in 1867 as a land-grant institution, the University of Illinois at Urbana-Champaign is committed to excellence in research, teaching, and public engagement. The University's mission is to transform lives and serve society by educating, creating knowledge, and putting knowledge to work on a large scale and with excellence. The University of Illinois serves the state, the nation, and the world through innovation and creativity in research and scholarship, prepares students for lives of impact, and addresses critical societal needs through the transfer and application of knowledge.

The University of Illinois owes its reputation for excellence in teaching and research to the quality of its faculty. More than 1,900 teachers and scholars provide academic leadership to the campus while making significant contributions to research in their fields. In 2005-2006, the university and its faculty were awarded more than $397 million in research grants and contracts from state, federal and private sources. More than 100 faculty members have been admitted to the American Academy of Arts and Sciences, the National Academy of Sciences, and the National Academy of Engineering. Twelve faculty and thirteen alumni are Nobel laureates. In fall 2003, two University of Illinois faculty members received Nobel Prizes, one received the prestigious Crafoord Prize, and a fourth received the National Medal of Technology.

More than eighty research centers, laboratories, and institutes are housed on the Urbana-Champaign campus, including the interdisciplinary Beckman Institute for Advanced Science and Technology, the Roy J. Carver Biotechnology Center, and the Institute for Genomic Biology. A newly constructed Research Park and Incubator fosters R&D collaboration and innovation between industry and university faculty, staff, and students. An acknowledged leader in information technology, the University of Illinois is the site one of only two National Centers for Supercomputing Applications in the nation. Outstanding computing facilities also contribute to the incorporation of information technology in teaching and research.

UIUC College of Medicine

The College of Medicine is a center for medical education and bioscience excellence. The mission of the College is to provide a premier scientific education, cutting-edge research opportunities, and the highest quality clinical training. Its traditional and dual degree Medical Scholars' program have earned outstanding reputations for preparing physician-scientist leaders for the 21st century. The College, as an integral part of UIUC (all of our medical faculty have joint appointments in the basic sciences), is in a unique position to provide interdisciplinary education and collaboration among researchers across campus. The College of Medicine offers a complete four-year medical education program leading to an MD degree as well as the 3rd largest MD PhD program in the nation.

The College enjoys a close relationship with our clinical partners, Provena, the Veterans Affairs Hospital and Carle Foundation Hospital. As part of the land grant mission of the University of Illinois, we are engaged in many initiatives to meet the healthcare needs of the citizens of Illinois through education, care and research. We would greatly like to expand these initiatives statewide through the networks this project will offer.

University of Illinois Extension

University of Illinois Extension is the flagship outreach effort of the University of Illinois at Urbana-Champaign, offering educational programs to residents of all of Illinois' 102 counties, including the most rural areas of the state. Through learning partnerships that put knowledge to work, U of I Extension's programs are aimed at making life better, healthier, safer and more profitable for individuals and their communities. U of I Extension offers evidence-based health education programs in a number of areas:

- Nutrition and dietary health
- Food security and safety

- Environmental health
- Agricultural safety and injury prevention
- Consumer education -- long-term care and health care financing

Most Extension programs are offered on an informal, non-credit basis, and U of I Extension actively partners with local health care providers in rural areas, including Critical Access Hospitals (CAH) and local public health departments, to deliver health programs to rural audiences. Extension programs may be offered as hands-on workshops, field days, self-paced tutorials via the World Wide Web, or in other formats that are suitable for the audience and subject-matter.

More than 2 ½ million Illinois residents take part in Extension programs each year, including nearly 300,000 who participate in 4-H youth programs. Each month, U of I Extension web pages draw more than 10 million page views, and people in more than 200 countries access Extension's web-based information.

Communities are directly served by Extension staff in 77 unit offices located throughout Illinois. Extension educators located in 12 centers across the state and specialists located on the U of I campus develop and deliver in-depth programming locally, in regional venues, and through distance-learning technologies. Because U of I Extension has created a number of satellite offices, the organization staffs and maintains a total of 131 off-campus locations.

As part of the nationwide Cooperative Extension System, U of I Extension also is able to draw on research-based expertise from land-grant universities all across the country. Volunteers who serve on local advisory councils provide direction for U of I Extension programming, ensuring that programs continue to meet critical needs.

U of I Extension is based in the College of Agricultural, Consumer and Environmental Sciences (ACES) at the University of Illinois at Urbana-Champaign. Some U of I Extension programs are offered in conjunction with the College of Applied Life Studies or the College of Veterinary Medicine. In terms of health education, University of Illinois Extension generates a significant impact through its nutrition and wellness programs. Almost 900,000 of Extension's face-to-face teaching contacts are related to health education (roughly one-third of Extension's 2.6 million face-to-face contacts during 2005) in areas including nutrition and wellness.

An example of such an Extension health education program, often offered jointly with local partners such as a CAH, is the Dining with Diabetes program. Illinois has the sixth largest prevalence of diabetes in the U.S., with approximately 567,000 adults having been diagnosed with diabetes. It is estimated that an additional 3 million people in Illinois are at increased risk of undiagnosed diabetes because of the risk factors of age, obesity, and sedentary lifestyles.

To address this, Extension staff developed an educational effort to improve the diets of people living with diabetes and thereby improve self-management of the disease. During 2005 1,617 people with diabetes and/or their caregivers participated in the educational series, Dining with Diabetes. All U of I Extension Nutrition and Wellness Team Educators have been involved in the state-wide implementation of this dynamic program. Not only have significant knowledge and behavior results been achieved, but coalitions have been forged with state and local agencies as well in order to improve the health and well-being of those with diabetes in Illinois.
Dining with Diabetes is a nutrition education program with cooking demonstrations for people with diabetes and their families. Extensively revised by Illinois Extension Educators over the past 3 years, the 3 sessions plus a 6-month reunion meeting are designed to help participants better plan a healthy food intake, thus leading to better control of blood glucose levels. Each session includes tips for managing diabetes, cooking demonstrations, and taste testing of healthy recipes. Impact evidence gathered from the program evaluations demonstrates the change in health behaviors of participants in the Dining with Diabetes program.

The Dining with Diabetes program is one example of the wide number of health-improving programs University of Illinois Extension delivers through its local County Offices each year. Other health-related programs include AgrAbility Unlimited and agricultural safety and health education, Healthy Moves for Healthy Children, the Illinois Senior Wellness Initiative, Long-Term Care Financing: A Consumer Education Program, among many others.

Attachment 1 – Participant Overviews

University of Illinois Extension has a long tradition of helping introduce new educational technologies into rural communities and assisting with their utilization and adoption. As part of that, U of I Extension has spent over $700,000 per year in Information Technology that directly supports local Extension programming. That figure includes funds for field staff computer equipment; local office connectivity, and operation/management of a 96 port audio/web conferencing system. In addition, University of Illinois Extension just committed to a $525,000 major upgrade and expansion of the current audio/web conferencing system. Through a partnership with CITES, both U of I Extension and CITES will each purchase a new Cisco Meeting Place 6 Distance Learning System that will provide 192 ports of audio conferencing; 192 ports of web conferencing; and 48 ports of video conferencing. In instances where it is desired, Extension's new Meeting Place 6 System will be able to be partnered with the campus/CITES Meeting Place system to create a total capacity of 384 ports of audio/web and 96 ports of videoconferencing. All of this investment can be leveraged and put to better and greater use in support of health education programming if local Extension offices can upgrade their network infrastructure.

Participation in the Illinois Rural Health Technology Network will allow local University of Illinois Extension Offices to better reach their communities with research-based health education messages and programs as well as to better partner with their local rural health colleagues, such as CAHs and local Departments of Public Health. Through the provision of infrastructure upgrades to connect the local County Extension Offices into the statewide network at much higher speeds, the rural County Offices will have the new capability of offering enhanced real time internet delivered conferences and health education events. Such events will originate from the Champaign-Urbana campus or from any other suitable provider.

For more information please contact:

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UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

College of Applied Health Sciences
Office of the Dean
110 Huff Hall, MC-586
1206 South Fourth Street
Champaign, IL 61820

April 26, 2007

Alan Kraus
Executive director
Broadband Development Group Northern Illinois University 1120 Diehl Road, Suite 140 Naperville, Illinois 60563

Dear Mr. Kraus:

I am pleased to write this letter in support of Northern Illinois University's (NIU) statewide infrastructure application to the FCC Rural Health Care Pilot Program. The research and outreach programs of the University of Illinois' College of Applied Health Sciences can be a great asset in the NIU initiative's goal to develop a robust connected healthcare system throughout Illinois. Additionally, the capacity envisioned through this expanded dedicated broadband network ties directly to several of the research initiatives developed within the college for providing specialized services to individuals living in rural areas of Illinois. The program descriptions that follow highlight some of the more relevant work of our faculty working in the area of telemedicine and distributive healthcare service.

DEPARTMENT OF SPEECH & HEARING SCIENCE

Teledynamic Evaluation Software System (TESS)

Dr. Adrienne Perlman has developed the Teledynamic Evaluation Software System (TESS) that enables medical experts to perform real time, high resolution, remote, interactive examinations of patients where ever a minimum connectivity of at least a T1 line is available. TESS was developed to permit qualified clinicians to perform offsite videofluoroscopic examinations on patients with suspected swallowing problems. However, the software capabilities are not limited to radiographic imaging and can be used with any dynamic imaging technique (for example, endoscopy).

Offsite evaluations are desirable when access is limited and qualified personnel are not readily available. The examination of those who live in rural communities typically incurs travel costs, inconvenience to the patient and family, and may require the time and cost of a health care attendant and ambulance. TESS was designed to meet the need stemming from the limited number of qualified speech-language pathologists available to serve patients in the rural areas. It is often necessary to transport patients to larger communities where experts are available to perform the videofluoroscopic examination of swallowing function or the endoscopic evaluation of laryngeal/pharyngeal function. This is not a minor health issue. Approximately 700,000 persons each year are diagnosed with swallowing difficulty.

TESS currently has two modules of acquisition: videofluoroscopy and endoscopy. TESS users are able to remain at their computer desks and connect via the Internet to a remote hospital or clinic to direct an examination in real time. The images, viewed in real time, are then transferred from a computer at the remote location to the computer in the users' offices, where they may be evaluated in detail and stored. A report is generated, which may be sent to the referring physician.

Need for Speech-Language Pathology Services in Rural Environments

There is a relatively high prevalence of individuals with traumatic brain injury (TBI) in rural environments and is related to several variables. Among the most prominent variables are farm accidents, driving long distances which results in an increased number of vehicular accidents and, more recently, the need to better serve Illinois Veterans who are returning from the wars in Afghanistan and Iraq with a diagnosis of blast injury. In all cases, survivors and their families require treatment, support and education regarding the effects of TBI on cognitive processes, language, speech and communication.

For example, TBI survivors often experience cognitive communication impairment indicating there is a cognitive issue such as memory, attention, and executive function deficits underlying language, speech and communication abilities. Cognitive communication impairment is diagnosed and treated by speech-language pathologists (SLPs) and requires individualized treatment for both the survivor and family members. Since many of the rural hospitals do not have the funding to hire speech-language pathologists, services in the area of cognitive communication are less than optimum.

Currently, the Department of Speech and Hearing Science (SHS) at the University of Illinois, Urbana is the only university in the country that has developed a specialized training program for SLPs in traumatic brain injury. Under the leadership of Professor Adele Proctor, Sc.D. , SHS has an organized and well develop program in place that can readily and effectively integrate service delivery and student training as related to traumatic brain injury. The availability of enhanced broadband connectivity will be an invaluable resource to rural healthcare providers who may wish to interact with the researchers in our department as they handle the increasing population of TBI survivors.

American Sign Language

A potential benefit of providing enhanced broadband access to rural hospitals throughout Illinois would be the ability to connect signing deaf and hard of hearing (D/HH) people in those areas with researchers and various professionals on the UIUC campus and other participating campuses throughout the country. D/HH individuals throughout rural Illinois have repeatedly expressed concern over their lack of access to broadband internet in order to communicate more effectively, either though video relay services or through videophone technologies, with D/HH people and various professionals outside of their communities. This effort could support networks of communication between UI researchers and professionals (e.g., American Sign Language experts, Deaf Education specialists, assistive listening device experts and providers, cochlear implant researchers and service providers, etc.) and D/HH individuals who are in need of various healthcare services in rural hospitals. UI could serve as an important source of information for D/HH individuals through a program that would link them with experts on our campus through video technology and the use of American Sign Language.

KINESIOLOGY AND COMMUNITY HEALTH

The Department of Kinesiology and Community Health is an interdisciplinary unit dedicated to the study of health, rehabilitation, and human movement. The advancement and dissemination of knowledge related to health, rehabilitation, and human movement is central to the Department's mission. Faculty in the Department utilize a broad variety of approaches in the integrative study of health, rehabilitation, and human movement, including research themes such as lifespan physical activity, community health, rehabilitation counseling, disability, well-being and inclusion, physical culture and education, pedagogy, human factors, and human performance. Faculty in the department are active in the dissemination of health-related knowledge in a wide variety of different areas. **Many of these projects are ideal for dissemination through virtual technology envisioned in the FCC proposal.**

The Department has actively developed technology-related courses and interventions designed to bridge the gap between the research laboratory and communities across the state in a variety of different areas;

KCH Concentrations:

The Department of Kinesiology and Community Health is organized around four concentrations: (1) Bio-Behavioral Kinesiology: Faculty in the Bio-Behavioral Kinesiology concentration examine the antecedents and consequences of involvement in physical activity and sport and the impact that physical activity and sport have upon individuals. This area includes Exercise and Sport Psychology, Biomechanics, MotorControl, and Kinesmetrics. (2) Community Health and Rehabilitation: Faculty with specializations in health policy, health education, health behavior, and epidemiology examine a variety of dynamic interactions that impact the overall health of communities. Faculty in rehabilitation examine the impact of disability in the population and the emotional, environmental, vocational, and educational issues surrounding adjustment to disability. (3) Cultural, Pedagogical, & Interpretive Studies: Faculty in the CP&I concentration examine the interaction between physical activity and the individual from a variety of cultural, sociological and pedagogical perspectives. Several faculty study the impact of movement on cultural and social relations, whereas others examine issues related to pedagogy and physical education. (4) Exercise Physiology and Athletic Training: Exercise physiology is the study of work output, energy transfer, and movement efficiency. Research in this area is conducted in order to better understand the consequences of exercise stress on body systems. The athletic training program focuses on the prevention, treatment, and rehabilitation of injuries incurred in physical activity and sport.

KCH Strategic Goals and Priorities:

KCH has developed a strategic plan that aligns departmental goals and objectives with those of the College Of Applied Health Sciences and the University. Our strategic priorities in the area of research, education, and outreach are as follows;

KCH Research Goals and Priorities: KCH has identified five strategic priorities in the area of research and discovery; (1) Build upon existing strengths in Health, Physical Activity, Disability, and Quality of Life, (2) Expand research programs in the area of healthy communities and health disparities, (3) Play a leadership role in campus efforts to increase translational research, (4) Continue to lead and expand the Initiative on Aging while integrating the Initiative into the AHS Center for Health, Aging, and Disability, (5) Expand current research strengths into new populations including public schools, health care settings, and industry.

KCH Education Goals and Priorities: KCH has identified five strategic priorities in the area of education and learning; (1) Revise and reform the undergraduate and graduate curriculum to include more discovery courses, capstone experiences, community projects, and team-based learning opportunities, (2) Provide incentives and resources for faculty to employ cutting edge educational technology to develop creative curricular offerings, (3) Increase the number of graduate-only courses, (4) Increase opportunities for innovative learning experiences, including distance learning, team-based learning, and cross-campus curricular partnerships, (5) Increase opportunities for student participation in research experiences.

KCH Engagement and Service Goals and Priorities: KCH has identified five strategic priorities in the area of engagement and service; (1) Increase opportunities for local community engagement with KCH through community health programming, physical activity, sports and fitness programs, and Complementary and Alternative Medicine programs, (2) Develop collaborations/partnerships with various campus and community

constituencies, including; UIUC Child Development center, extension programs, local & suburban schools, and state and national planning commissions to research, test, and demonstrate best practices, (3) Extend KCH engagement with older adults beyond research to support the departmental teaching and outreach mission, (4) Expand community partnerships in health, aging, disability, and quality of life, (5) Encourage increased collaboration with UI Extension involving the development of healthy communities in rural and urban environments.

Synergy between Department Goals and FCC Project:

The Department is well positioned to provide leadership to, and participate in the FCC Rural health Care Pilot Proposal. Areas of synergy between KCH faculty strengths and the FCC Project include;

Health Informatics: Both AHS and Kinesiology and Community Health have research ties with NCSA. In addition, KCH faculty provide informatics support for the Illinois Department of Public Health. For example, in conjunction with NCSA, KCH faculty have developed a state-mandated childhood obesity tracking system and online programs for delivery of biomechanical and motor control educational materials.

Health Sciences Research: AHS and KCH are campus leaders in interdisciplinary research in health relative to neuroscience, imaging, engineering, veterinary medicine, urban planning, psychology, nutrition, physiology and cancer and rehabilitation research. KCH has historically been an international authority on health and human nutrition research.

Environment- & Health Research: AHS has historically been a leader in environmental accessibility and many of its departments focus on research issues related to the environment – health relationship. KCH has both research and outreach programs for understanding the built and social environment and their impact on health and quality of life. Locally, AHS and KCH provide multiple opportunities for public engagement. This is evidenced through research and internships in public schools, local government, community agencies, Chicago land institutions, as well as with collaborations with many faculty at international universities. They are actively leading numerous public health activities in the community which relate to disease prevention and wellness.

Physical Activity and Healthy Aging Research and Outreach: The Department of Kinesiology and Community Health has identified healthy aging as a departmental research priority. The department offers a number of important data and information clearinghouses and community programs related to Active Aging and Wellness. This information would be invaluable for the FCC Project. Highlights include; KCH coordinates a comprehensive Internet-based resource center for Healthy Aging-related projects (www.agingblueprint.org). KCH operates a National Healthy Aging Blueprint Office and Technical Assistance Center at the University of Illinois. KCH has organized and hosted a National Strategic Planning meetings at the University of Illinois. Web-casts of these events would be possible under the FCC project. KCH regularly disseminates information to the general public through television, radio, and print media appearances. KCH has provided assistance to DHHS, Office of the Surgeon General, NCOA, and other federal and non-governmental organizations.

Good luck with your application and we look forward to working with you and other partners in the implementation of this exciting development addressing the needs of rural healthcare in the State of Illinois.

Sincerely,

Tanya M. Gallagher
Dean

The Carle Foundation - Telemedicine Program

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.

Carle Telemedicine specialties that are currently available are:

- Neurology
- Certified Sleep Specialists
- Gastroenterology
- Cardiology
- Oncology
- Colon/Rectal Surgery
- Child & Adolescent Psychiatry

The Regional Outreach Services Department connects with several additional Critical Access Hospitals to provide continuing education via videoconferencing with professional credits provided for medical and nursing. This enables the professional members of health care to remain in their local community while keeping their knowledge base up to date with current trends in a wide variety of disease states, diagnosis and current treatment strategies.

Carle Foundation Hospital receives communications from small, rural hospitals asking for assistance with providing specialty care to the members of their communities and counties. Telemedicine is an obvious solution to this need, but it requires broadband internet access over a protected network for privacy and quality of service. These rural facilities do not have the funding or the staff to attain access to the technology that would make this service a possibility. In some locations, there is no hardwire laid to the last mile, making the high speed internet connections necessary impossible.

Carle Foundation Hospital's goal is to expand the telemedicine program to sites in many rural locations throughout downstate Illinois to better serve the rural population through education, research and quality patient care. Many of these small, rural hospitals are in the precarious situation of trying to keep not only their hospitals viable, but to maintain the very existence of their small, rural communities.

Delnor Community Hospital

Delnor-Community Hospital (DCH), located in Geneva, Illinois, is a leader in providing comprehensive, cutting edge medicine within a culture that fosters some of the highest patient, physician and employee satisfaction scores in the nation. The 128-bed, acute care hospital has also earned Magnet Nursing Designation, the American Nurses' Association's highest honor for nursing excellence. Delnor was the first non-academic medical center in Illinois and one of just 3 percent of hospitals nationwide who have earned the right to be called Magnet.

DCH recently began construction on the largest addition in the hospital's history. The three-story, 100,000 square-foot expansion will enable Delnor to add 31 private patient rooms and convert the few remaining semi-private rooms in the existing hospital to private rooms as well. The project is targeted for completion in the spring of 2008.

As a Level II Trauma Center and Emergency Department Approved for Pediatrics, Delnor's Emergency Department (ED) offers the expertise and resources to treat people of all ages with severe or life-threatening illnesses and injuries. Housed in a state-of-the-art 28,500 square foot facility, the ED offers all private rooms including 19 standard care rooms, two trauma rooms and six ERexpress rooms for less severe emergencies. Connected directly to the ED is Delnor's dedicated Cardiac Catheterization lab, which uses advanced technology to help physicians evaluate and treat critical cardiac blockages fast and accurately while exposing patients to less radiation.

Delnor's NewLife® Maternity Center provides all families with a private suite offering all the amenities of a fine hotel. The Level II with Extended Capabilities Nursery is equipped to care for low birth weight infants, premature infants, and infants on ventilators. Delnor's neonatalogists are available 24 hours a day. The center also offers maternal-fetal medicine services for women experiencing high risk pregnancies including multiple births, and 24 hour obstetric physician coverage in the event of an emergency.

Delnor's beautifully-appointed Center for Breast Health offers digital mammography, the most technologically advanced equipment for the early detection of breast abnormalities. For the woman needing a diagnostic mammogram, Delnor offers a dedicated radiologist who will read the mammogram immediately. The patient will know the results before she leaves the center.

Delnor also offers the following services:

- Cancer care services
- Cardiology services
- Community education (classes, screenings and events)
- Diabetes education
- Diagnostic services
- Gastroenterology
- Home health services
- Interventional radiology
- IV therapy
- Kidney dialysis services
- Laboratory services
- Lymphedema Treatment and Management
- Neurological services
- Nutrition counseling
- Outpatient infusion services

- Patient advocate
- Pain management services
- Pediatric services
- Pelvic Pain Program
- Pulmonary rehabilitation
- Respiratory care
- Senior services
- Social services
- Spiritual care
- Stress management services
- Sleep disorders services
- Support groups
- Surgical services
- Urinary Incontinence Program
- Volunteer services
- Wound treatment services

Delnor Hospital is part of Delnor-Community Health Systems, which provides a broad range of health care and wellness services for the community. Other components of the system include the Delnor Health & Wellness Center, one of the area's premier medically-based fitness facilities; the LivingWell Cancer Resource Center; Delnor Glen, an assisted living facility; and the Townhomes of Delnor Glen, independent living for seniors.

Our Telemedicine/Health includes the following:

- Radiology and Cardiology PACS imagines are accessed remotely by physicians using a VPN connection.
- The Meditech EMR is also accessible remotely using Citrix.
- We have developed an HL7 interface from the physicians EMR for lab orders/results to the Meditech HIS.

For more information about Delnor and its services, please call (630) 208-3993 or visit www.delnor.com.

TriRivers Health Partners

TriRivers Health Partners is a joint venture organization of SwedishAmerican Health Systems in Rockford, IL and FHN in Freeport, IL. Created in 2004 TriRivers Health Partners provides opportunities for the development of Information Systems Technology capabilities in the area of shared health care information systems. For the last two years, TriRivers has been evaluating the development of a shared high speed regional health care information network that would allow TriRivers to establish a high speed broadband network between its Rockford and Freeport location. This would allow for the sharing of technical infrastructure for both of its parent facilities through the development of two parallel data processing centers establishing a business continuance capability between these two facilities. As a result of this high speed broadband capability, TriRivers would establish a Replicated Content Management Architecture for its Picture Archiving Computer Systems that would reduce the cost of this technology by sharing the infrastructure established by each facility. In addition this capability establishes a high-speed network architecture that allows disaster recovery capabilities to be leveraged across to physical locations 28 miles apart.

Sharing of Technical Infrastructure

Technical infrastructure associated with common business applications, such as email, Internet appliances, Internet security tools and support, and Storage Area architectures have been targeted for consolidation. Each facility will invest based upon its relevant size and a common group of support staff will support technical infrastructure on behalf of the two parent organizations.

Sharing of Technical Infrastructure is particularly important in the area of Picture Archiving Information Systems (PACS). PACS is a method by which Radiology studies are archived using digital means. By sharing the technical infrastructure associated with PACS on a shared high-speed regional broadband network TriRivers Health Partners can leverage existing capabilities using common approaches with the high-speed network as the transport means to replicate Radiology studies on common hardware. Other systems that use storage area networks can also be leveraged to support improvements in disaster recovery through this process.

Regional Health Information System Development

Regional Health Information Systems (RHIO) development can be better realized when a regional broadband network exists that supports the transport of system information across multiple providers. TriRivers is currently implementing a shared Health Information Systems Network between FHN and SwedishAmerican that will result in a regional Electronic Medical Record. This system will allow for access of critical patient information across multiple facilities. The system is best supported through a regional high-speed network.

TeleHealth and TeleMedicine Capabilities

FHN and SwedishAmerican Health System will utilize the regional broadband network to support TeleRadiology evaluation by accessing Radiology and Cardiology studies from each organization's PACS system. This will allow for access to critical study information by specialists at Swedish American for patients that have been seen at FHN in Freeport. This collaboration among specialists will support the development of better quality for the patient through collaboration and referral processes for the more critical procedures that can be done by each facility. In addition SwedishAmerican through its connectivity will be able to better assist FHN in its Radiology overread process which is needed by FHN for Radiology interpretation in Freeport. In addition to the transfer of Radiology and Cardiology studies, the participating facilities will also use Video Conferencing to support collaboration, education, and joint health system planning.

Illinois Rural Health Association

DATE: April 26, 2007
TO: Federal Communication Commission
RE: Rural Health Care Pilot Program

The Illinois Rural Health Association (IRHA) is writing to offer our support for the Illinois Rural Health Net proposal to the Federal Communication Commission for the Rural Health Care Pilot Program. IRHA is a statewide association which has a diverse constituency including individuals concerned with rural health, health care providers and administrators from both public and private settings, state and local government leaders, researchers, educators, consumer groups, consultants, insurance and employer representatives.

IRHA has identified priority areas of health care concerns in Illinois which include lack of access to health care, lack of transportation systems in rural areas, and an inability to acquire and retain quality health care professionals in rural areas. IRHA whole heartedly supports the initiatives identified in the proposal of the Illinois Rural Health Net which seeks to "provide the best medical and health care as can be made available to all our residents and visitors in Illinois, even when they are located in rural areas that may be some distance from major urban hospitals." The use of an advanced broadband service would make a significant improvement to access to health care for rural residents.

IRHA has aggressively pushed for improved telehealth medicine in Illinois and has been met with continued opposition based on financial resources. The Illinois Rural Health Net Consortium will bring Illinois into the 21st century with telemedicine and telehealth services which over come barriers in rural areas of our state with lack of access to health professionals and lack of adequate transportation. By creating a consortium of providers, the Illinois Rural Health Net presents a strong base of medical, health care, education and broadband expertise with which to support needed services in rural areas of Illinois.

Rural residents in Illinois deserve the same access to quality health care as our urban counterparts. Through this initiative of the Illinois Rural Health Net, Illinois' rural residents will see significant improvement in much deserved access to quality health care services.

Sincerely,

Pat Bickoff

Pat Bickoff, President
Illinois Rural Health Association

Illinois Critical Access Hospital Network

The Illinois Critical Access Hospital Network (ICAHN) is pleased to provide a letter of support for the development and implementation of the new **Illinois Rural HealthNet**. This new network will combine elements of existing fiber networks, commercial networks, new fiber or other network construction (including wireless) and the use of existing resources under the control of us as organizational members and partners.

The Illinois Rural Health Net project will assist ICAHN's 51 small critical access hospital members to expand their current broadband capabilities of a T-1 line (1.5 mega bytes) to connect with either wireless at 100 times current capacity or fiber at 1000 times current capacity depending on the hospital's location. The Illinois Rural Health Net project will build on existing resources to make these new connections for our Illinois critical access hospitals as well as other rural and resource hospitals, mental health facilities and providers of health and social services throughout Illinois. This is a most important project for our small critical access hospitals located in very rural communities across Illinois and which have limited technological and human resources. Our small hospitals will then be able to connect with other facilities for tele-medicine services and other tele-health type projects. Potentially, the small critical access hospitals could connect their operating rooms with larger hospital operating rooms for consultation or even mechanical type surgery – bringing access to greater resources to our Illinois rural communities.

ICAHN looks forward to the opportunity to be a part of the Illinois Rural HealthNet project as an organizational member and once again offers its support of this most vital and essential grant project that will help eliminate the digital divide for our rural communities.

Pat Schou, Executive Director
Illinois Critical Access Hospital Network
www.icahn.org

Illinois Critical Access Hospital Network (ICAHN)

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.

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 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.

ICAHN MISSION STATEMENT

"The mission of our organization is to strengthen Illinois critical access hospitals through collaboration"

ICAHN will accomplish its mission through core network activities by:

- Ensuring appropriate funding and financial resources
- Continuing efforts to be a recognized resource on critical access hospitals in Illinois
- Promoting efficient use of information technology services for the network and members alike
- Maintaining and further developing specific user groups, activities and list serves that promote hospital operational efficiencies and connectivity
- Offering on-going educational opportunities and resources
- Developing and offering projects that are self sustaining and which add value to the organization and its members
- Developing and offering shared services that offer value to members

ICAHN
Illinois Critical Access Hospital Network

To learn more about ICAHN
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815.875.2999
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Visit us at www.icahn.org

ICAHN
Illinois Critical Access Hospital Network

"Better Together"

Connecting Illinois Critical Access Hospitals

Visit us online at www.icahn.org

WHAT IS ICAHN

The Illinois Critical Access Hospital Network (ICAHN) is a not for profit corporation 501 (c)(3) established in 2003 for the purposes of sharing resources, education, promoting operational efficiencies, and improving health care services for member critical access hospitals and their rural communities.

ICAHN, with 50 critical access hospital members, is an independent network governed by a nine member Board of Directors. There are standing committees and several project development committees that facilitate the overall activities of the network..

ICAHN builds on its partnerships with the Illinois Department of Public Health's Center for Rural Health, Illinois Hospital Association, academic institutions, and other rural health and economic development organizations. ICAHN strives to strengthen the capacity and viability of its members and rural health partners. ICAHN members believe that working together we can make the critical difference.

ICAHN PROGRAMS AND SERVICES

Technical Assistance

- CAH program and resource tools
- Regulatory preparation and program development expertise
- Directory of member services resources
- State, federal and private grant applications and administration
- Hospital operations assistance such as quality improvement and human resource consultation

Quality Improvement/Peer Review

- "ICAHN Quality Alliance"-a quality improvement, on-line, data repository including clinical and patient safety indicators
- External Peer Review Network (EPRN) program to enhance internal peer review through panel of network specialty physicians

Network Business Opportunities

- Group Purchasing
- Email Hosting/Web Design
- Managed Care Consulting
- Shared Services Programs

Education Programs and Resources

- State-wide workshops and seminars with topics ranging from clinical to management and personal development
- Standing Education Committee
- Health professional CEU programs and partnerships
- Network-wide videoconferencing capability

Information Technology and Support Services

- Member access to expert information systems and technical support
- IT department analysis and assessment
- Personal computer configuration and installation
- Intranet and internet solutions
- Wireless networking solutions
- Local Area Network (LAN) Design, Wide Area Network (WAN) and Virtual Private Network (VPN) connection to remote facilities

CONNECTIVITY

ICAHN User Groups & List serves

- CAH CEO's
- CFO
- Human Resources
- Ancillary Services
- Nurse Leaders
- Materials Managers/Dietary Managers
- Business Office/Health Information Management
- Pharmacy
- Information Technology
- Quality Improvement

These are a few of the current ICAHN User groups and List serves providing a forum for education and training, networking opportunities, problem solving, product and service development along with productivity/benchmarking activities.

Network Hospital Cooperation

Member hospitals live the "Better Together" ideal through the many networking avenues available to them and the sharing of resources, experiences and ideas to the betterment of their facilities and communities.

ICAHN Newsletter

ICAHN produces a newsletter approximately four times per year to keep its members informed on a variety of topics of interest. The newsletter can be accessed through the ICAHN web site.

Southern Illinois University School of Medicine

Telehealth Networks & Programs
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April 24, 2007

Alan Kraus
Executive Director
Broadband Development Group
Northern Illinois University
1120 East Diehl Road, Suite 140
Naperville, IL 60563

Dear Mr. Kraus:

I am pleased to write this letter in support of Northern Illinois University's (NIU) statewide infrastructure application to the FCC Rural Health Care Pilot Program. Telehealth Networks & Programs at Southern Illinois University School of Medicine (SIU-TNP) can be a great asset in the NIU initiative's goal to develop a robust connected healthcare system throughout Illinois.

SIU-TNP builds partnerships to expand healthcare capacity through the use of health information technology, particularly videoconferencing. In 2006, SIU-TNP brought together 104 organizations in 92 communities and 63 counties in Illinois to undertake 46 telehealth programs using videoconferencing (see attachment #1). In addition, by the end of 2006 we had helped to connect Illinoisans with people in California, Massachusetts, Maryland, New Jersey, Rhode Island, South Dakota, Virginia, Wisconsin, Egypt and Nigeria.

We use our telehealth capabilities to partner with community organizations to bring needed healthcare services to veterans, adults and children with mental illnesses and intellectual and developmental disabilities, as well as patients recovering at home. Our clinical telehealth programs (focusing primarily in dermatology, neurology and psychiatry) are with the Veterans Hospital in Marion, Chester Mental Health Hospital in Chester, state operated developmental centers in Jacksonville, Centralia, Anna, Tinley Park and Kankakee, and Shawnee Health Services in Murphysboro, Carterville and Marion.

For our educational programs, we partner with universities, health education programs, and healthcare organizations throughout the state to bring medical, nursing, allied health and community education programs to downstate Illinois. Within SIU, we work with the school of medicine in Springfield, Carbondale, Quincy and Decatur along with the schools of nursing, pharmacy and dentistry in Edwardsville, and school of allied health and other health-related programs in Carbondale such as the Rehabilitation Institute and the Center for Rural Health and Social Services Development.

Other universities, state and local agencies, and community-based organizations have partnered with us to bring educational programs to southern Illinois. Western Illinois University, University of Illinois components in Chicago, Urbana/Champaign, Rockford and Peoria, John A. Logan Community College, Illinois departments of human services and public health, and the Western Illinois Area Health Education Center and the Illinois Health Education Consortium are among our partners.

SIU-TNP helps leaders from across the state come together by videoconferencing to participate in health planning, policy and management meetings. By partnering with organizations such as the Illinois Rural Health Association and Illinois Critical Access Hospital Network, rural leaders have a voice at the table when decisions are made.

Attachment 1 – Participant Overviews

In 2006, we initiated two new programs with partners in southern Illinois – one focusing on children with mental health concerns and a second serving adults with intellectual and developmental disabilities (IDD). Our partners for the child Telepsychiatry project are Shawnee Health Services in Marion, Carterville and Murphysboro, Franklin-Williamson Human Services in Marion and SIU Family Practice Center in Carbondale. For the IDD project our primary partners is the Illinois Department of Human Services in Springfield with sites in Anna, Murphysboro, Centralia, Charleston, Jacksonville, Galesburg, Kankakee, Tinley Park and Dixon (see attachment #2). Both of these projects build healthcare capacity in Illinois by bringing specialized healthcare resources, the latest medical knowledge and innovative management strategies.

SIU-TNP also provides multi-site connection services at no cost to its partners and users. Market rates for multi-site connections range from $50 to $325 per end point per hour. SIU-TNP's videoconference bridge allows for the interconnection of up to 30 videoconference sites per conference or an equivalent combination of multiple sites within multiple conferences. The system handles all of the common protocols for audio and video transmission over the Internet and ISDN phone lines. As well, people without videoconferencing are able to participate in videoconferences by telephone or cell phone.

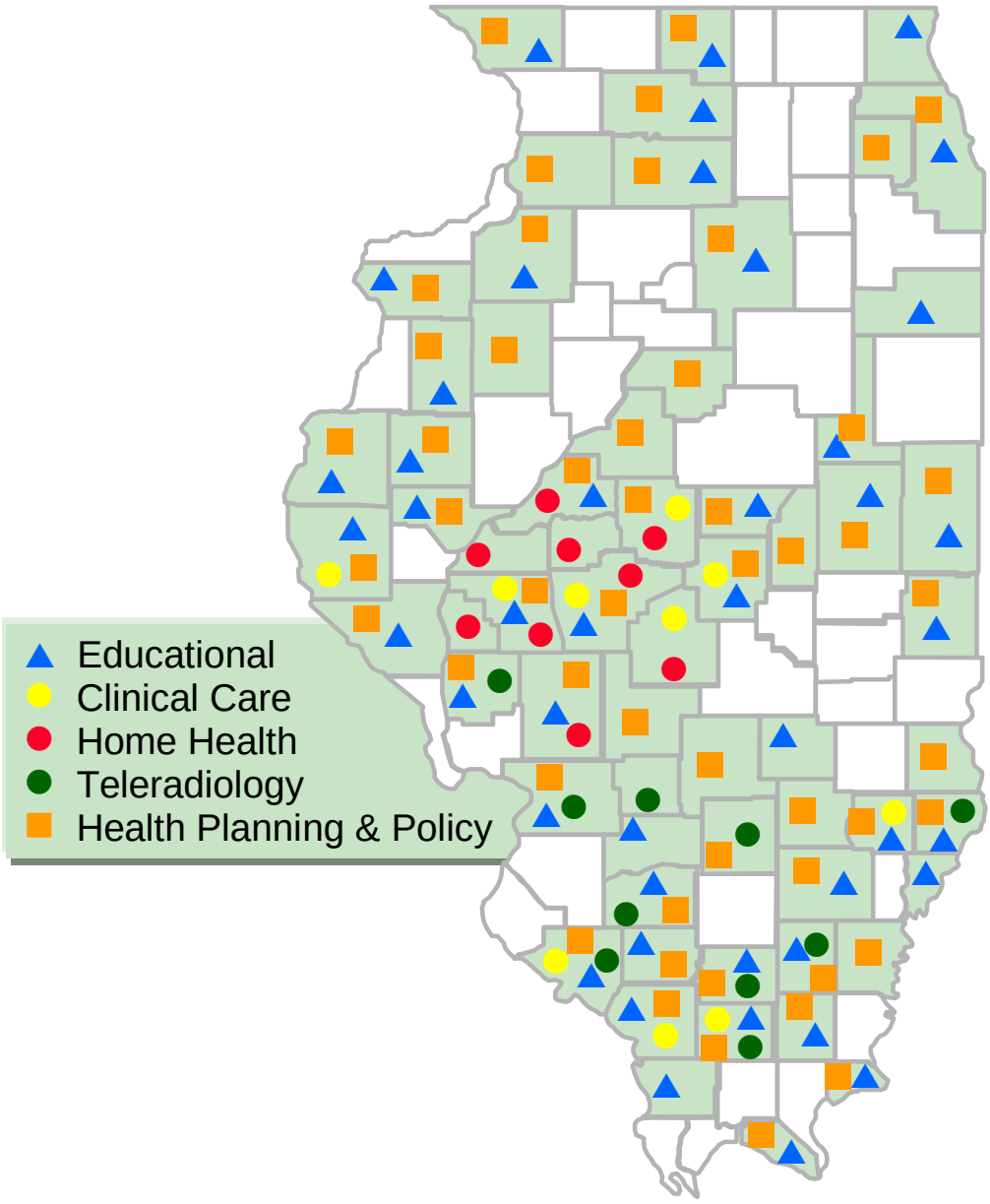
The work that the SIU-TNP has undertaken since its inception in 2001 will provide a solid foundation upon which to build and leverage the NIU statewide initiative. SIU-TNP welcomes the opportunity to work with you and others throughout the state to address the health workforce and healthcare access issues in Illinois through the application of health information technology.

Sincerely,

Deborah E. Seale
Executive Director

SIU Telehealth Networks & Programs

2001 – 2006 Cumulative Programs



Within the United States

- California
- Massachusetts
- Maryland
- New Jersey
- Rhode Island
- South Dakota
- Virginia
- Wisconsin

International

- Egypt
- Nigeria

March 2007

Attachment 1 – Participant Overviews

SIU Telehealth Impact Summary 2006
Location Data - Counties

Illinois Counties Served			
Adams	Blessing Hospital		Quincy, IL
	IRHA Function		
	Quincy Family Practice		
	Neuro Grand Rounds	IMPC Technology	
	Clinical Managers	ICAAP STEPPs 2	
	Dialog with the Dean	President Poshard Speech	
	Primary Care Case Management		
	Western IL Area Health Education Center		Quincy, IL
	IRHA Function		
Bond	Greenville Regional Hosp. (formerly Edwards A. Utlaut Memorial)		Greenville, IL
	Teleradiology Project		
Cass	Various Patients Homes		
	Telehome Wound Care		
Champaign	Carle Hospital		Urbana, IL
	IRHA Function		
Christian	St. Vincent Memorial		Taylorville, IL
	ICAHN Function		
Clay	Clay County Hospital		Flora, IL
	ICAHN Function		
Clinton*	Murray Developmental Center		Centralia, IL
	Psych Topic Review	IRHA Conf. Planning	
Cook	Healthcare & Family Services		Chicago, IL
	Primary Care Case Management		
	Howe Developmental Center		Tinley Park, IL
	Psych Topic Review	IRHA Conf. Planning	
	Metro Chicago Healthcare		Chicago, IL
	DHS Conference		
	University of Illinois		Chicago, IL
	IRHA Function		
Crawford	Crawford Memorial Hospital		Robinson, IL
	ICAHN Function		
DeWitt	Dr. John Warner Hospital		Clinton, IL
	ICAHN Function	Education & Training Programs	
DuPage	Illinois Hospital Association		Naperville, IL
	ICAHN Function		
Edgar	Human Resource Center		Paris, IL
	Psych Topic Review		
	Paris Community Hospital		Paris, IL
	IRHA Function		
Fayette*	Fayette County Hospital		Vandalia, IL
	ICAHN Function		

Attachment 1 – Participant Overviews

Ford	Gibson Area Hospital and Health Services		Gibson City, IL
	ICAHN Function	Education & Training Programs	
Franklin	Family Practice Center		W. Frankfort, IL
	Noon Chart Rounds		
	Franklin Hospital		Benton, IL
	ICAHN Function	Internal Grand Rounds	
Greene	Various Patients Homes		
	Telehome Wound Care Program		
	Thomas H. Boyd Memorial		Carrollton, IL
	Education & Training Prog.	Internal Grand Rounds	
	ICAHN Function		
Hamilton	Hamilton Memorial Hospital		McLeansboro, IL
	Teleradiology Project	Education & Training Programs	
	ICAHN Function		
Hancock	Carthage Memorial Hospital		Carthage, IL
	Education & Training Prog.	Illinois Rural Interdisc. Network	
	IRHA Function	Internal Grand Rounds	
Hardin	Hardin County Hospital		Rosiclare, IL
	Neuro Grand Rounds	Psych Grand Rounds	
Henry	Hammond-Henry Hospital		Geneseo, IL
	ICAHN Function		
	Kewanee Hospital		Kewanee, IL
	Education & Training Prog.	ICAHN Function	
	Internal Grand Rounds		
Jackson	Carbondale Family Practice		Carbondale, IL
	Internal Grand Rounds	IMPC Technology Update	
	Psych Topic Review	Dialog with the Dean	
	President Poshard Speech	ICAAP STEPPs 2	
	Primary Care Case Management		
	Southern IL University		Carbondale, IL
	SIUE Nursing	Computer Support/Net. Admin.	
	IMPC Technology	Noon Chart Rounds	
	Dialog with the Dean	President Poshard Speech	
	SIU School of Law	Habitat For Humanity	
	Acad. for Schol. Education	MedEd Faculty Dev.	
	SIUE History 400	EAHA Rural Health	
	DHS OAT Grant		
	SIU Center for Rural Health		Carbondale, IL
	Connect SI		
Jo Daviess	Galena-Strauss Hospital		Galena, IL
	Education & Training Prog.	ICAHN Function	
	IRHA Function		
Kankakee*	Shapiro Dev. Center		Kankakee, IL
	Neuro Grand Rounds	Psych Topic Review	
	IRHA Conf. Planning		
Knox	OSF St. Mary's Medical Center		Galesburg, IL
	IRHA Function		

Lake*	Multi-University Center		Grayslake, IL
	Psych Topic Review		
LaSalle	Mendota Community Hospital		Mendota, IL
	ICAHN Function	IRHA Function	
Lawrence	Lawrence County Hospital		Lawrenceville, IL
	Teleradiology Project	Education & Training Programs	
	ICAHN Function		
Lee	Katherine Shaw Bethea Hospital		Dixon, IL
	Illinois Rural Interdisc.	IRHA Function	
Logan	Abraham Lincoln Memorial Hospital		Lincoln, IL
	ICAHN Function		
	Various Patients Homes		Hartsburg, IL
	TelehomeWound Care		
	Various Patients Homes		Lincoln, IL
	Telehome Wound Care		
Macon	Family Practice Center		Decatur, IL
	Clinical Managers	EHR Preparation Meeting	
	IMPC Technology	American Cancer Society	
	Dialog with the Dean	President Poshard Speech	
	Primary Care Case Management		
Macoupin	Macoupin County Health Department		Girard, IL
	IL Rural Interdisc. Network		
	Community Memorial Hospital		Staunton, IL
	IL Rural Interdisc. Network		
	Various Patients Homes		Carlinville, IL
	Telehome Wound Care		
Madison	Southern Illinois University		Edwardsville, IL
	SIUE Nursing	SIUE History 400	
	St. Joseph's Hospital		Highland, IL
	ICAHN Function		
	Alton Mental Health Center		Alton, IL
	Psych Grand Rounds		
Marion	Salem Township Hospital		Salem, IL
	Teleradiology Project	ICAHN Function	
	Various Patients Homes		
	Telehome Wound Care		
Mason	Mason District Hospital		Havana, IL
	IRHA Function	ICAHN Function	
	Internal Grand Rounds		
	Various Patients Homes		
	Telehome Wound Care		
Massac	Massac Memorial Hospital		Metropolis, IL
	IRHA Function	ICAHN Function	
	Education & Training Prog.		
McDonough	Western Illinois University		Macomb, IL
	IRHA Function	Illinois Rural Interdisc.	
Menard	Various Patients Homes		

	Telehome Wound Care		
Mercer	Mercer County Hospital		Aledo, IL
	Neuro Grand Rounds	Education & Training Programs	
	Internal Grand Rounds	ICAHN Function	
Montgomery	Hillsboro County Hospital		Hillsboro, IL
	Education & Training Prog.	ICAHN Function	
Morgan	Jacksonville Dev. Center		Jacksonville, IL
	Psych Topic Review	DHS Conference	
	Internal Grand Rounds	Psych Grand Rounds	
	Neuro Grand Rounds	Teledermatology Project	
Ogle	Rochelle Community Hospital		Rochelle, IL
	ICAHN Function	Education & Training Programs	
Perry	Marshall Browning Hospital		DuQuoin, IL
	IRHA Function	ICAHN Function	
	Pinckneyville Comm.District		Pinckneyville, IL
	ICAHN Function	Education & Training Programs	
Piatt	John and Mary E. Kirby Hospital		Monticello. IL
	ICAHN Function		
Pike	Illini Community Hospital		Pittsfield, IL
	IRHA Function	ICAHN Function	
	Internal Grand Rounds		
Randolph	Chester Memorial Hospital		Chester, IL
	Teleradiology Project	ICAHN Function	
	Chester Mental Health Center		
	Teledermatology Project	Psych Grand Rounds	
	Teleneurology Project		
	Sparta Community Hospital		Sparta, IL
	ICAHN Function	Teleradiology Project	
Richland	Richland Community Hospital		Olney, IL
	Internal Grand Rounds	ICAHN Function	
	Teleneurology Project	Education & Training Programs	
	ICAHN Function		
Saline	Ferrell Hospital		Eldorado, IL
	ICAHN Function	Internal Grand Rounds	
	Harrisburg Medical Center		Harrisburg, IL
	Internal Grand Rounds	IRHA Function	
Sangamon	Various Patients Homes		Illiopolis, IL
	Telehome Wound Care		
	Brother James Court		Springfield, IL
	Telederm Project	Psych Topic Review	
	Family & Community Medicine		
	General Meetings		
	Family Practice Center		
	Primary Care		
	Healthcare & Family Services		
	Primary Care		
	Hope School		

	Psych. Topic Review	Autism Project
	McFarland Mental Health Center	
	Psych Grand Rounds	
	Memorial Medical Center	
	Internal Grand Rounds	Psych Grand Rounds
	Neuro Grand Rounds	
	Memorial Medical Center - Visiting Nurses	
	Telehome Wound Care	
	SIU Department of Psychiatry	
	Psych Topic Review	Psych Grand Rounds
	SIU Medical Education	
	Expanding Your Horizons	
	SIU Medical Humanities	
	Expanding Your Horizons	
	SIU Neurology	
	Teleneurology Project	Neuro Grand Rounds
	SIU Pediatrics	
	CCH Diagnostic Referral Center for Children	
	SIU Telehealth	
	Acad. for Schol. Education	Autism Project
	American Cancer Society	CCH Diagnostic Referral Center for Children
	Camp Coco	Computer Support/Net. Admin.
	Clinical Managers	DHS Conference
	Connect SI	EHR Prep.
	DHS OAT Grant	Expanding Your Horizons
	Dialog with the Dean	Habitat for Humanity
	ENT Grand Rounds	ICAHN Function
	IMPC Technology	Illinois Rural Interdisc.
	Internal Grand Rounds	MedEd Faculty Dev.
	IRHA Function	Noon Chart Rounds
	Medical Micro	President Poshard Speech
	Practices Management	Primary Care Case Management
	Psych Topic Review	Psych Grand Rounds
	S. IL Broadband Initiatives	SIU School of Law
	SIUE History 400	SIU-Egypt Exploration
	SIUE Nursing	VMRC/SIU Neurology
	W. Frankfort Telehealth Proj.	
	St. John's Hospital	
	Internal Grand Rounds	Neuro Grand Rounds
	EAHA Rural Health	Clinical Managers
	University of Illinois – Spfld.	
	Expanding Your Horizons	
Schuyler	Sara Culbertson Hospital	Rushville, IL
	Internal Grand Rounds	
Scott	Various Patients Homes	Winchester, IL
	Telehome Wound Care	
Tazewell	Hopedale Medical Complex	Hopedale, IL

	ICAHN Function		
Union	Choate Medical Center		Anna, IL
	Psych Topic Review	IRHA Conf. Planning	
Vermillion	Hoopeston Reg.l Health Center		Hoopeston, IL
	ICAHN Function		
Wabash	Wabash General Hospital		Mt. Carmel, IL
	ICAHN Function	Internal Grand Rounds	
Warren	Community Medical Center		Monmouth, IL
	ICAHN Function	Education & Training Programs	
	IRHA Function		
Washington	Washington County Hospital		Nashville, IL
	ICAHN Function	Education & Training Programs	
	IRHA Function	Internal Grand Rounds	
	Teleradiology Project		
Wayne	Fairfield Memorial Hospital		Fairfield, IL
	ICAHN Function	IRHA Function	
	Internal Grand Rounds		
White	White County Medical Center		Carmi, IL
	ICAHN Function		
Whiteside	Morrison Community Hospital		Morrison, IL
	ICAHN Function		
Williamson	John A. Logan College		Carterville, IL
	Connect SI	DHS Conference	
	Herrin Hospital		Herrin, IL
	ICAHN Function	Teleradiology Project	
	Veteran's Admin. Hospital		Marion, IL
	Teledermatology Project	Internal Grand Rounds	
Winnebago	University of Illinois		Rockford, IL
	Psych Topic Review	Illinois Rural Interdisc.	
	IRHA Function		
Woodford	Eureka Community Hospital		Eureka, IL
	ICAHN Function		
Additional U.S. States Served			
Carroll	SW Virginia Training Center		Hillsville, VA
	Psych Topic Review		
Dane	Central WI Center for DD		Madison, WI
	Psych Topic Review		
Hunterdon*	Hunterdon Developmental		Clinton, NJ
	Psych Topic Review		
Providence*	RI State Legislature		Providence, RI
	SIUE Nursing		
San Joaquin	Valley Mountain Reg. Center		Stockton, CA
	VMRC/Neurology		
International Sites Served			
	ESTINET		Cairo, Egypt
	Psych Topic Review	SIU-Egypt Explor.	

Illinois State University

Illinois State University's interest in telemedicine and the FCC rural telemedicine grant is the result of efforts currently undertaken by faculty of Mennonite College of Nursing (MCN). MCN took the lead in developing distance education at Illinois State University. Mission focused on addressing the health care needs of vulnerable and underserved populations, the College specializes in care of the elderly. Recognizing the underserved and aging demographics of rural Illinois, the College is increasing clinical operations via distance technology. Nursing Grand Rounds in rural long term care facilities, for example, greatly enhances the professional environment for the nurses working in rural long term care settings while providing the residents with the most up to date clinical assessment and evidence based practice. Distance monitoring of elder clients in their homes can enhance their ability to maintain independent living. In addition to educating students to care for rural populations, and providing clinical services to rural populations, the College faculty are engaged in externally funded research projects to enhance the clinical outcomes for elder clients.

2 – Programs

Several special initiative programs take student learning beyond the classroom while students and faculty provide much-needed health care and education to the community. Through geriatric initiatives, such as the Joe Warner Teaching Nursing Home and Extension, Hartford Heritage and modules, students and long term care staff learn more about providing quality long-term care. Students have the opportunity to reach out to their community by participating in service initiatives, such as teaching health issues and providing school physicals and immunization clinics to underserved elementary school students. The Transcultural Program provides students with a cultural experience in rural and urban settings, while providing health care in a setting that may be new to them.

3 – Accelerated Degree, Masters Degrees and PhD Program

MCN is now offering an Accelerated BSN Sequence for students with a previous non-nursing bachelor's degree. This degree aims to improve the severe nursing shortage and accelerate students' paths to obtaining a nursing degree. The masters family nurse practitioner program prepares students to provide primary care services to rural populations. To address the nursing faculty shortage, the college started a collaborative PhD program in aging with the University of Iowa. These programs employ distance technologies.

4 – Research and Instruction

MCN faculty are engaged in research and scholarship activities to address the nursing and health care needs of urban and rural populations and to identify effective strategies to reduce health disparities in vulnerable and underserved populations. Faculty strive to engage the community served through research in a reciprocal relationship to assure research practices are attentive to the special needs of vulnerable populations during all phases of the research process, including study planning, recruitment, obtaining consent for research, data collection and reporting findings. These include:

- Clinical Lab Simulations; Students and practicing staff nurses participate in multiple types of complex case studies using simulated mannequins and equipment;
- Video conferencing for the purpose of making content experts such as diagnostic specialist available to students and patients when and where time and distance constraints exist.
- Distant Learning designed to remove travel and time barriers for RN/BSN, MSN and PhD students allowing them to continue working as a RN while pursuing their degrees.
- The examination of HD (high definition) video is an area of interest to further enhance the quality of demonstrations or instruction.
- Sharing nursing faculty resources through a collaborative distance education PhD program with the University of Iowa, College of Nursing

- Students are given the opportunity to examine nursing care in a location that is culturally different from central Illinois. The program offers eligible nursing students the opportunity to participate in a two- to four-week transcultural experience, typically during the summer months.

5 – Grants

Faculty have received several million dollars in external funding for these initiatives. The following are externally funded research initiatives currently under investigation:

- JOHN A. HARFORD FOUNDATION/ATLANTIC PHILANTHROPIES CLAIRE M. FAGIN FELLOW
- EXPANDING THE TEACHING-NURSING HOME CULTURE IN THE STATE OF ILLINOIS
- NURSING LEADERSHIP INTERVENTIONS AND WEIGHT LOSS IN NURSING HOMES
- JOHN A. HARTFORD FOUNDATION BUILDING ACADEMIC GERIATRIC NURSING CAPACITY SCHOLAR
- COLLABORATIVE DOCTORAL PROGRAM – CARING FOR OLDER ADULTS (WITH THE UNIVERSITY OF IOWA COLLEGE OF NURSING)
- BLUE SKIES: A WEB-BASED SELF-MANAGEMENT FOR TEENS WITH DEPRESSION
- MULTITHEORETICAL APPROACH TO PREVENT HIV AMONG WOMEN
- RISK OF HIV AMONG MIDDLE AGE AFRICAN AMERICAN WOMEN
- IMPLEMENTING EVIDENCE-BASED PRACTICE
- BIOBEHAVIORAL NURSING RESEARCH GRANT

6 – Conclusion

Due to the current efforts of MCN at Illinois State University, students and faculty already benefit the surrounding communities by producing graduates with exposure to more than just what is available on campus. Partnerships have increased the quality of these offerings in addition to enhancing research efforts. With funding from the FCC telemedicine grant, MCN can greatly improve and expand the quality of these experiences that benefit the University, participating health providers, and communities. By connecting the many healthcare providers throughout central Illinois, MCN students will have the opportunity for greater exposure to real-world healthcare issues. Additionally, this connection will provide an avenue for healthcare providers throughout central Illinois to access a wider range of diagnostic support by leveraging the combined personnel resources at the many local hospitals, long term care facilities, and health research organizations throughout central Illinois.

Attachment 2 – Technology Platforms

Technology Platforms

The following pages provide a summary description of the key technology components that will be used to build the proposed network. The following five components provide the capabilities supporting our proposed design:

1. Ciena CN4200
2. Force 10 S25P Access Switch
3. Force 10 E-Series Switch
4. DragonWave Horizon Wireless Ethernet
5. DragonWave AirPair Wireless Ethernet

Product descriptions from each manufacturer are included in the following pages.

CN 4200™ FlexSelect™

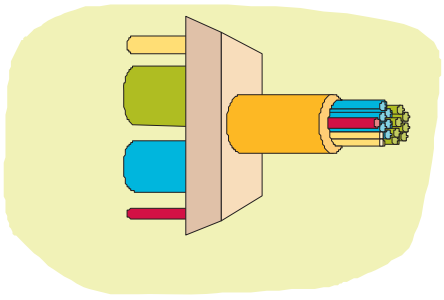
Advanced Services Platform

THE CN 4200 FLEXSELECT ADVANCED SERVICES PLATFORM IS A NEW GENERATION MULTISERVICE TRANSPORT AND AGGREGATION PLATFORM capable of supporting any transport protocol—including Time Division Multiplexing (TDM), Ethernet, storage or video—on any available port, even when on the same line card. The first in the industry to offer user programmable line ports, the CN 4200 allows services of up to 10 Gb/s to be provisioned, upgraded or changed with point-and-click ease—without introducing new modules. Unlike other service platforms, the CN 4200 was built from the ground up to make the worldwide migration from TDM to packet services simple, practical and cost-effective.

UNPRECEDENTED FLEXIBILITY Any mix of services is supported in a single slot using Ciena's FlexiPort technology. Designed to meet the changing needs of end user applications, each individual port can be remotely programmed for any supported service type and data rate for provisioning, upgrading (i.e., from 1 Gb/s to 2 Gb/s Fibre Channel) or even changing (i.e., from SONET/SDH to GbE) services at any time. Further flexibility is provided through software-defined personalities—like transponder, muxponder, Add/Drop Multiplexer (ADM), or cross-connect—and with support of pluggable SFPs that are available to meet any network requirement.

OPTIMAL COST EFFICIENCY The CN 4200 drastically reduces CAPEX and OPEX as a result of fewer hardware elements and innovative technologies—including advanced switching and grooming, and remote programmability. Sub-wavelength grooming and a fixed Optical Add/Drop Multiplexer (OADM) provide 78% greater efficiency than competing ROADM solutions. Remote programmability reduces provisioning times by 95%, eliminates truck rolls and saves planning and engineering costs. Additionally, using FlexiPort technology reduces sparing costs by 66%.

AUTOMATED NETWORK AND SERVICE MANAGEMENT ON-Center™, Ciena's industry-leading network management solution suite, enables granular service level monitoring and management in addition to point-and-click provisioning for managing networks. FlexSelect OS, Ciena's intelligent control plane technology, provides even greater levels of network automation.



FEATURES & BENEFITS

- Flexible solution for delivering lower-speed multiservice data services transport
- High density multiservice transport platform supporting CWDM/DWDM
- Managed aggregation, grooming and transport of up to 24 any-rate signals from 10 Mb/s to 10.7 Gb/s, including SONET/SDH, Ethernet and storage protocols
- Flexible sub-rate grooming, add/drop and multiplexing to network interfaces
- Flexible assignment of ports as client or network ports
- OTU1/OTU2 DWDM network links with pluggable DWDM optics
- Optional integrated protection switching modules that can be used for both client and network side protection
- Sub-SONET/SDH protection switching (<25 ms), with 1+1 protection for 99.999% service availability
- Extensive performance

INVESTMENT PROTECTION

Using ITU G.709 standards-based technology (also known as Digital Wrapper) the CN 4200 grooms multiple optical services running on any port on to OTU1 (2.7Gb/s) or OTU2 (10.7 Gb/s) wavelengths.

Technical Information

SYSTEM LEVEL

Optical interfaces	10/100/1000BT (Cat5e) for client-side only, 850 nm (MMF) for client-side only, 1310 nm (SMF) up to 35km reach
SFP Transceivers (Multi-rate)	ITU 694.1 DWDM (SMF) (<120 km), ITU 694.2 CWDM (SMF) (<120 km)
Spectral grids for WDM applications:	80 and 120 km reach: 1471, 1491, 1511, 1531, 1551, 1571, 1591, 1611 nm
CWDM wavelength grid (G.694.2)	46 wavelengths on 100 GHz boundaries
DWDM wavelength grid (G.694.1)	850 nm (MMF) for client-side only, 1310 nm (SMF) up to 10km reach
XFP Transceivers (10 Gb/s)	1550 nm (unspecified) up to 40km reach, 1550 nm (unspecified) up to 80km reach
	ITU 694.1 DWDM (SMF) (<80 km)*: - DWDM wavelength grid (G.694.1); - 46 wavelengths on 100 GHz
	–
Discrete Transceivers (10 Gb/s)	–
Fixed wavelength DWDM transceiver	46 ITU 694.1 wavelengths on 100 GHz (SMF) (<90 km)
Tunable wavelength DWDM transceiver	91 ITU 694.1 wavelengths on 50 GHz (SMF) (<90 km)

LINE CARD SPECIFICATIONS

M6S line cards carry six full-duplex SFP-based multi-rate ports with a maximum OTU1 line rate.
F10-T line card features XFP based and fixed or fully tunable optics for 10GbE LAN/WAN, OC-192/STM-64, 10G FC and OTU2
F10-A line card features multi-rate SFPs (max OTU1) and fixed or tunable optics for OTU2
FC4-T line card multiplexes up to three FC200 or FC400 connections onto a single OTU2 wavelength using either fixed or fully tunable optics

OPTICAL PROTECTION SWITCH MODULES

OPS-1	Single optical protection switch supports 1310 nm (1260 – 1360 nm), DWDM and CWDM (1460 – 1620 nm) wavelengths; half width module
OPS-2	Dual optical protection switches; supports 1310 nm (1260 – 1360 nm), DWDM and CWDM (1460 – 1620 nm) wavelengths; half width module
OPS-2-850	Dual optical protection switches; dedicated solely to support 850 nm (770 – 880 nm) services; half width module

MANAGEMENT AND CONTROL

Standard SONET/SDH OTN (GCC0) management planes; SNMP v1 (RFCs 1155-1157); SNMP v2c; SNMP v3
CLI; TL1; Embedded Signaling and Control Channel; Telnet; HTTP; FTP

POWER REQUIREMENTS

DC Power	-36V to -72V DC
AC Power	Optional AC rectifier converts 100 – 240 VAC @ 47 – 63 Hz to 42 – 56 VDC (750W max)

AGENCY APPROVALS

ETSI/CE	ETS 300 019/IEC 68, EN 300 386/EN 55022, EN 61000, ETS 300 753, EN 60950
NEBS Level 3	GR-63, GR-1089
Safety	UL 60950, CSA C22.2 60950, FCC Part 15, Class A

ENVIRONMENTAL CHARACTERISTICS

Ambient Temperature	+5˚C to +50˚C; -5˚C to +55˚C short term
Relative Humidity	5% to 85% (non-condensing)
Altitude	13,000 ft; 4000 m
HVAC	Cooling available for maximum 375 W heat dissipation (DC power) or 170 W (AC power)

PHYSICAL CHARACTERISTICS

	Side Exhaust Configuration	Front Exhaust Configuration	Rear Exhaust Configuration
Height	7.0 in (178 mm)	7.0 in (178 mm)	7.0 in (178 mm)
Width	17.5 in (445 mm)	19.5 in (495 mm)	19.5 in (495 mm)
Depth	11.8 in (300 mm)	11.8 in (300 mm)	12.0 in (305 mm)
Weight	23 lbs; 10.5 kg (max.)		

Lightwave, MD 21090
1.800.20.3714 (US)
1.410.865.8671 (outside US)
1.410.865.8620 www.ciena.com

S25P Access Switch

24-port GbE fixed configuration
1-RU switch

Up to four 10 GbE uplinks

Scalable stacking technology supports 192 GbE ports in up to eight S25Ps

S-Series S25P High Performance GbE/10 GbE Access Switch

The Force10 S25P is a compact form factor switch that delivers secure high Gigabit Ethernet fiber density at the network edge, enabling cost-effective scalability while eliminating bandwidth bottlenecks at key aggregation points.

Key Applications

Coupled with the E-Series, which delivers unmatched resiliency and performance, the S25P enables IT managers to deploy a reliable end-to-end 10 GbE solution that spans from core to network edge.

- Small form factor intra-POP Layer 2 interconnects
- Extend fiber reach in small to medium metro POPs
- 10 GbE LAN/WAN PHY or DWDM optics for cost-effective metro or inter-POP transport
- Scalable multi tenant unit (MTU) core or distribution switch
- Secure migration of server interconnects from 100Base-FX to GbE speeds

Key Features

High density, small form factor for high performance Ethernet environments.

- 24 SFP ports in a 1-RU form factor with two modular slots
  - 24 ports GbE or 100Base-FX SFP pluggable optics
  - 4 ports 10/100/1000Base-T shared with SFP pluggable optics ports
- Optional Modules
  - 2-port 10 GbE CX4
  - 2-port 12 Gbps stacking
  - 1-port 24 Gbps stacking
- Switching fabric capacity of 144 Gbps and forwarding capacity of more than 95 Mpps
- Stacks up to eight S25Ps to deliver a high capacity solution
- Supports jumbo frames of up to 9,216 bytes; ideal for high-end server connectivity and network attached file servers
- Full complement of standards-based Layer 2 and Layer 3 features
- Built-in power redundancy

Specifications: S-Series S25P Access Switch

Ordering Information

Order Number	Description
S25-01-GE-24P	24-port 100FX/1GbE switch with SFP pluggable optics & 4 10/100/1000Base-T ports with 2 Modular slots
S50-01-10GE-2P	2-Port 10 GbE XFP Fiber Module*
S50-01-10GE-2C	2-Port 10 GbE CX4 Module*
S50-01-12G-2S	2-Port 12Gbs Stacking Module*
S50-01-24G-1S	1-Port 24Gbs Stacking Module*
S50-01-SSC-12G	60cms stacking cable for S50-01-12G-2S
S50-01-LSC-12G	4m stacking cable for S50-01-12G-2S
S50-01-SSC-24G	60cms stacking cable for S50-01-24G-1S
S50-01-LSC-24G	4m stacking cable for S50-01-24G-1S
S50-01-SW-L3	Layer 3 Software Upgrade for S25-01-GE-24P

* Optional module for S25-01-GE-24P

All S25P components are ROHS Compliant.

Physical

24 line-rate ports supporting GbE or 100Base-FX SFPs

4-ports 10/100/1000Base-T (shared with SFP ports)

2 Optional module slots:

- 2 line-rate ports 10 Gigabit Ethernet XFP
- 2 line-rate ports 10 Gigabit Ethernet CX4
- 2 line-rate ports 12 Gigabit Stacking

IEEE Compliance

802.3ab 1000Base-T
802.3z Gigabit Ethernet (1000Base-X)
802.3u Fast Ethernet (100Base-FX)
802.3ae 10 Gigabit Ethernet
802.3ak 10 Gigabit Ethernet CX4
802.1p L2 Prioritization
802.1Q VLAN Tagging, GVRP
802.1s Multiple Spanning Tree Protocol
802.1w Rapid Spanning Tree Protocol
802.3ad Link Aggregation with LACP
802.1D Bridging, GARP, GMRP
802.3x Flow Control
802.1ac Frame Extension for VLAN tagging
802.1x Port based Network Access Control

RFC Compliance

OSPF:

1587 NSSA Option
1765 OSPF Database Overflow
1850 OSPF MIB
2154 OSPF MD5
2328 OSPF v2

RIP:

1058 RIP v1
1724 RIP MIB
2082 RIP MD5
2453 RIP v2

IP Multicast:

1112 IGMP
1122 DVMRPv3-10
2236 IGMPv1 and v2
2362 PIM-SM
3376 IGMPv3
Ietf-draft IGMP-snooping v1, v2 and v3
Ietf-draft PIM-DMv2

Management and SNMP:

RADIUS/TACACS+ Authentication
Secure Web-based Management
Industry Familiar CLI: Scripting, Command completion, Context sensitive help

1157 SNMP v1
1212 Concise MIB Definition
1213 SNMP v2 (MIB-II)
1493 Bridge MIB
1643 Ethernet-like MIB
1901 Community based SNMPv2
1905 Protocol Operations for SNMPv2
1906 Transport Mappings for SNMPv2
1907 Management Information Base for SNMPv2
1908 Coexistence between SNMPv1, SNMPv2
1724 RIP v2 MIB extension
1850 OSPF v2 MIB
2096 IP forwarding table MIB
2233 The Interfaces Group MIB using SMI v2
2570 SNMP v3
2665 Ethernet-like interfaces
2674 VLAN MIB
2787 VRRP MIB
2819 RMON (Groups 1,2,3,9)
2933 IGMP MIB
2934 PIM MIB for IPv4
Ietf-Draft DVMRP MIB

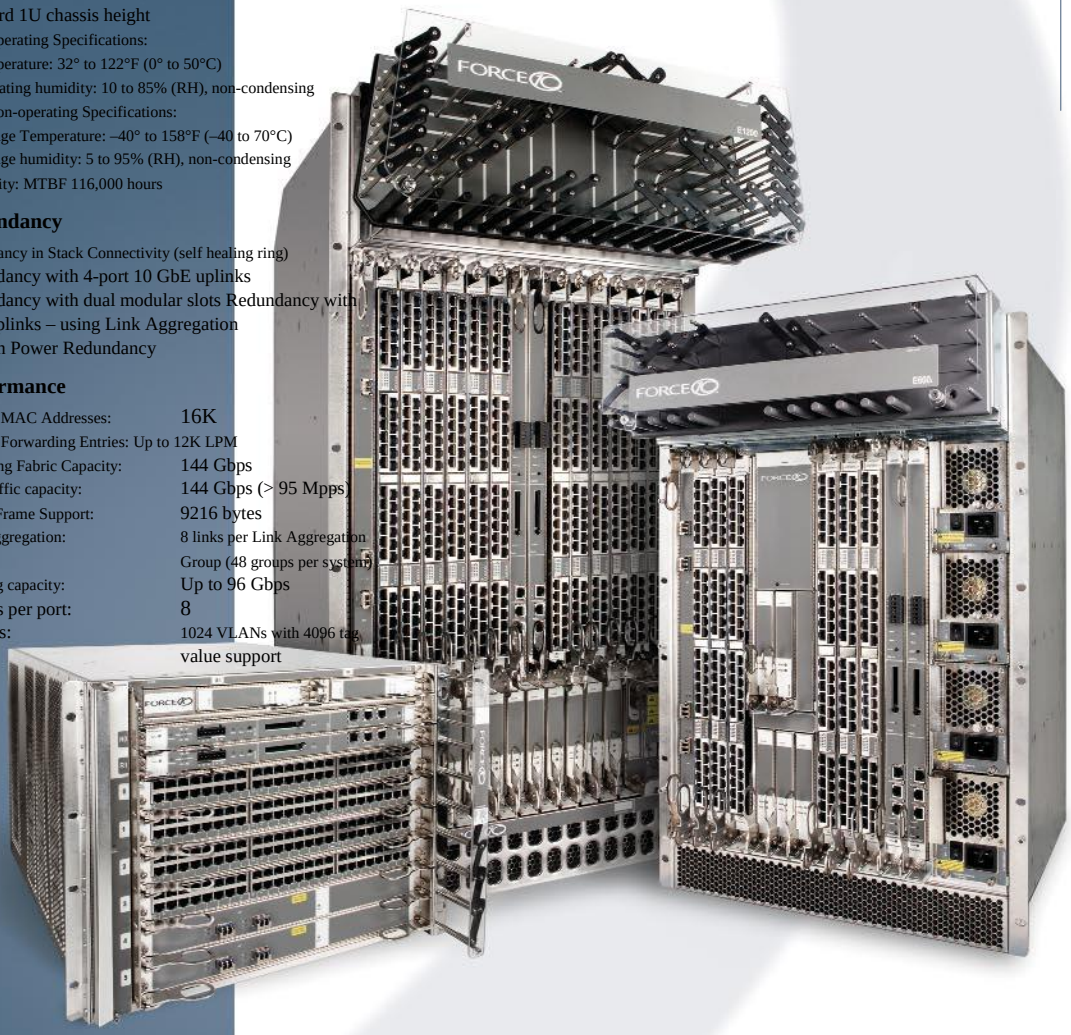
1 line-rate port 24 Gigabit Stacking
1 RJ-45 Console/management port with RS-232 signaling
Size: 17.32 w x 16.73 d x 1.73" h (440 x 425 x 44 mm)
Weight: 14.41 lbs (6.54 Kg)
Power Supply:
Primary: 100-240V AC, 50-60Hz, Autosensing
Secondary: 100-240V AC, 50-60Hz, Autosensing
Max. Thermal Output: 44.782BTU/hr
Max. Current Draw per System: 100vAC/4A, 240vAC/2A
Max. power consumption: 150W
19" rack mountable
Standard 1U chassis height
Max. Operating Specifications:
Temperature: 32° to 122°F (0° to 50°C)
Operating humidity: 10 to 85% (RH), non-condensing
Max. Non-operating Specifications:
Storage Temperature: –40° to 158°F (–40 to 70°C)
Storage humidity: 5 to 95% (RH), non-condensing
Reliability: MTBF 116,000 hours

Redundancy

Redundancy in Stack Connectivity (self healing ring)
Redundancy with 4-port 10 GbE uplinks
Redundancy with dual modular slots Redundancy with GbE uplinks – using Link Aggregation
Built-in Power Redundancy

Performance

Layer 2 MAC Addresses:	16K
Layer 3 Forwarding Entries: Up to 12K LPM	
Switching Fabric Capacity:	144 Gbps
User traffic capacity:	144 Gbps (> 95 Mpps)
Jumbo Frame Support:	9216 bytes
Link Aggregation:	8 links per Link Aggregation Group (48 groups per system)
Stacking capacity:	Up to 96 Gbps
Queues per port:	8
VLANs:	1024 VLANs with 4096 tag value support



FORCE10

Attachment 2 – Technology Platforms

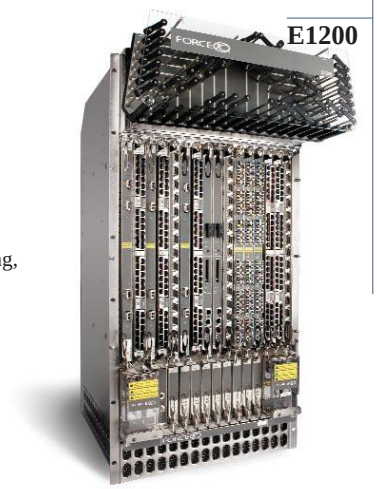
Force10 Networks is the pioneer in resilient Gigabit and 10 Gigabit Ethernet switching and routing. The Force10 E-Series switch/routers provide best-in-class resiliency, unmatched scalability, line-rate performance, and full L2 switching and L3 routing. Based on revolutionary system architecture that combines fully distributed hardware and modular software, the E-Series switch/routers ensure predictable application performance, increase network availability, and reduce operating costs.

Attachment 2 – Technology Platforms

To simplify network operation and maintenance, the E1200/E600/E300 allow hot-swap of all key components and share the same Switch Fabric Modules (SFMs) and FTOS software. In addition, the E1200 and E600 share common line cards and Route Processor Modules (RPMs).

The Force10 E-Series sets a new standard for high-performance switch/routers with unmatched scalability to 1,260 Gigabit Ethernet or 224 Ten Gigabit Ethernet ports per chassis, consistent performance with ACLs on all ports, and full L2 switching and L3 routing. These groundbreaking products simplify network applications from Server/Cluster Consolidation, Grid Computing, Campus backbones, next-generation Internet Exchanges, and Metro Ethernet services.

The Force10 E-Series E1200/E600 provides 56.25 Gigabits per second per slot and the E300 delivers 25 Gigabits per second per slot. All deliver predictable line-rate performance with any combination of features enabled, deterministic low latency and jitter, robust L2/L3 functionality, and the resiliency to thwart Denial of Service (DoS) attacks. Built upon the powerful and cost-effective Force10 architecture, the E-Series sets the industry standard both for resiliency and performance.



E1200

- 1.68 Tbps non-blocking switch fabric
- 1/2 rack chassis (19" rack width)
- 1 billion packets per second
- 14 line card slots
- 1+1 redundant RPMs
- 8:1 redundant SFMs
- 1+1 redundant DC Power Entry Modules

E600

- 900 Gbps non-blocking switch fabric
- 1/3 rack chassis (19" rack width)
- 500 million packets per second
- 7 line card slots
- 1+1 redundant RPMs
- 4:1 redundant SFMs
- 3+1 and 2+2 redundant AC power supplies
- 1+1 redundant DC Power Entry Modules

E300

- 400 Gbps non-blocking switch fabric
- 1/6 rack chassis (19" rack width)
- 196 million packets per second
- 6 line card slots
- 1+1 redundant RPMs
- 3+1 and 2+2 redundant AC power supplies
- 1+1 redundant DC Power Entry Modules

Highest Ethernet Density

The Force10 E-Series delivers unparalleled Gigabit Ethernet and 10 Gigabit Ethernet port densities. The E1200/E600 support 90 Gigabit Ethernet ports or 16 10 Gigabit Ethernet ports per line card slot and up to 14 and 7 line card slots per chassis respectively. The E300 supports 48 Gigabit Ethernet ports or eight 10 Gigabit Ethernet port per line card slot and up to six line card slots per chassis.

Line-Rate Performance

With six custom Force10 ASICs and advanced Ternary Content Addressable Memories (TCAM) on every line card, the Force10 E-Series provides line-rate, non-blocking forwarding performance across all ports, even with all features enabled simultaneously. These features include:

- Extended ACLs for packet filtering and policy routing
- Multi-field packet lookup and classification for QoS
- Packet metering and marking for rate limiting and policing
- Congestion control using WRED and WFQ

Full L2 Switching and L3 Routing

Force10 ASICs, E-Series architecture and FTOS software work in unison to give robust L2 switching and L3 routing functionality to the E-Series with the scalability and security required for applications spanning the LAN, MAN, and Internet-connected WAN. The Force10 E-Series L2 and L3 features include:

- BGP, IS-IS, OSPF, and RIP routing protocols
- Prefix-based distributed forwarding table on every line card
- Forwarding table support for up to 256K routes
- 55 ms to 200 ms packet buffering per port

High Density Interfaces

Ports Per Chassis	High	Density	Gigabit Ethernet
			Line-Rate Gigabit Ethernet

Attachment 2 – Technology Platforms

With the power of the E-Series architecture, the Force10 E-Series delivers breakthrough resiliency at performance levels never before realized. The Force10 E-Series architecture is the result of patented technological innovation in switch fabric, backplane, ASIC, and system control plane design.

Separate System Control Plane

The E-Series architecture includes distinct data and control planes. The system control plane is augmented with three processors on each Route Processor Module (RPM). The first processor handles Layer 2 traffic, the second, Layer 3, and the third, management traffic. This patented architecture allows faults to be contained while protecting other parts of the system. For example, it protects against spanning tree loops and DoS attacks providing unparalleled resiliency.

Designed to meet the needs of Internet-scale networks, the E-Series system control plane supports millions of routing table entries, up to 320K forwarding table entries, and thousands of ACLs on every line card. The RPM's innovative control traffic rate limiting and filtering functionality empowers network administrators to suppress harmful DoS attacks and prevent flooding of unwanted traffic onto the network. And dedicated 100 Mbps switched paths from the RPMs to every line card eliminate sluggish forwarding table updates that could otherwise jeopardize network stability.

Distributed ASIC-Based Forwarding

The Force10 ASICs, along with advanced TCAMs on every line card, give absolutely predictable line-rate forwarding for every packet regardless of the number, type, or complexity of features enabled across the chassis. Unlike low-performance, processor-based forwarding architectures, there is no "slow-path" or software-based forwarding in the E-Series. The Force10 ASICs look up and act upon all information related to forwarding and applying policy to a packet before the entire packet is received, independent of table lengths, IP address prefix lengths, or packet size. This hardware forwarding enables the E-Series to provide the deterministic low latency and jitter required by VoIP and streaming media applications.

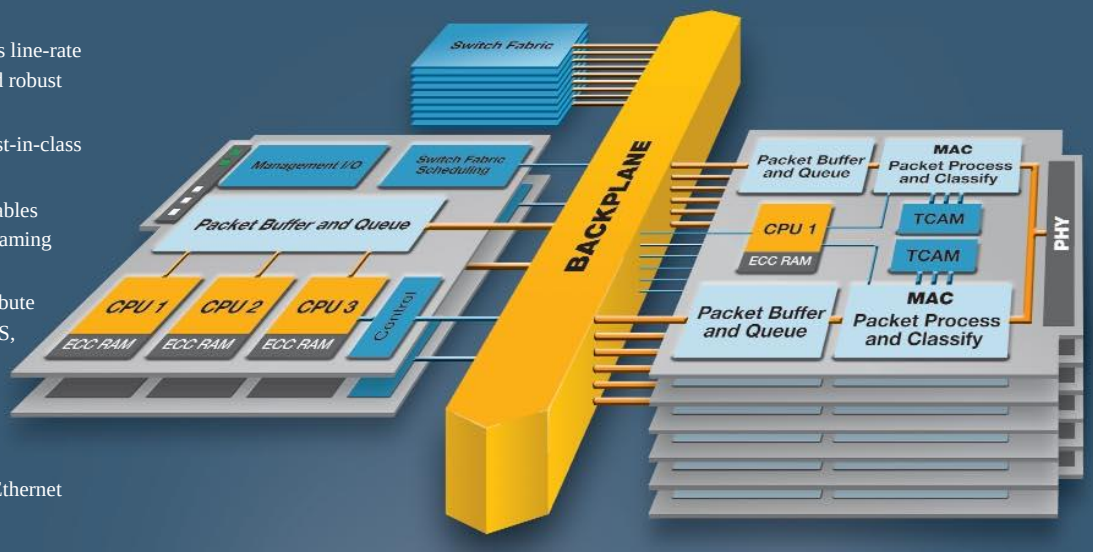
Non-Blocking 1.68 Tbps Switch Fabric

The E-Series switch fabric provides non-blocking connectivity along with advanced queuing, multicast, and jumbo frame support. The E1200/E600's cost-effective N:1 redundant switch fabric design reduces SFM sparing costs while providing 56.25 Gigabits per second of non-blocking bandwidth to each line card slot.

The Force10 E-Series Architecture

The Force10 E-Series Architecture delivers line-rate performance, cost-effective scalability, and robust L2 switching and L3 routing:

- Three CPU Route Processor delivers best-in-class resiliency and security
- Scalable, non-blocking switch fabric enables the low latency and jitter critical for streaming media applications
- High performance Force10 ASICs distribute packet forwarding, ACL processing, QoS, and buffering to every line card
- Robust L2/L3 multiprocessor control plane with innovative control traffic filtering and rate limiting capabilities
- Cost-effective, reliable — 100 Gigabit Ethernet



Attachment 2 – Technology Platforms

Passive Copper Backplane

The E-Series architecture's reliable and cost-efficient backplane is the industry's first high speed, non-optical backplane to scale to 5 Tbps data rates in a single 1/2 rack E1200 switch/router chassis. Unlike optical backplane interconnect systems or active copper backplanes, the E-Series backplane has no single point of failure and eliminates costly electrical-optical-electrical conversions. The resulting system simplicity afforded by the backplane means bulletproof reliability and minimum cost — available on all three platforms. The massive backplane capacity of E-Series chassis bought today also translates to enough bandwidth per slot (E1200 and E600) to support 100 GbE when that standard becomes available.

Fault Tolerance and High Availability

The E-Series architecture supports redundancy, availability, and serviceability features to maximize network uptime. All key systems in the E-Series are redundant, including the RPMs, SFMs, and power. All memory systems are ECC/parity protected. System-wide environmental monitoring and persistent configuration synchronization enable FTOS to detect, report, and correct faults with a minimum of system interruption. In addition, serviceability features include hot-swap of all key components, cable management, and front-side access to all cabling and cards minimize mean time to repair.

Attachment 2 – Technology Platforms

Force10 FTOS software is purpose-built for scalable, high-performance Ethernet applications that span the LAN, MAN, and WAN. FTOS harnesses the massive performance of the Force10 E-Series and provides end users with the functionality they need to utilize the power of the E-Series architecture.

FTOS is a real-time operating system customized for high-availability and fault tolerance. FTOS delivers an extensive range of high-performance L2 switching and L3 routing features including robust IP routing control plane, hardware and software fault tolerance, highly granular traffic management and accounting, industry standard command line interface (CLI), and system diagnostics.

FTOS Provides:

- Stable, scalable L2 switching and L3 routing in a protected environment
- Fault tolerance with modular processes allocated to multiple system processors
- Simplified management with SNMP and an industry-standard CLI
- Full suite of debug and Syslog capabilities

E-Series Route Processor Module

E-Series Switch Fabric Module

FTOS Key Features

L2 Switching

- 4,096 VLANs
- 16M VLANs with VLAN stacking
- Up to 896K MAC addresses per system
- Link aggregation
- 802.1p prioritization
- FVRP VLAN redundancy
- MSTP (802.1s)/RSTP (802.1w)

L3 Routing

- Robust protocols: BGP, IS-IS, OSPF and RIP
- Multicast with IGMP, PIM-DM, PIM-SM, PIM-BSR, MBGP, and MSDP
- Full Internet route table support
- VRRP
- IPv6
- Graceful restart of BGP and OSPF

Services

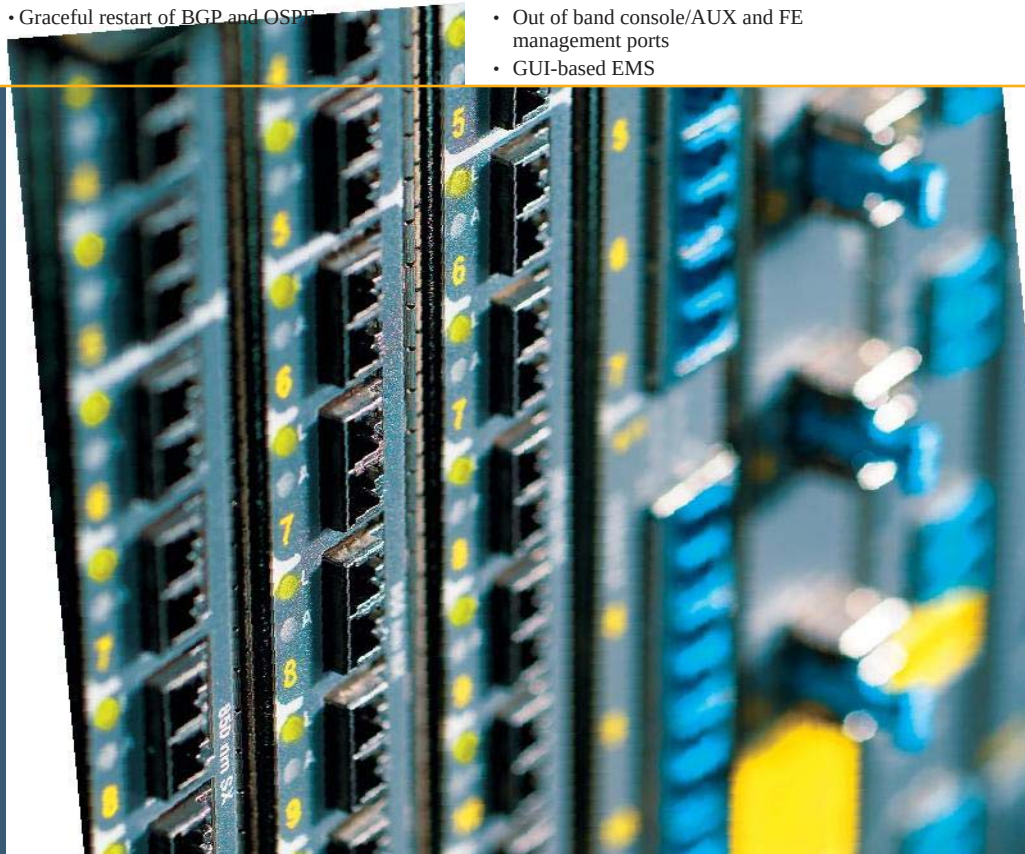
- Congestion control with WRED and WFQ
- QoS for L2 and L3
- Egress rate shaping, ingress rate policing
- Committed access rate support — two-rate, three-color model
- Port mirroring

Management

- Ping, Traceroute, Telnet
- RADIUS, TACACS+, SSH, SCP
- FTP, TFTP client
- DNS client, BootP/DHCP relay
- Accounting and statistics
- SNMP v1, v2c, v3, HP OpenView support
- RMON
- Out of band console/AUX and FE management ports
- GUI-based EMS

The New Standard of Scalability and Performance

From Server/Cluster Consolidation and Grid Computing to Campus Backbones, next-generation Internet Exchanges and Metro Ethernet services, the breakthrough Force10 E-Series ensures predictable application performance, increases network availability, and reduces operating costs. The Force10 E-Series provides an unprecedented combination of resiliency, scalable performance, and full-featured routing and switching.



Attachment 2 – Technology Platforms

The Force10 E-Series simplifies high-speed enterprise and service provider applications spanning the LAN, MAN, and WAN. With its resiliency, its high density of Gigabit and 10 Gigabit Ethernet, line-rate performance, and robust L2/L3 feature set, the Force10 E-Series reduces total cost of ownership (TCO) and increases network scalability for Server/Cluster Consolidation, Grid Computing, Campus Backbones, Metro Ethernet services, and Internet Exchanges (IXs).

Server Consolidation

Server consolidation within the enterprise can dramatically lower TCO. Lower powered servers with 10/100 connections are being replaced by high-performance servers that provide Gigabit Ethernet connectivity and are co-located in fewer data centers. Aggregating these Gigabit Ethernet servers requires a next-generation platform that delivers high capacity,

Cluster/Grid Computing

As they did with the Internet, research institutions are driving the creation of the next IT revolution: the Grid. Ultimately the Grid will create enormous “virtual supercomputers” providing CPU cycles on demand. Today the Grid is being built using native 10 Gigabit Ethernet connections between geographically disbursed Gigabit Ethernet attached server clusters. Similarly, many enterprises are

Campus Backbone

As with 10/100 Base-T before it, an explosion of 10/100/1000 Base-T at the desktop is underway, driving the need for 10 Gigabit Ethernet-attached servers and backbone trunks. Multiplying bandwidth requirements are IP-PBXs that put voice traffic onto the data network, new video and streaming media applications, and daily desktop backups to IP-connected storage arrays. The Force10

Metro Ethernet

Service providers are in a crunch to deliver new Ethernet services using their existing SONET/SDH infrastructure or installed dark fiber plant. These service providers need the ability to provide simple L2 access and aggregation coupled to a robust L3 core to scale the network to thousands of customers. The Force10 E-Series is uniquely qualified

E-Series Specifications

Chassis

E1200 – 14 line card slots
Size: 36.75 h x 17.4 w x 24" d (93.3 x 44.2 x 61 cm)
Weight (factory-installed components): 99 lbs (44.9 kg)
Weight fully loaded: 321 lbs (145.6 kg)
Maximum thermal output: 6,700W (22,860 BTU/hour)
Maximum current draw per DC PEM: 150A
Maximum power consumption: 7,200W

E600 – 7 line card slots
Size: 28 h x 17.4 w x 24" d (71.1 x 44.2 x 61 cm)
Weight (factory-installed components): 81 lbs (36.7 kg)
Weight fully loaded: 242 lbs (109.8 kg)
AC Power
- Nominal input voltage: 120-240 VAC 50/60 HZ
- Maximum thermal output:
  - 4,550W (15,800 BTU/hour) 100/120 VAC
  - 4,250W (14,500 BTU/hour) 200/240 VAC
- Maximum input current per module:
  - 16A 100 VAC 13A 120 VAC
  - 13A 200 VAC 11A 240 VAC
- Maximum system power input:
  - 4.8 KVA 100/120 VAC, 4.5 KVA 200/240 VAC

DC Power
- Max. thermal output: 3,750W (12,800 BTU/hour)
- Maximum current draw per DC PEM: 100A
- Maximum power consumption: 4,000W

E300 – 6 line card slots
Size: 14 h x 17.4 w x 24" d (35.6 x 44.2 x 61 cm)
Weight (factory-installed components): 55 lbs (25 kg)
Weight fully loaded: 185 lbs (84.1 kg)
AC Power
- Nominal input voltage: 100–240 VAC 50/60 HZ
- Maximum thermal output:
  - 2900W (9,900 BTU/Hour) 100/120 VAC
  - 2700W (9,900 BTU/Hour) 200/220 VAC
- Maximum input current per module:
  - 10A 100 VAC 8.3A 120 VAC
  - 7A 200 VAC 5.8A 240 VAC
- Maximum system power input:
  - 3 KVA 100/120 VAC, 2.8 KVA 200/240 VAC

DC Power
- Max. thermal DC output: 2,300W (7,850 BTU/hour)
- Maximum current draw per DC PEM: 60A
- Maximum power consumption: 2,400W

Common

19" front, 19" middle (optional) and 23" middle
(E1200/E600 only) rack mountable
Maximum Operating Specifications:
- Temperature: 32° to 104°F (0° to 40°C)
- Altitude: no degradation to 10,000 feet (3,048 m)
- Relative humidity: 5 to 85 percent, noncondensing

Shock and vibration: Bellcore GR-63
Maximum Non-operating Specifications:
- Temperature: -40° to 158°F (-40° to 70°C)
- Maximum altitude: 15,000 feet (4,572 meters)
- Relative humidity: 5 to 95 percent, noncondensing

Vibration: Bellcore GR-63

E1200/E600 Redundancy/Availability

1+1 redundant Route Processor Modules (RPM)
N:1 redundant Switch Fabric Modules (SFM)
(E1200 8:1, E600 4:1)
1+1 redundant DC Power Entry Modules (PEM)
2+2 redundant AC power supplies
(E600 only, high line operation)
3+1 redundant AC power supplies
(E600 only, low line and high line operation)
Online insertion and removal of all components
Built-in cable management
Environmental self-monitoring

E300 Redundancy/Availability

1+1 redundant Route Processor Modules (RPM)
1+1 redundant DC Power Entry Modules (PEM)
2+2 redundant AC power supplies
(E300 high line operation only)
3+1 redundant AC power supplies
(low line and high line operation)
Online insertion and removal of all components
Built-in cable management
Environmental self-monitoring

IEEE Compliance

802.3ae 10 Gigabit Ethernet
802.3ab 1000Base-T
802.1p/Q VLAN Tagging
802.1s Multiple Spanning Tree Protocol
802.1w Rapid Spanning Tree Protocol
802.3ad Link Aggregation with LACP
802.1D Bridging
802.3x Flow Control
802.1ac Frame Extension for VLAN tagging

RFC Compliance

BGP4

1771	BGP v4
1772	Application of BGP4 in the Internet
1997	BGP Communities Attribute
1998	Application of BGP Community Attribute
2385	TCP MD5
2439	BGP Route Flap Damping
2519	Route Aggregation
2796	BGP Route Reflection
2842	Capabilities advertisement with BGP4
2858	Multi-protocol Extensions for BGP4 (MBGP)
2918	Route Refresh
3065	Autonomous System Confederations for BGP

ietf-draft Graceful BGP restart

OSPF

1587	NSSA option
2154	OSPF MD5
2328	OSPF v2
2370	Opaque LSA option
3623	Graceful OSPF Restart

RIP

1058	RIP v1
2453	RIP v2

IS-IS

1142	Intra-domain Routing Protocol
1195	Routing for TCP/IP
2763	Dynamic Hostname Exchange
2966	Domain-wide Prefixes
3373	Three-Way Handshake
3567	Cryptographic Authentication

ietf-draft Point-to-point operation over LAN
ietf-draft Maintaining more than 255 circuits in IS-IS
ietf-draft Extended Ethernet Frame Size support
ietf-draft Extensions for Traffic Engineering (wide metrics)

General Routing Protocols

768	UDP	1305	NTP v3
783	TFTP	1519	CIDR
791	IP	1542	BootP (relay)
792	ICMP	1591	DNS client
793	TCP	1812	IP v4 routers
826	ARP	2131	BootP/DHCP helper
854	Telnet	2236	IGMP v1 and v2
959	FTP	2338	VRRP
1027	Proxy ARP	2787	VRRP MIB

IP Multicast

1112	IGMP
2236	IGMP v2
2362	PIM SM
2858	Multi-protocol Extensions for BGP4 (MBGP)
3618	Multicast Source Discovery Protocol (MSDP)
3973	PIM-DM

ietf-draft PIM – SM v2
ietf-draft PIM BSR
ietf-draft IGMP Snooping

Security

1492	TACACS+
2865	RADIUS
3128	Protection Against a Variant of the Tiny Fragment Attack

Secure Copy (SCP)
SSH v1, v2

SNMP/MIBs

1157	SNMP v1
1213	SNMP v2 (MIB-II)
1215	Traps for use with SNMP
1493	Bridges
1573	Interfaces group MIB
1657	BGP
1724	RIP v2 MIB extension
1757	RMON
1850	OSPF v2 MIB
1907	MIB for SNMPv2
2011	SNMPv2 IP MIB
2012	SNMPv2 TCP MIB
2013	SNMPv2 UDP MIB
2096	IP forwarding table MIB
2233	Interfaces MIB
2665	Ethernet-like interfaces
2787	VRRP MIB

ietf-draft BGP4 MIB
ietf-draft IS-IS MIB
Fault management (alarms & status reporting)
Force10 Link aggregation MIB
Force10 chassis MIB
Force10 SNMP copy MIB
Force10 monitoring MIB

QoS

QoS mapping (Ethernet 802.1p and IP DiffServ)
Traffic conditioning for 8 traffic classes/port
Programmable WRED drop thresholds per queue
Egress rate-shaping
Weighted Fair Queuing
Committed Access Rate support—2-rate, 3-color model

Management

Industry-standard CLI
XML configuration and command output
Telnet, FTP, TFTP
Secure Copy (SCP)
NTP v3 Client, Server
Secure Shell support (SSH)
SNMP v1, v2c, v3
HP OpenView support
RADIUS/TACACS+ -based authentication
RMON
Port mirroring
Out of band console/AUX and FE management ports

Designed for NEBS

On board thermal and voltage monitoring
GR-63-Core: NEBS, physical protection
GR-1089-Core: EMC and Electrical Safety for Network Telecommunications Equipment
SR-3580 NEBS criteria levels (Level 3 compliance)

Safety

UL listed (UL 60950, 3rd Edition)
CUL CSA 22.2 #60950
CDRH 21
CFR 1040
EN 60950
EN 60825-1 Safety of Laser Products – Part 1: Eqpt. Classification Reqmts / User's Guide
EN 60825-2 Safety of Laser Products – Part 2: Safety of Optical Fiber Comm. Systems

EMC

USA: FCC CFR47 Part 15, Subpart J, Class A
Canada: ICES-003, Issue-2, Class A
Europe: EN 55022 1998 (CISPR 22: 1997), Class A
Japan: VCCI V3/01.4 Class A

Immunity

EN 300 386 V1.3.1 (2001-09) EMC for Network Eqpt.
EN 55024 1998
- EN61000-4-2/IEC-1000-4-2
- EN61000-4-3/IEC-1000-4-3
- EN61000-4-4/IEC-1000-4-4
- EN61000-4-5/IEC-1000-4-5
- EN61000-4-6/IEC-1000-4-

Attachment 2-Technology Platforms

Safety

CUS 60950, 3rd edition (US NRTL through CSA)
CSA 60950, 3rd edition
CE Mark (EN 60950)
CB Report, all country deviations
EN 60825-1 Safety of Laser Products-Part 1: Equipment Classification Requirements and User's Guide
EN 60825-2 Safety of Laser Products-Part 2: Safety of Optical Fibre Communications Systems
21 CFR 1040.10 and 1040.11 FDA laser device requirements

EMC

USA: FCC CFR47 Part 15, Subpart J, Class A
Canada: ICES-003, Issue-2, Class A
Europe: EN55022 1998 (CISPR 22: 1997), Class A
Japan: VCCI V3/01.4 Class A

EN 61000-4-2 ESD
EN 61000-4-3 Radiated Immunity
EN 61000-4-4 EFT
EN 61000-4-5 Surge
EN 61000-4-6 Low Frequency Conducted Immunity
EN 300 386 V1.3.1 (2001-09) EMC for Network Equipment
EN 55024 1998

Telecoms

JATE (for Japan)

Attachment 2-Technology Platforms

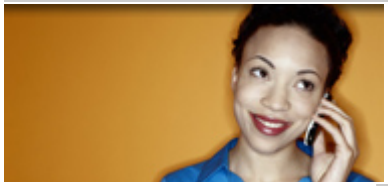
Horizon Compact Wireless Ethernet

Upgrade to new technologies such as WiMAX or 3G with DragonWave's next-generation, high capacity native Ethernet system Horizon Compact. Horizon Compact offers improved economics and simplified operations. Featuring a zero-footprint platform, the radio and the modem are integrated into one single compact outdoor-unit. Increased capacity (800 Mbps) simplified installation and operation, and improved troubleshooting mean lower lifecycle costs. Horizon Compact is a highly integrated, carrier grade solution for Ethernet backhaul using licensed or unlicensed spectrum.

- 11-38 GHz Frequency Support
- 800 Mbps full duplex capacity
- IP optimized GigE platform
- Integrated RF Loopback
- 100ms Adaptive Modulation
- 100ms Ring/Mesh Switching
- "Zero-footprint", hardened out-door-unit

Attachment 2-Technology Platforms

DragonWave



PRODUCTS - AIRPAIR

Need a flexible bandwidth radio platform than can scale rapidly to meet the growing demands on your network? AirPair meets the critical needs demanded by carrier class customers delivering a wireless GigE/100bT connection of up to 500 Mbps full duplex over licensed or unlicensed frequency allocation in an indoor or all-outdoor environment. AirPair can scale from 10 to 500 Mbps in 10 Mbps increments via a simple software configuration.

Product Features:

- 11-38 GHz Frequency Support
- 500 Mbps full duplex capacity
- Indoor/Outdoor split
- 19" 1U-high rack mountable option
- Adaptive Modulation
- 100ms Ring/Mesh Switching

	Standards				
Frequencies	**FCC**	**IC**	**ITU**	**ETSI**	**Mexico**
11 GHz	√	√		√	
13 GHz			√	√	
15 GHz		√	√	√	√
18 GHz	√	√	√	√	√
23 GHz	√	√	√	√	√
24 GHz UL	√	√	√	√	√
24 GHz DEMS	√	√			
26 GHz			√	√	
28 GHz	√			√	
38 GHz	√	√	√	√	

Attachment 3

Network Management

Management Overview

NIU will provide the day-to-day monitoring and management for the Illinois Rural HealthNet system. Our facilities will be used to perform the monitoring, bandwidth management and coordination of corrective maintenance for the Illinois Rural HealthNet system.

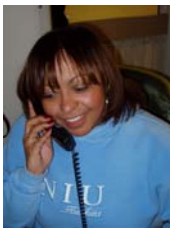
Helpdesk Services

NIU maintains a helpdesk that provides response to service calls every day of the year. Our helpdesk provides a range of functionality from support for Microsoft products to network monitoring and problem resolution. The key strengths of the organization can be summarized as follows:

- A mature service oriented organization that is driven by quantitative and qualitative metrics such as first contact resolution (FCR), average handle time (AHT) and customer satisfaction surveys.

- The helpdesk provides a series of web-based self-service to assist the end-user community with the resolution of problems with common software products. The current products supported include:

    1. Adobe Acrobat
    2. Microsoft Access
    3. Microsoft Excel
    4. Microsoft PowerPoint
    5. Microsoft Word
    6. File Sharing
    7. FTP
    8. Computer Basics including
        a. Operating System set-up (All versions of Windows)
        b. Virus prevention (McAfee Suite)
        c. Secure computing protocols (VPN clients)
    9. E-Mail Services
        a. Anti-spam software
        b. Outlook Express
        c. POP/IMAP
    10. Wireless Access



- We provide live support 80 hours per week, 7 days a week
    1. Customized (1- 800) Telephone Support
    2. Walk-in Support Monday through Friday on the main campus
    3. Customized e-mail resource in-box

- For network problems, emergency on-call assistance is available 24/7/365 should a problem occur outside of our principle staff-supported timeframes.

- Our helpdesk provides administration services to track problem statistics. We have reporting capabilities that provide:

    1. Data Analysis
    2. Customized Reporting
    3. Problem Management Application Access
    4. Escalation and Contact Management Services

Our helpdesk organization will work with CMS to develop a call procedure and reporting approach that best meets the needs of the user community.

Technical Experience

We have a substantial fiber optic data network that links over forty buildings in DeKalb, links to the DeKalb schools, the City of DeKalb, to Kishwaukee Community Hospital, and the IMBCA. The IMBCA, Illinois Municipal Broadband Communications Association, is a consortium of NIU and the communities along I-88 from Rock Falls to Batavia. NIU is a member of this consortium and active in the operation and management of the fiber optic network.

Examples of our experience include the following:

Since 1996 NIU has provided services to the DeKalb School District 428. Within the past year NIU has delivered Gigabit services allowing the school district to connect to resources needed for Internet and other District 428 facilities.

Brian Tobin
Facilitator of Technology
DeKalb School District 428
901 S. 4th Street
DeKalb Il, 60115
Phone: 815-754-2284
E-Mail: Btobin@dist428.org

NIU has a long standing partnership with Kishwaukee Community College. NIU has supported services for their campus back to NIU over a Microwave system. Recently NIU has engineered and is in the process of installing fiber between their campus and DeKalb. NIU will be providing Gigabit services to the college beginning this summer.

Scott Armstrong
Direct Information Technology
Kishwaukee Community College
21193 Malta Road
Malta Il, 60150
Phone: 815-8252086 x 358
E-mail: sarmstro@kishwaukeecollege.edu

The Department of Information Technology Services (ITS) at Northern Illinois University provides telephone and network support for the NIU Federal Credit Union located off the main campus in DeKalb Illinois. In the past year NIU has delivered Gigabit services to the main campus for local and internet services.

Jeanne Baird
President
NIU Employees Federal Credit Union
817 W. Lincoln Hwy.
DeKalb, Il 60115
Phone: 815-753-1911
E-Mail: W25JEB1@wpo.cso.niu.edu

Attachment 4

Biographies of NIU Personnel

Herb Kuryliw, Chief Network Architect

Herb Kuryliw is responsible for the design and build out of a regional fiber optic network used for research advancement, administrative resources and academic initiatives. He is currently involved in the design and build of a regional research network in Northern Illinois, NIUNet, which is expanding into communities for use by local governments, schools and hospitals. His responsibilities include the development of strategic partnerships to reduce costs of network infrastructures and promote the design of advanced networks in the Northern Illinois region. He has over twenty years of technical, managerial and administrative experience in communication networks. He designed and installed the first routed backbone for Northern Illinois University and expanded it to support over 12,000 concurrent users with a multi-gigabit backbone. His background includes knowledge of the Nortel SL-100 and the implementation of distance learning and video conferencing using the H.320 protocols. He also participated in the development and testing of ADSL products that are used to deliver broadband services throughout the campus.

In addition to his work at NIU, Mr. Kuryliw has volunteered many hours of his skills to develop the technology for the local school district 428. He designed and installed network strategies for the schools to meet the educational and administrative needs of the district. Using his knowledge and skills he coordinated and assisted nine NETDAYS using volunteers to help wire a majority of the schools. In 2001 he designed a plan for a fiber optic gigabit network that now connects all but two schools in the district.

Herb's educational background includes an Associates Degree in Applied Sciences from McHenry County College and Bachelor of Liberal Arts and Sciences in Computer Science at Northern Illinois University. He is the Secretary of the IMBCA Executive Board representing NIU in the consortium.

Alan Tody, Network Engineering Manager

Alan Tody is our Network Engineering Manager and is responsible for managing the Network Engineering staff. This group is responsible for the operations of our network with over 100 buildings, 15,000 ports for a converged video, voice, and data network, and three remote campus locations in Rockford, Hoffman Estates and Naperville. He has also worked with Harvard School District 50 where he was responsible for the design and support approach of a robust video, voice, and data network for 700 nodes. Alan has over 18 years experience in the design and management of networking systems.

Jeff McCarthy, Lead Network Engineer

Jeff McCarthy, Lead Network Engineer, has 7 years networking experience with Northern Illinois University. Jeff also spent 5 years with the DeKalb School District providing their network support. In Jeff's position he provides expert technical direction and mentoring to Associate Network Engineers, evaluates, develops, and recommends specific network technology products and platforms to provide cost-effective solutions that meet the University's technology requirements. His position requires that he assess the University's technology initiatives, provides consultation, technical support, and recommendations to optimize the utilization of the enterprise network infrastructure. He performs root cause analysis for service interruptions and creates preventative measures to reduce the probability of service interruptions in the future. Jeff is also a retired Master Sergeant from the US Air Force.

Alan Kraus, Executive Director of BBDG

Alan Kraus, is currently Executive Director of the Broadband Development Group at the Regional Development Institute at Northern Illinois University. Prior to his appointment at the University Mr. Kraus had over thirty years of experience in the development and management of telecommunications companies. Twelve of those years were spent with Viacom and Cablevision with management assignments in business development and cable system operations. From the early 1980's until his current assignment at NIU Mr. Kraus developed and built companies that provided Broadband support services to public and private sector organizations. These companies under Mr. Kraus's direction grew from a single employee to revenues exceeding $5 million dollars and 50 employees. These companies were early implementers of Ethernet over Broadband in the manufacturing environments and community-based metropolitan area networks. In particular these companies were known for advising local governments and educational institutions in the development and application of Broadband technologies.

Attachment 4

Some of the organizations for which Mr. Kraus has been a featured speaker include the National Association of Telecommunications Officers and Advisors, the National Cable Telecommunications Association, The Law Institute, and the Illinois Municipal League.

Mr. Kraus has been author or co-author of a number of industry papers and articles. Topics discussed were "Effective Implementation of Broadband Technology", "Best Practices and Critical Success Factors for Public Sector Connectivity", "Developing Strategies to Advance Telecommunications Connectivity".

Mr. Kraus holds a BS in Communications from Southern Illinois University and a Masters in Liberal Arts from the University of Chicago. He is currently adjunct faculty at Northwestern University School of Continuing Studies.

Roger Swenson, BBDG Director of Technology

Roger Swenson, as Director of Technology, is responsible for research and design of high-speed voice, video and data networks. His experience includes the design and implementation of networks for Caterpillar Corporation facilities throughout North and South America, a data networks for O'Hare International Airport, a complex LAN system for the North Chicago Veterans Administration campus, wireless and fiber optic network for numerous municipal agencies. He was one of the architects for the Chicago CivicNet network that was proposed to link two thousand city locations supporting converged voice, video and data as an alternative to the existing Centrex based approach. Mr. Swenson's background includes over sixteen years with Digital Equipment Corporation, designing and installing local and wide area data networks. Some recent projects include the expansion of the metropolitan area networks for both Lake Forest and Hoffman Estates, and the specification document and RFP for a 1000+ IP based surveillance system for a major city. Roger is also an Adjunct teaching at DeVry University and Northwestern University. He received a Bachelor's degree in Business from DePaul University and a Masters in Computer Science from the same institution. Roger is a member of the IMBCA representing NIU in the fiber optic consortium.

Rusty Winchel, BBDG Senior Consultant

Rusty Winchel, as Senior Consultant**,** brings experience covering a broad array of telecommunications and data skills including Voice over IP (VOIP), circuit switched voice and high-speed data applications for the broadband and CATV industries and extensive data and voice network design for business and educational applications. At Motorola BCS, Rusty was responsible for the Systems Engineering Team for the IP Network Services (IPNS) Group, helping to establish high-speed data, VoIP and circuit switched voice applications worldwide. Prior to joining Motorola, he was a Network Consultant with Pioneer-Standard Electronics establishing a network services business group providing voice, video and data systems network design and integration services. Previously, Rusty served as a Network Consultant for Digital Equipment Corporation providing planning, design and integration services for national and international business customers. Prior to Digital, Rusty was a Field Engineering Manager for US Sprint managing high-density fiber optic applications, switch and transmission system installation and testing. Some of Rusty's recent projects include the planning and analysis of wireless and fiber optic networks for the City of Sullivan Illinois. Mr. Winchel earned a BS from the University of Wisconsin.

Doug Power, BBDG Senior Consultant & Research Associate

Doug Power, Senior Consultant and Research Associate**,** has worked with a broad range of enterprise voice and metropolitan area networks. He has participated in a range of technical and management positions to develop telecommunications strategies that involve fiber optics, WANs, wireless systems, PBX systems, and Centrex systems. He has installed and managed major voice networks with populations of near 100,000 stations for organizations such as the City of Chicago and the State of Ohio. His most recent project was working with Central Management Services supporting the wireless network direction for Montgomery and Macoupin counties in the State of Illinois. Working in these positions, Doug has been responsible for the ongoing operational requirements, such as maintenance and system design, as well as financial planning, forecasting, and budgeting with all departments for these services within the organization. Mr. Power earned a BA in Communications from the University of Illinois at Chicago and is an accomplished speaker and author.

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Ray Elseth, BBDG Senior Consultant

Ray Elseth, Senior Consultant, has extensive expertise in the selection, integration, and optimization of Information Technology solutions, and possesses particular strengths in systems integration and strategic technology planning. His exposure to both private and public sector environments and his active involvement with mainframe, midrange, and server-based computing gives him a unique perspective on technology directions. His professional experience includes 10 years as the senior technology manager for the second largest K-8 school district in Illinois where he was responsible for the establishment and ongoing enhancement of the infrastructure needed to grow that district to its present size of over 4000 workstations and 34 servers and a distributed telephone system supporting 23 sites. Prior to that he was an independent consultant working with Siemens Gammasonics, Abbott Laboratories, Sears Technology Services, and the Internal Revenue Service. Previously he spent 10 years as Manager, Information Systems and Services with Fiat-Allis North America, providing mainframe-based technology support involving warehousing, distribution, and order entry. He has also held positions as Manager, Data Center with McGraw-Edison and Senior Systems Analyst with Gillette and Montgomery Wards. He has been a presenter at Comdex and PC Expo and was a technical editor on a major third-party Windows book. Additionally, he provides mapping and spatial analysis as projects require, having extensive experience with the ESRI ArcView product. Mr. Elseth attended Brown University and served as both an enlisted and a commissioned member of the United States Marine Corps.

Biography of MREN Personnel

Joe Mambretti, Northwestern University

Joel J. Mambretti is Director of the International Center for Advanced Internet Research at Northwestern University (iCAIR), which is focused on developing digital communications for the 21st Century. The Center, which was created in partnership with a number of major high tech corporations (www.icair.org), has established projects in four mission areas, advanced applications, advanced network middleware, and advanced infrastructure as well as public policy studies related to advanced communications. He is also Director of the Metropolitan Research and Education Network (MREN, http://www.mren.org), an advanced high-performance network interlinking organizations in seven upper-Midwest states including several national, major research universities, corporate research labs, and other advanced national and international networks. iCAIR is a also partner in the StarLight international networking facility and iGRID2002 (ref: www.startap.net/starlight).

Biographies of Sinnissippi Rural Healthcare Personnel

Phyllis Berge, Executive Secretary

Phyllis Berge is the Executive Secretary for Sinnissippi Centers, Dixon, IL. Drawing upon her 25 years of Sinnissippi experience, Phyllis has direct oversight for clerical operations agency-wide. She is an integral member of the Documentation Committee and is often called upon as a source of information with regard to streamlining functions and identifying efficiencies. She oversees all aspects of the agency's complex phone systems.

Teresa Good, VP/Chief Financial Officer

Teresa Good, VP/Chief Financial Officer, has been with Sinnissippi for over 16 years. As the lead financial executive, Teresa is involved in nearly every aspect of agency operations. With direct supervisory responsibility for the Business Office and MIS functions, Teresa is regularly called upon to participate in quality improvement and revenue enhancing initiatives and heads up the agency's technology improvement initiatives. Teresa received her Bachelor's in Accounting from Mt. St. Clare College.

Tom Hermes, LCSW, Director of Crisis and Assessment Services

Tom Hermes, LCSW, is the Director of Crisis and Assessment Services for Sinnissippi Centers, Dixon, IL and has been with the agency for almost 30 years. Tom maintains responsibility for a number of the agency's services including physician services, assessment/intake, after-hours crisis response and transportation services. In addition to his daily responsibilities, he chairs a number of the agency's quality and efficiency committees. Tom has his Master's of Social Work from the University of Illinois-Chicago.

Attachment 4

Kim James, LCPC, Director of Area Offices/Corporate Compliance Officer

Kim James, LCPC, Director of Area Offices/Corporate Compliance Officer, brings over 16 years of Sinnissippi experience to her current role. Her first position within Sinnissippi was as a Clinician within the Family Services Division. Over the years and as a result of her many strengths, she has moved from clinician to supervisor to manager and into her current role as the Director of Area Offices. She has recently taken on responsibility for corporate compliance for the agency. Kim has a Master's Degree in Gerontology from Eastern Illinois University.

DeAnne White, SPHR, Director of Operations/Human Resources

DeAnne White, SPHR, is the Director of Operations/Human Resources for Sinnissippi Centers, Inc., Dixon, Illinois. With almost 10 years of Sinnissippi experience, DeAnne has responsibility for the HR and Marketing functions for the agency. DeAnne has a Bachelor's Degree in Personnel Psychology and a Master's Degree in Labor and Industrial Relations both from the University of Illinois.

Biographies of University of Illinois Personnel

Paul E. McNamara, Associate Professor

Paul E. McNamara is an Associate Professor at the University of Illinois at Urbana-Champaign in the Department of Agricultural and Consumer Economics and in the Division of Nutrition. He also serves as an Extension Specialist with University of Illinois Extension in the areas of health and consumer economics. His Ph.D. is from the University of Minnesota, Department of Applied Economics, with a minor in health services research, policy, and administration. He also holds a Master in Public Policy degree from the Kennedy School of Government at Harvard University. His research interests focus on the intersection of health economics, consumer and family economics, and public policies affecting consumer and family welfare. He is active in consumer and health issues in Illinois and he currently serves on the Board of the Illinois Rural Health Association. His research includes economic analyses in the areas of rural health, long-term care insurance, food safety, and other consumer demand and welfare topics. In addition, he serves as the economics topics editor for the Rural Crossroads section of the Journal of Rural Health.

Paul Hixson, Assistant Dean and Director of ITCS

Paul Hixson is Assistant Dean and Director of Information Technology and Communications Services (ITCS); College of Agricultural, Consumer and Environmental Sciences (ACES); University of Illinois. Mr. Hixson also serves as a Communications Specialist with University of Illinois Extension, and is a senior multimedia producer. The ITCS unit Mr. Hixson leads is comprised of 48 professionals who work in the areas of computer support services, IT management, distance learning, web management, news and public affairs, photo/video services, educational publishing, and marketing.

Diana Avalos Dummitt, Associate Director of Development

Diana Avalos Dummitt is an Associate Director of Development for the College of Medicine at the University of Illinois at Urbana-Champaign. She also serves as on the Governor's Rural Affairs Council and is former Chair of the Illinois Asthma Partnership. She is Co-Pi on an NSF grant for integrating computational chemistry into curriculum to prepare students from 120 rural Illinois School Districts for the 21st century workforce. Her MS is from the University of Illinois in Extension. Her research interests focus on health , education, and public policies affecting rural life.

Attachment 5

NIU Regional Development Institute
NIU Outreach
Broadband Development Group
Alan Kraus, Executive Director
1120 East Diehl Road, Suite 140
Naperville, IL 60563
Office: (815) 753-8945
Fax: (815) 753-8940
akraus@niu.edu

ILLINOIS RURAL HEALTHNET CONSORTIUM

Draft for Initial Organizational Structure
April 17, 2007
Drafted by NIU Broadband Development Group

The language below is an initial draft to establish a not-for-profit organization of interested parties in the Illinois Rural HealthNet.

INITIAL DRAFT:

This agreement is entered into by the following organizations and/or institutions, for the purpose of managing the operations, services, applications, billing, budgeting, finances, and marketing of a broadband network that is being established to enhance public and non-profit health care providers' access to advanced telecommunications and information services. The membership of this Consortium may be altered from time to time, as needs may dictate and according to the procedures described herein.

Initial Membership:

- Northern Illinois University
- Illinois Critical Access Hospital Network (ICAHN)
- Tri-Rivers Health Network
- Metropolitan Research and Education Network (MREN)
- Illinois State University (ISU)
- Janet Wattles
- Ben Gordon Center
- Sinnissippi Center
- Delnor Hospital
- University of Illinois College of Medicine

The purpose of this Agreement is to establish a not-for-profit Consortium to be known as the Illinois Rural HealthNet Consortium (hereinafter referred to as "the Consortium"), and to set forth the terms and understandings under which the Consortium will function.

AGREEMENT OF THE ILLINOIS RURAL HEALTHNET CONSORTIUM

ARTICLE I: Name, Purpose, and Scope

Section 1.1 Name: The broadband network that is being established with the benefit of funding from the Federal Communications Commission (FCC) shall be known as the Illinois Rural HealthNet Consortium, hereinafter named as "the Consortium" in this document. The functioning of the Illinois Rural HealthNet may be referred to as the IRHN in this document.

Attachment 5

Section 1.2 Purpose: 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 can be included are:

- Public and not-for-profit hospitals, health care clinics, mental health facilities;
- Public and not-for-profit medical and nursing schools;
- Agencies of government;
- Public and not-for-profit educational institutions;
- Public and not-for-profit research and education networks;

Section 1.2.1 The purpose of the Consortium includes the management and oversight of the advanced telecommunications and information services to be provided by Illinois Rural HealthNet, including legal and financial responsibility for those activities funded by the FCC in this regard.

Section 1.2.2 The purpose of the Consortium may not include all elements of the direct operation of a communications network. It is the intent of the Consortium that the provision of communications services will, to a certain extent, be provided by other entities, who may be asked to respond to procurement documents and to develop a contractual relationship with the Consortium that describes the agreed-upon duties and obligations to be performed by the other entities.

Section 1.3 Goals and Objectives: The goals and 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 to link 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.

Section 1.4 Scope: The scope of this Agreement includes the following:

2. The Consortium will provide input to its members on issues pertaining to the improvement of the availability of advanced telecommunications services and information to public and non-profit health care providers within the State of Illinois, particularly in areas designated as rural, and to connect these health care providers to Internet2.

3. Input could include items such as: a) the identification of health care providers within the State that are interested in or that have need for advanced communications services; b) the identification of specific services and/or applications that would be welcomed as additional capabilities to be taken advantage of; and c) the identification of individuals, organizations, or public or private entities that may be interested in participating in the Consortium, or working cooperatively with the Consortium in the implementation of advanced telecommunications services and information in the State.

4. The Consortium is being 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 1 and 2 of this Section.

5. The Consortium has the intention of creating a 501(c)(3) organization to carry out the functions outlined for the Consortium in this Agreement.

6. 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:

        i. Cost effective use of existing technical resources.

        ii. 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.

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

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

        v. Management of the inclusion of for-profit entities, to expand the impact of the IRHN while also assuring that for-profit participants pay their fare 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.

Section 1.5 Powers: The Consortium shall have the following powers:

(16) To make, amend and repeal bylaws, rules, regulations, rates, charges and other rules of service.

(17) To invest funds not required for immediate disbursement in properties or securities as permitted by Illinois law.

(18) To acquire, purchase, hold, lease and use any property, real or personal or mixed, tangible or intangible, or any interest in such property, necessary or desirable for carrying out the purposes of the Consortium, and to sell, lease, transfer or dispose of any property or interest in such property.

(19) To sue and be sued, complain and defend in all courts, and to appear in or before all applicable federal, state and local governmental agencies.

(20) To enter into joint venture and/or other appropriate business agreements to enable third parties, including individual IRHN Consortium members, to build or improve or procure local distribution systems and/or provide high speed communications services to health care entities in historically rural or underserved areas in Illinois and to connect these entities to sources of medical and health expertise in rural and urban areas in Illinois and to Internet2.

(21) To make and execute contracts and other instruments of any name or type necessary or convenient for the exercise of the powers stated in this Agreement.

(22) To establish the design, plans, and specifications for the IRHN Network Facilities, as well as to conduct or contract for studies and planning concerning the operation and management of the IRHN Network Facilities.

(23) To review and approve budgets and expenditures for the IRHN Network Facilities and related services.

(24) To borrow money and issue evidences of indebtedness pursuant to Illinois law.

(25) To obtain insurance for the IRHN Network Facilities.

(26) To obtain necessary, easements, permits and other approvals for the construction and operation of the IRHN Network Facilities, as may be needed.

(27) To apply for and administer grant proceeds and other funding opportunities received from government and other sources and to accept contributions of capital from member agencies and/or from other public and private sources.

(28) To hire consultants and/or employees and/or to contract for the operation and management of the IRHN Network Facilities and related services.

(29) To form a non-profit corporation under Illinois law, if necessary or convenient to conduct its business and otherwise achieve the purposes set out by this Agreement.

(30) To do all acts and things necessary or convenient for the conduct of its business and the general welfare of the Consortium and its members and to carry out the purposes and powers granted to it by this Agreement and permissible under Illinois law.

The Consortium shall not have the power of taxation.

Section 1.6 Work Plan: The IRHN work plan is summarized below. A detailed description of the work plan is provided as Appendix I to this Agreement.

The IRHN work plan will include (but is not limited to) the following elements, many of which will be conducted in parallel:

1. Confirmation of each organization's communication needs and procedures
2. Confirming the availability of public sector resources
3. Finalizing the fiber optic and wireless corridors
4. Establishing last mile links for member locations
5. Establishment of the IRHN 501(c)(3) organization.
6. Establishment of financial and business model structure

7. Project oversight and monitoring
8. Network configuration
9. Network start-up
10. Instituting the maintenance structure
11. Developing new sources of funding for network growth and sustainability
12. Expanding access to the IRHN as appropriate to improve rural health care in Illinois

ARTICLE II: Participation

Section 2.1 Members: Members of the IRHN Consortium can include public and non-profit health care agencies and organizations, private sector health care organizations and businesses, and public sector agencies that are providing assistance and/or resources for IRHN network development and management. The Consortium will create several Committees to provide input to the network planning and implementation process.

1. The Public and Non-Profit Committee will consist of all Members from public and non-profit health care entities, and also governmental, educational, and other entities of the public sector, and is created to assist in the identification of health care needs and in the planning to address such needs. Members must be public or non-profit entities or agencies, and membership shall require adoption of an enabling resolution duly authorizing membership in the Consortium and execution of this Agreement.

2. The User Committee will consist of members from the public and non-profit health care sector and the private health care sector, and is created to assist in the identification of communications needs for health care entities located in rural areas of Illinois and in the planning to address such needs. Membership in the User Committee, for private health care entities, shall require execution of this Agreement.

3. The Consortium will create a Steering Committee to coordinate the network's implementation and management processes, such that decision-making can occur without requiring the participation of every Member of the Public and Non-Profit Committee and the User Committee. The Steering Committee shall consist of Members from the Public and Non-Profit Committee and the User Committee, selected by each Committee respectively. The number of Members of the Steering Committee shall be determined by the Consortium, and is subject to change. The Steering Committee shall have an uneven number of Members, and not less than two-thirds of the Steering Committee shall consist of representatives from the Public and Non-Profit Committee.

4. Additional public and non-profit healthcare entities, and additional governmental, educational, and other entities of the public sector, may become Members of the Consortium upon the recommendation of a majority vote of the Consortium, and such membership shall require adoption of an enabling resolution duly authorizing membership in the Consortium and execution of this Agreement, and may require payment of such sums and under such conditions as may be set forth by the Consortium.

5. Additional private or for-profit health care entities may become Members of the User Committee upon the recommendation of a majority vote of the Consortium, and such membership shall require adoption of an enabling resolution or equivalent duly authorizing membership in the User Committee and execution of the Agreement, and may require payment of such sums and under such conditions as may be set forth by the Consortium.

6. Non-voting Affiliate Membership is the vehicle by which private and for-profit health care entities can participate on the User Committee and can be included in Steering Committee discussions. Non-voting Affiliate Membership does not allow such private and for-profit health care Members to vote in Consortium proceedings, but does allow such Members to participate and indicate their preferences in discussions and in the preparation of recommendations from the User Committee and the Steering Committee. Non-voting Affiliate Membership requires that private and for-profit health care entities pay their own costs of connecting to the IRHN and pay their fair share of the IRHN Network's costs.

Section 2.2 Term: The term of this Agreement shall be perpetual, but the Agreement shall terminate in the event that there is a vote of two-thirds (2/3) by the governing bodies of the Public and Non-Profit Members, pursuant to a plan of liquidation of the assets of the Consortium, as may be decided by a two-thirds (2/3) vote of the Members of the Public and Non-Profit Committee.

Section 2.3 Withdrawal: Withdrawal of membership may be accomplished by written notification of the withdrawing entity at least three months prior to the beginning of the next IRHN fiscal year.

ARTICLE III: Governance and Organization

Section 3.1 Voting: Each Member of the Consortium shall have one (1) representative and a designated alternative as needed, to be selected by a governing or appropriate body of each Member.

Section 3.2 Voting by Members: Each Member shall have one (1) vote. The Public and Non-Profit Committee and the User Committee shall select representatives for the Steering Committee, as described in Article II, Section 2.1.

4. Each Member of the Steering Committee shall have one vote, and all votes shall be by a majority of the Public and Non-Profit Members of the Steering Committee. A majority of Steering Committee Members shall constitute a quorum and a majority of the Steering Committee representatives present and voting shall be necessary for any action by the Consortium. If one-third (1/3) or more of the Steering Committee representatives present and voting indicate that the topic in question should be directed to the Consortium as a whole for a vote, the Consortium Members will be so notified.

5. All the members of the Public and Non-Profit Committee and the User Committee shall be notified of proposed actions that have been approved by the Steering Committee. If a majority of either the Public and Non-Profit Committee or the User Committee feels that a proposed action by the Steering Committee should be put to a full vote of the Consortium Members, the Steering Committee will take the appropriate steps to call for such a vote.

    a. A roll call vote of the Voting Members of the Consortium will be required for approval of the annual budget, which shall require an affirmative vote of two-thirds (2/3) of the Members.

6. The Public and Non-Profit Committee shall retain veto power over any proposed actions that, in the opinion of a majority of the Members of the Public and Non-Profit Committee, would detract from the ability of public and non-profit health care entities to provide critical services to their health care constituents.

Section 3.3 Elected Officers: There shall be a President, Vice-President and Secretary/Treasurer nominated and elected by the Consortium, who shall constitute the elected officers of the Consortium, and who shall also serve as the elected officers of the Steering Committee. Such officers shall be selected from among the representatives of the Members of the Consortium. All officers shall be elected for two-year terms and shall serve until their successor is elected and takes office. The officers shall have the duties and authority stated as follows:

1. President. The President shall be the chief executive officer of the Consortium and shall preside at all meetings of the Steering Committee and the Consortium. The President shall also sign all resolutions and policy statements adopted by the Consortium and shall also execute contracts entered into by the Consortium with public and non-profit entities, private business enterprises, or individuals.

2. Vice-President. The Vice-President shall serve as presiding officer in the absence of the President and shall represent the Consortium as directed by the President or in the President's absence.

3. Secretary/Treasurer. The Secretary/Treasurer shall be responsible for maintaining all the official records of the Consortium, taking minutes of Steering Committee and Consortium meetings, and attesting to the signature of Consortium officials as required on necessary documents. In addition, the Secretary/Treasurer, or a designated agent approved by the Consortium, shall be responsible for overseeing all financial operations of the Consortium, including accounting for all revenues and expenditures, preparation of annual budgets, and authorization of payments of all goods and services acquired by the Consortium.

Section 3.4 Compensation and Reimbursement: Representatives shall serve without compensation. However, the Consortium may authorize reimbursement of necessary expenses incurred by elected officers in connection with Consortium business.

ARTICLE IV: Finance

Section 4.1 Fiscal Year: The Fiscal Year for the Consortium shall be established at such time as funding has been addressed and schedules can be fixed.

Section 4.2 Annual Dues and Special Assessments: There are no special assessments or annual dues contemplated at this time. Operating costs are projected to be financed via two sources: 1) FCC funding; and 2) Re-allocation of Members' existing expenditures for telecommunications services and information, some or all of which will be replaced by the IRHN.

Section 4.3 Projects: In furtherance of the IRHN objectives, the Consortium anticipates initiating projects such as leasing, construction, and/or purchase of required facilities and infrastructure. Such projects may be financed by FCC funding, in-kind contributions of Members, re-allocated costs of Members, capital contributions of Members, and/or, subject to Section 4.5, issuance of debt. Issuance of debt is envisioned primarily as a vehicle for procuring equipment or services in a scenario where FCC funding has been guaranteed and an invoice from the equipment and/or service provider must be submitted to the Federal government for reimbursement, according to the processes outlined by the Universal Service Administration Company (USAC), as indicated by the FCC Order concerning the Rural Health Care Pilot Program. Affiliate Members will be responsible for paying their fair share of costs for connection to the IRHN Network, because of their status as private or for-profit entities.

Section 4.4 Budget: The Secretary/Treasurer, or the Managing Agent as defined in Article VIII below, shall research and recommend an operating budget, based on the principles outlined in this Article IV. The Consortium shall review and approve the final budget.

Section 4.5 Indebtedness: Any Consortium indebtedness or request to Members to sponsor Consortium indebtedness shall only be approved by the Consortium following a thirty (30) day advanced written notice and affirmative vote of at least two-thirds (2/3) of the Members. Notwithstanding any such vote, no individual Member may be required to sponsor or underwrite any debt issue without the express approval by resolution or equivalent of the Member's governing body.

Section 4.6 Audit: The Consortium shall ensure that an annual financial report and/or annual independent audit be performed on behalf of the Consortium. A copy of the report or audit shall be provided to each Member, and to Affiliate Members upon request. In addition, Members shall have access to all contracts, documents, records, and information relating to the IRHN Network facilities and associated services.

ARTICLE V: Property and Equipment

Section 5.1 Owned Property and Equipment: All property and equipment that is purchased with funds provided by the FCC shall be owned by the IRHN Consortium.

1. Co-located Equipment: Equipment that is owned by participating public sector agencies may be co-located in facilities owned by public sector or private sector entities, or in facilities that provide services, by mutual agreement between the IRH, the public sector agency that owns the equipment, and the owner of the facilities. If such an arrangement is created, each party shall be self-insured, and each party will take all reasonable precautions to prevent disruption to the other party's operations. The owner of the facility will at all times be in full control of the facility, but will make reasonable arrangements to allow access to the facility by the IRHN or its designated representatives.

2. Transfer of Equipment: If, by mutual agreement, any public sector entity and the Consortium decide at some future time to transfer ownership and/or management of equipment to the Consortium, or to an entity designated by the Consortium, the public sector entity and the Consortium will discuss the means and procedures for such transfer.

Section 5.2 Loaned Property and Equipment: Any property and/or equipment that is loaned by the IRHN Consortium to any entity, or loaned by any entity to the IRHN Consortium, shall remain the property of the loaning party and be fully insured by the loaning party.

ARTICLE VI: Meetings

Section 6.1 Regular Meetings: The Consortium shall initially meet at least quarterly at a time and place which a majority of members shall determine is reasonably convenient. Dates and times of all regular meetings shall be scheduled and posted at least three weeks in advance of the meeting, and meetings shall be conducted in the manner prescribed by the Open Meetings Act.

Section 6.2 Steering Committee Meetings: The Steering Committee shall initially meet at least at six-week intervals while the project is being implemented, after which time the scheduling can be revised. Dates and times of Steering Committee meetings shall be scheduled and posted at least one week in advance of the meeting, and meetings shall be conducted in the manner prescribed by the Open Meetings Act. All meetings shall be called for a date, time, and location which is reasonably convenient and for which it is anticipated that a quorum will be present.

Section 6.3 Special Meetings: If a majority of the members of the Public Sector Committee or the User Committee feels that a proposed action by the Steering Committee should be put to a full vote of the Consortium, a Special Meeting may be called by notifying the Consortium representatives of the time, date, and location, at least one week prior to the meeting. Such meetings shall be publicly noticed and conducted in the manner prescribed by the Open Meetings Act. Special Meetings may also be called by a majority of the members of the Steering Committee.

ARTICLE VII: Liability and Indemnification

Section 7.1 No Claims: No Member to this Agreement is responsible for any claims made against any other Member.

Section 7.2 Indemnification: Subject to the limitation stated in Section 8.6, if applicable, each and every party to this Agreement shall indemnify, defend, save and hold harmless the other parties, their boards, Consortiums, trustees, officers, employees, and agents from and against any and all claims, actions, suits, costs, losses, liabilities, damages to real and personal property, and injuries to or death suffered by persons arising out of, or caused directly or indirectly by any act or omission of the indemnifying party or that party's boards, Consortiums, trustees, officers, employees, and agents. Each party agrees to be responsible for damage to its property occasioned while operating under this Agreement and specifically waives the right of subrogation for property damage against the other.

Section 7.3 Several Liability: Except as otherwise expressly stated in this Agreement, each Member agrees to be severally liable for its share of the financial obligations resulting from such contracts, agreements, or other obligations pertaining to each Member's involvement in the IRHN Network, as may be agreed to as part of each Member's written understanding of its specific role.

ARTICLE VIII: Managing Agent

Section 8.1 Identification of Managing Agent: The IRHN Consortium shall identify the Managing Agent for the initial stages of the project. At some point, some of the duties of the Managing Agent may be transitioned to other entities as may be deemed appropriate.

Section 8.2 Duties: The Managing Agent shall supervise the procurement, acquisition, and implementation of the improved broadband IRHN services. The Managing Agent shall also develop and oversee implementation of appropriate contracting procedures for equipment, services, maintenance, operation, and billing for the improved broadband IRHN network services. The Managing Agent will not be in the position of providing communications capabilities or services. The Managing Agent will perform duties, including those listed below, to enable the process by which telecommunications services and information are enhanced for health care entities located in rural areas of Illinois:

10. Gather input on broadband needs for rural health care entities.
11. Identify public sector assets and resources that can be used in project implementation.
12. Assist in the creation and functioning of the IRHN Consortium.
13. Develop technical specification and procurement documents.
14. Develop business models for network outsourcing and oversight.
15. Provide recommendations on distribution and oversight of funding.
16. Provide recommendations on contractual arrangements and on parties to the contract(s).
17. Provide oversight and management of implementation, as appropriate, including designation of milestones and deliverables, and recommendations for payment to outsourced network vendors.
18. Provide recommendations on strategic direction and growth, including health care community awareness and development of applications.

Section 8.3 Authority of the Managing Agent: The Managing Agent shall have the general authority to incur such expenses, execute such contracts and take such other actions as it determines necessary or desirable in carrying out its duties, including but not limited to:

(f) Subject to the budget adopted by the Members, purchasing, renting or leasing such real property, facilities, equipment, and materials as may be necessary or desirable for acquiring, constructing, operating, maintaining, and repairing the IRHN Network.

(g) Administering the construction, maintenance, and operation of the IRHN Network.

(h) Acting as the fiscal agent for the Consortium by preparing budgets and approving expenditures for the IRHN Network; preparing annual financial reports for the operation of the IRHN Network; preparing fees and expenses incurred in the acquisition, construction, leasing, operation, and maintenance of the IRHN Network; billing and collecting from each party its respective share of the costs and expenses of the IRHN Network; and generally handling the financial matters affecting the IRHN Network.

(i) Obtaining insurance, if necessary, for the IRHN Network facilities and the Members' activities relating to the IRHN Network.

(j) Obtaining necessary easements, permits, and other approvals for construction and operation of the IRHN Network facilities.

Section 8.4 Limitations on Managing Agent's Authority. All contracts and expenditures shall be subject to the annual budget adopted by the Members. In addition, the Managing Agent shall not (i) incur any extraordinary expense unless pursuant to a budget approved by the Members; (ii) make any capital improvements, unless pursuant to a budget adopted by the Members; (iii) borrow money or grant any mortgage on or security interest in, the IRHN Network facilities; or (iv) sell or otherwise dispose of any facilities that make up the IRHN Network, without express (i.e. two-thirds majority) approval of the Members.

Section 8.5 Coordination: Each Member and Affiliate Member agrees to coordinate its activities as relates to the IRHN Network with the Managing Agent's efforts to carry out its duties as Managing Agent.

Section 8.6 Limitation on Liability: The Managing Agent shall not be liable to the Members or Affiliate Members for any act or omission pursuant to the authority granted to the Managing Agent by this Agreement if the Managing Agent acted in good faith and in a manner it reasonably believed to be within the scope of its authority granted to it by this Agreement; provided, however, that the Managing Agent shall not be relieved of liability for any claim or matter as to which the Managing Agent is finally adjudicated to have acted or failed to act in a manner which constitutes any of the following:

(a) A willful failure to deal fairly with the Members in connection with any matter in which the Managing Agent has a material conflict of interest;

(b) In violation of the criminal law, unless the Managing Agent had reasonable cause to believe its conduct was lawful or no reasonable cause to believe its conduct was unlawful;

(c) A transaction from which the Managing Agent derived an improper profit;

(d) Willful misconduct.

ARTICLE IX: Dissolution

Members are not constrained from resigning from the Consortium, or deciding to vote on the future role of the Consortium or the absence thereof.

ARTICLE X: Miscellaneous Provisions

Section 10.1 Ratification: This Agreement is considered in force and the Agreement applicable to those members whose governing bodies have adopted the intent and conditions of membership.

Section 10.2 Separability: Each article, section, paragraph, sentence, and clause of this Agreement is separable without affecting the remainder of this Agreement.

Attachment 5

Section 10.3 Choice of Law: This Agreement shall, in general, be governed by and construed in accordance with the laws of the State of Illinois.

Section 10.4 Assignment: This Agreement is for the benefit of the parties in interest and shall not be deemed to give any legal or equitable right, remedy, or claim to any other entity or person. This Agreement cannot be assigned or delegated without the prior written consent of all the members.

Section 10.5 Amendment: This Agreement may be amended in the following manner: Notice of the proposed amendment shall be mailed to the representatives of all members of the Consortium at least 28 days prior to the meeting at which the proposed amendment will be presented. A two-thirds majority vote is required for approval of an amendment, including a two-thirds majority vote of the Public Sector Committee.

SIGNATURE PAGE

Name_____

Organization_____

Contact Information_____

_____

Attachment 5

AGREEMENT APPENDIX I.

PROJECTED WORKPLAN FOR THE ILLINOIS RURAL HEALTHNET (IRHN)

Note: Some of the following phases and tasks will occur in parallel, and/or on an ongoing basis.

Phase 1

Initial Steps

10. Confirm each participating health care organization's locations, communications systems, needs, and procedures.
11. Finalize documentation of the areas of Illinois that must be linked by the initial IRHN.
12. Confirm the fiber optic, public, and private infrastructure resources that are available to be used to offer fiber, wireless, or other connectivity within each of the regions.
13. Identify the specific points of connectivity for each participating organization and location.

Confirm Partnering Agencies

14. Confirm the partnering non-health care agencies (such as the Municipal Research and Education Network) and identify any new agencies that may express interest in participating in the network.
15. Work with public sector entities to document their plans to install fiber along selected routes.
16. Finalize budget estimates for the fiber optic and wireless connectivity of the project to link the participants in the network to public sector fiber.
17. Working with each participant, develop the needs and costs for data connectivity, bandwidth requirements, logical connectivity, and security needs for each participant.
18. Develop and recommend technical and operational procedures to define the relationship between original members of the IRHN and any new participants.

Phase 2

Fiber Optic and Wireless Corridors

6. Provide coordination between public sector fiber and wireless resources and the needs of the IRHN topology.
7. Finalize the routes, fiber optic and wireless characteristics, technology and construction standards to allow interconnection between all segments.
8. Work with equipment vendors and service providers (as appropriate) throughout the implementation process in an oversight role. This will require evaluation of the vendors' project plans, periodic visits to the job sites to inspect installation processes and to monitor progress.
9. Provide periodic monitoring of the final testing and certification processes for fiber and wireless network elements and/or services elements. Insure that the final system characteristics will meet the needs of the IRHN organization.
10. Gather and review all as-built documentation and integrate into a package suitable for future reference by IRHN to support plans for expansion to the current and future members of the organization.

Phase 3

Establish Member Links

3. Provide coordination and guidance (as may be needed) for each participant in the IRHN.
4. Provide advice on last mile links and terminating equipment.
3. Aggregate the needs of all organizations and locations by technology platform and develop procurement vehicles.
10. Work with the appropriate procurement organizations to issue the procurement documents.
11. Provide a leadership role in the procurement process, including vendor meetings, receiving questions, and providing vendor feedback.
12. Develop the evaluation procedures, facilitate the evaluation process, and assist in preparation of a brief report outlining the decision of the selection committee.
13. Work with the selected vendor(s) throughout the implementation process in an oversight role.
14. Provide periodic monitoring of the final testing and certification processes. Gather all test results, perform final reviews, and integrate into a package suitable for future reference.
15. Gather and review all as-built documentation and integrate into a package suitable for future reference.

Phase 4

Illinois Rural HealthNet Startup

2. Coordinate the startup processes between the technologists within each of the member organizations. This includes the development of specifications for link characteristics, addressing, protocol, and security requirements that will allow seamless connectivity between the participants and their specific target locations while also providing appropriate levels of security.
2. Document the overall configuration of the network, and also the configurations of the separate sub-networks, for establishing operational procedures.

Phase 5

Maintenance Phase

3. Document maintenance responsibilities for all logical segments of the network. This will include name, contact, contact number, area of responsibility, contract coverage hours, emergency response commitments, and escalation procedures.

4. Service Level Agreements will be established for the IRHN as a whole, and with individual equipment and service providers, as needed.

Phase 6

Implementation of the Financial and Business Model

8. Finalize partnership and financial arrangements for IRHN network users and for public sector entities providing network resources.

9. Finalize cost structures for equipment purchases and for purchasing telecommunications services to be provided by private sector.

10. Establish structures to fulfill FCC and USAC requirements for network and financial reporting.

11. Finalize budget and cash flow requirements.

12. Assign responsibilities for conducting cost reimbursement, cost tracking, and for billing any for-profit users of the IRHN.

13. Seek additional funding as may be made available.

14. Seek to establish the financial sustainability of the IRHN, by aggregating Network users and re-allocating their communications costs to provide operating funds for the IRHN, and by marketing the IRHN to eligible entities within the State of Illinois.

Phase 7

Establishment of the IRHN Consortium 501(c)(3) Organization

1. Finalize language for the IRHN Consortium Agreement.

2. Prepare and submit application documents.

3. Elect and/or appoint officers and Steering Committee, as appropriate.

4. Establish requirements for ongoing staff assistance, as appropriate.

Attachment 6

Participating Healthcare Facilities

ILLINOIS CRITICAL ACCESS HOSPITAL NETWORK (ICAHN)

1.	Thomas H. Boyd Memorial Hospital	800 School St.	Carrollton	62016
2.	John and Mary E. Kirby Hospital	1111 N. State	Monticello	61856
3.	Galena-Stauss Hospital	215 Summit St.	Galena	61036
4.	Dr. John Warner Hospital	422 W. White St.	Clinton	61727
5.	Mercer County Hospital	409 NW 9th Ave.	Aledo	61231
6.	Community Memorial Hospital	400 Caldwell	Staunton	62088
7.	Memorial Hospital	402 S. Adams St.	Carthage	62321
8.	Pinckneyville Community Hospital	101 N. Walnut St.	Pinckneyville	62274
9.	Washington County Hospital	705 S. Grand St.	Nashville	62263
10.	Eureka Community Hospital	101 S. Major St.	Eureka	61530
11.	Mendota Community Hospital	1315 Memorial Dr.	Mendota	61342
12.	Fairfield Community Hospital	303 NW 11th St.	Fairfield	62837
13.	Rochelle Community Hospital	900 N. 2nd St.	Rochelle	61068
14.	Mason District Hospital	615 N. Promenade	Havana	62644
15.	This line intentionally left blank			
16.	Illini Community Hospital	640 W. Washington	Pittsfield	62363
17.	Hoopeston Community Hospital	701 E. Orange St.	Hoopeston	60942
18.	Gibson Area Hosp & Health Services	1120 N. Melvin St.	Gibson City	60936
19.	Community Med Ctr of Western IL	1000 W. Harlem Ave.	Monmouth	61462
20.	Hammond-Henry Hospital	600 N. College Ave.	Geneseo	61254
21.	Paris Community Hospital	721 E. Court St.	Paris	61944
22.	Franklin Hospital	201 Bailey Lane	Benton	62812
23.	Massac Memorial Hospital (pending)	28 Chick St.	Metropolis	62960
24.	Abraham Lincoln Memorial Hospital	315 8th St.	Lincoln	62656
25.	Ferrell Hospital	1201 Pine St.	Eldorado	62930
26.	Kewanee Hospital	719 Elliott St.	Kewanee	61443
27.	Hamilton Memorial Hospital District	611 S. Marshall Ave.	McLeansboro	62859
28.	Wabash General Hospital	1418 College Drive	Mt. Carmel	62863
29.	Hardin County General Hospital(pndg)	6 Ferrell Rd.	Rosiclare	62982
30.	Morrison Community Hospital	303 N. Jackson St.	Morrison	61270
31.	Hopedale Medical Complex	107 Tremont St.	Hopedale	61747
32.	Marshall Browning Hospital	900 N. Washington	DuQuoin	62832
33.	Hillsboro Area Hospital	1200 E. Tremont	Hillsboro	62049
34.	Sarah D. Culbertson Mem. Hospital	238 S. Congress	Rushville	62681
35.	St. Joseph Memorial Hospital	2 S. Hospital Dr.	Murphysboro	62966
36.	St. Joseph's Hospital	1515 Main St.	Highland	62249
37.	Mercy Harvard Hospital	901 Grant St.	Harvard	60033
38.	Perry Memorial Hospital	530 Park Ave. East	Princeton	61356
39.	Memorial Hospital	1900 State St.	Chester	62233
40.	St. Vincent Memorial Hospital	201 E. Pleasant St.	Taylorville	62568
41.	Valley West Hospital	11 E. Pleasant Ave.	Sandwich	60548
42.	Pana Community Hospital	101 E. 9th St.	Pana	62557
43.	Union County Hospital Dist. (pndg)	517 N. Main St.	Anna	62906
44.	Crawford Memorial Hospital	1001 N. Allen St.	Robinson	62454
45.	Lawrence County Hospital	2200 W. State St.	Lawrenceville	62439
46.	Salem Township Hospital	1201 Ricker Rd.	Salem	62881
47.	Fayette County Hospital	650 W. Taylor St.	Vandalia	62471
48.	Carlinville Area Hospital	1001 E. Morgan St.	Carlinville	62626
49.	Red Bud Regional Hospital	325 Spring St.	Red Bud	62278

Attachment 6

50.	Sparta Community Hospital	818 E. Broadway	Sparta	62286
51.	St. Francis Hospital	1215 Franciscan Dr.	Litchfield	62056
52.	Clay County Hospital	699 N. Stanford Ave.	Flora	62839

TRI-RIVERS HEALTH PARTNERS

1.	Swedish American Health System	1358 4th St.	Rockford	61104
2.	Freeport Memorial Hospital	1045 W. Stephanson	Freeport	61032
3.	Swedish American Med. Group	220 W. Blackhawk	Byron	61010
4.	Swedish American Med. Group	5665 N. Junction Way	Davis Junction	61020
5.	Rochelle Hospital (also ICAHN)	900 N. Second St.	Rochelle	61068
6.	Swedish American Med. Group	1700 Henry Luckow	Belvidere	61108
7.	Swedish American Med. Group	5005 Hononegah Rd.	Roscoe	61073
8.	Freeport Healthcare Center	3001 Highland View	Freeport	61032
9.	Freeport OT and Chiropractic	1842A S.West Ave.	Freeport	61034
10.	FHN Family Healthcare Ctr.	803 First Ave.	Forreston	61030
11.	FHN Family Healthcare Ctr.	1301 Main St.	Pecatonica	61063
12.	FHN Family Healthcare Ctr.	101 W. Main St.	Orangeville	61060
13.	FHN Family Healthcare Ctr.	109 N. Main St.	Stockton	61085
14.	FHN Family Healthcare Ctr.	160 W. Main St.	Lena	61048
15.	FHN Family Healthcare Ctr.	606 Tisdell Ave.	Warren	61087
16.	FHN Family Healthcare Ctr.	1120 Healthcare Dr.	Mt. Carroll	61053
17.	FHN Family Healthcare Ctr.	602 W. Olympic Dr.	Lannark	61046
18.	FHN Family Healthcare Ctr.	2107 Chicago Ave.	Savanna	61074
19.	FHN Family Healthcare Ctr.	300 Summit St.	Galena	61036

SINNISSIPPI CENTERS (MENTAL HEALTH)

1.	Sinnissippi Ctr. – Dixon	325 Illinois Rt. 2	Dixon	61021
2.	Sinnissippi Ctr. – Mt. Carroll	1122 Healthcare Dr.	Mt. Carroll	61053
3.	Sinnissippi Ctr. – Oregon	125 S. 4th St.	Oregon	61061
4.	Sinnissippi Ctr. – Rochelle	1321 N. 7th St.	Rochelle	61068
5.	Sinnissippi Ctr. – Sterling	2611 Woodlawn Rd.	Sterling	61081
6.	Sinnissippi Ctr. – Amboy	37 S. East Ave.	Amboy	61310
7.	Sinnissippi Ctr. – Morrison	100 E. Knox St.	Morrison	61270

KISHWAUKEE

1.	Kishwaukee Community Hospital	626 Bethany Dr.	DeKalb	60115

CARLE

1.	Carle Clinic	301 E. Southline Rd.	Tuscola	61953

ILLINOIS STATE UNIVERSITY

1.	Illinois State University	Campus Box 3500	Normal	61790

BEN GORDON CENTER

1.	Ben Gordon Center	12 Health Services Dr.	DeKalb	60115
2.	Sandwich Satellite	100 S. Latham, Ste 294	Sandwich	60548
3.	Reality House	631 S. First St.	DeKalb	60115

Attachment 6

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN COLLEGE OF MEDICINE

1.	UIUC College of Medicine	196 Medical Science Bldg		61801

JANET WATTLES CENTER

1.	Janet Wattles Center	526 W. State St.	Rockford	61101
2.	Janet Wattles Center	475 Southtown Dr.	Belvidere	61008

DELNOR COMMUNITY HOSPITAL

1.	Delnor Community Hospital	300 Randall Road	Geneva	60134

Attachment 7

RUCA CODES FOR PARTICIPATING HEALTH CARE FACILITIES

ILLINOIS CRITICAL ACCESS HOSPITAL NETWORK (ICAHN)

	Certified as a Critical Access Hospital			ZIP	RUCA	
1.	Thomas H. Boyd Memorial Hospital	800 School St.	Carrollton	62016	10.6	217-942-6846
2.	John and Mary E. Kirby Hospital	1111 N. State	Monticello	61856	7.1	217-762-2115
3.	Galena-Stauss Hospital	215 Summit St.	Galena	61036	7.3	815-777-1340
4.	Dr. John Warner Hospital	422 W. White St.	Clinton	61727	7.3	217-935-9571
5.	Mercer County Hospital	409 NW 9th Ave.	Aledo	61231	7.3	309-582-5301
6.	Community Memorial Hospital	400 Caldwell	Staunton	62088	9.1	618-635-2200
7.	Memorial Hospital	402 S. Adams St.	Carthage	62321	7	217-357-3131
8.	Pinckneyville Community Hospital	101 N. Walnut St.	Pinckneyville	62274	7	618-357-2187
9.	Washington County Hospital	705 S. Grand St.	Nashville	62263	7	618-327-8236
10.	Eureka Community Hospital	101 S. Major St.	Eureka	61530	7.1	309-467-2371
11.	Mendota Community Hospital	1315 Memorial Dr.	Mendota	61342	7.4	815-539-7461
12.	Fairfield Community Hospital	303 NW 11th St.	Fairfield	62837	7	618-842-2611
13.	Rochelle Community Hospital	900 N. 2nd St.	Rochelle	61068	4.2	815-562-2181
14.	Mason District Hospital	615 N. Promenade	Havana	62644	7	309-543-4431
15.	This line intentionally left blank					
16.	Illini Community Hospital	640 W. Washington	Pittsfield	62363	7	217-285-2113
17.	Hoopeston Community Hospital	701 E. Orange St.	Hoopeston	60942	7.3	217-283-5531
18.	Gibson Area Hosp & Health Services	1120 N. Melvin St.	Gibson City	60936	7.3	217-784-4251
19.	Community Med Ctr of Western IL	1000 W. Harlem Ave.	Monmouth	61462	4	309-734-3141
20.	Hammond-Henry Hospital	600 N. College Ave.	Geneseo	61254	7.3	309-944-6431
21.	Paris Community Hospital	721 E. Court St.	Paris	61944	7	217-465-4141
22.	Franklin Hospital	201 Bailey Lane	Benton	62812	7	618-439-3161
23.	Massac Memorial Hospital (pending)	28 Chick St.	Metropolis	62960	7.4	618-524-2176
24.	Abraham Lincoln Memorial Hospital	315 8th St.	Lincoln	62656	4.2	217-732-2161
25.	Ferrell Hospital	1201 Pine St.	Eldorado	62930	7.4	618-273-3361
26.	Kewanee Hospital	719 Elliott St.	Kewanee	61443	4	309-853-3361
27.	Hamilton Memorial Hospital District	611 S. Marshall Ave.	McLeansboro	62859	7.4	618-643-2361
28.	Wabash General Hospital	1418 College Drive	Mt. Carmel	62863	7	618-262-8621
29.	Hardin County General Hospital(pndg)	6 Ferrell Rd.	Rosiclare	62982	10.5	618-285-6634
30.	Morrison Community Hospital	303 N. Jackson St.	Morrison	61270	7.4	815-772-4003
31.	Hopedale Medical Complex	107 Tremont St.	Hopedale	61747	3	309-449-3321
32.	Marshall Browning Hospital	900 N. Washington	DuQuoin	62832	7	618-542-2146
33.	Hillsboro Area Hospital	1200 E. Tremont	Hillsboro	62049	7	217-532-5611
34.	Sarah D. Culbertson Mem. Hospital	238 S. Congress	Rushville	62681	7	217-322-4321
35.	St. Joseph Memorial Hospital	2 S. Hospital Dr.	Murphysboro	62966	5	618-684-3156
36.	St. Joseph's Hospital	1515 Main St.	Highland	62249	7.1	618-654-7421
37.	Mercy Harvard Hospital	901 Grant St.	Harvard	60033	7.3	815-943-5431
38.	Perry Memorial Hospital	530 Park Ave. East	Princeton	61356	7	815-875-2811
39.	Memorial Hospital	1900 State St.	Chester	62233	7	618-826-4581
40.	St. Vincent Memorial Hospital	201 E. Pleasant St.	Taylorville	62568	4.2	217-824-3331
41.	Valley West Hospital	11 E. Pleasant Ave.	Sandwich	60548	2	815-786-8484
42.	Pana Community Hospital	101 E. 9th St.	Pana	62557	7.4	217-562-2131
43.	Union County Hospital Dist. (pndg)	517 N. Main St.	Anna	62906	7	618-833-4511
44.	Crawford Memorial Hospital	1001 N. Allen St.	Robinson	62454	7	618-544-3131

Attachment 7

45.	Lawrence County Hospital	2200 W. State St.	Lawrenceville	62439	7.4	618-943-1000
46.	Salem Township Hospital	1201 Ricker Rd.	Salem	62881	7.4	618-548-3194
47.	Fayette County Hospital	650 W. Taylor St.	Vandalia	62471	7	618-283-1231
48.	Carlinville Area Hospital	1001 E. Morgan St.	Carlinville	62626	7	618-662-2131
49.	Red Bud Regional Hospital	325 Spring St.	Red Bud	62278	7.3	618-282-3831
50.	Sparta Community Hospital	818 E. Broadway	Sparta	62286	7.3	618-443-2177
51.	St. Francis Hospital	1215 Franciscan Dr.	Litchfield	62056	7	217-324-2191
52.	Clay County Hospital	699 N. Stanford Ave.	Flora	62839	7	618-662-2131

TRI-RIVERS HEALTH PARTNERS

1.	Swedish American Health System	1358 4th St.	Rockford	61104	1	815-968-4400
2.	Freeport Memorial Hospital	1045 W. Stephanson	Freeport	61032	4	815-599-6000
3.	Swedish American Med. Group	220 W. Blackhawk	Byron	61010	2	815-968-4400
4.	Swedish American Med. Group	5665 N. Junction Way	Davis Junction	61020	2	815-968-4400
5.	Rochelle Hospital (also ICAHN)	900 N. Second St.	Rochelle	61068	4.2	815-562-2181
6.	Swedish American Med. Group	1700 Henry Luckow	Belvidere	61108	1	815-968-4400
7.	Swedish American Med. Group	5005 Hononegah Rd.	Roscoe	61073	1	815-968-4400
8.	Freeport Healthcare Center	3001 Highland View	Freeport	61032	4	815-235-3165
9.	Freeport OT and Chiropractic	1842A S.West Ave.	Freeport	61034	4	815-599-7880
10.	FHN Family Healthcare Ctr.	803 First Ave.	Forreston	61030	10.5	815-938-3130
11.	FHN Family Healthcare Ctr.	1301 Main St.	Pecatonica	61063	2	815-239-1400
12.	FHN Family Healthcare Ctr.	101 W. Main St.	Orangeville	61060	5	815-789-3100
13.	FHN Family Healthcare Ctr.	109 N. Main St.	Stockton	61085	10.5	815-947-3211
14.	FHN Family Healthcare Ctr.	160 W. Main St.	Lena	61048	7.4	815-369-3300
15.	FHN Family Healthcare Ctr.	606 Tisdell Ave.	Warren	61087	10.6	815-745-2644
16.	FHN Family Healthcare Ctr.	1120 Healthcare Dr.	Mt. Carroll	61053	10	815-244-4181
17.	FHN Family Healthcare Ctr.	602 W. Olympic Dr.	Lannark	61046	10.5	815-493-2831
18.	FHN Family Healthcare Ctr.	2107 Chicago Ave.	Savanna	61074	7	815-273-3323
19.	FHN Family Healthcare Ctr.	300 Summit St.	Galena	61036	7.3	815-777-2836

SINNISSIPPI CENTERS (MENTAL HEALTH)

1.	Sinnissippi Ctr. – Dixon	325 Illinois Rt. 2	Dixon	61021	4	815-284-6611
2.	Sinnissippi Ctr. – Mt. Carroll	1122 Healthcare Dr.	Mt. Carroll	61053	10	815-244-1376
3.	Sinnissippi Ctr. – Oregon	125 S. 4th St.	Oregon	61061	7	815-732-3157
4.	Sinnissippi Ctr. – Rochelle	1321 N. 7th St.	Rochelle	61068	4.2	815-562-3801
5.	Sinnissippi Ctr. – Sterling	2611 Woodlawn Rd.	Sterling	61081	4	815-625-0013
6.	Sinnissippi Ctr. – Amboy	37 S. East Ave.	Amboy	61310	7.4	815-857-3532
7.	Sinnissippi Ctr. – Morrison	100 E. Knox St.	Morrison	61270	7.4	815-772-2114

KISHWAUKEE

1.	Kishwaukee Community Hospital	626 Bethany Dr.	DeKalb	60115	1	815-756-1521

CARLE

1.	Carle Clinic	301 E. Southline Rd.	Tuscola	61953	7.3	217-253-5231

ILLINOIS STATE UNIVERSITY

1.	Illinois State University	Campus Box 3500	Normal	61790	1	309-438-7258

Attachment 7

BEN GORDON CENTER

1.	Ben Gordon Center	12 Health Services Dr.	DeKalb	60115	1	815-756-4875
2.	Sandwich Satellite	100 S. Latham, Ste 294	Sandwich	60548	2	815-786-7544
3.	Reality House	631 S. First St.	DeKalb	60115	1	815-756-8501

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN COLLEGE OF MEDICINE

1.	UIUC College of Medicine	196 Medical Science Bldg		61801	1	217-333-5198

JANET WATTLES CENTER

1.	Janet Wattles Center	526 W. State St.	Rockford	61101	1	815-968-9300
2.	Janet Wattles Center	475 Southtown Dr.	Belvidere	61008	1	815-968-9300

DELNOR COMMUNITY HOSPITAL

1.	Delnor Community Hospital	300 Randall Road	Geneva	60134	1	630-208-4250

Attachment 8-Wireless Costs

Illinois Rural HealthNet
Wireless Build

From City	To City	Transport Costs	End Link Costs	Speed	Hospital
Sandwich	Aurora	$ 92,300		340 Mbps	
	Sandwich		$ 30,300	200 Mbps	Valley West Comm. Hosp.
Harvard	Belvidere	$ 92,300		340 Mbps	
	Harvard		$ 30,300	200 Mbps	Mercy-Harvard Hospital
Rockford	Byron	$ 92,300		340 Mbps	Swedish American Medical
	Byron		$ 30,300	200 Mbps	
Byron	Davis Junction	$ 92,300		340 Mbps	Swedish American Medical
	Davis Junction		$ 30,300	200 Mbps	
Byron	Oregon	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Oregon		$ 30,300	200 Mbps	
Oregon	Forreston	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Forreston		$ 30,300	200 Mbps	
Forreston	Lannark	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Lannark		$ 30,300	200 Mbps	
Lannark	Mt. Carroll	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Mt. Carroll		$ 30,300	200 Mbps	
Mt. Carroll	Savanna	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Savanna		$ 30,300	200 Mbps	
Freeport	Pecatonica	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Pecatonica		$ 30,300	200 Mbps	
Freeport	Lena	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Lena		$ 30,300	200 Mbps	
Freeport	Orangeville	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Orangeville		$ 30,300	200 Mbps	
Lena	Stockton	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Stockton		$ 30,300	200 Mbps	
Stockton	Warren	$ 92,300		340 Mbps	FHN Family Healthcare Center
	Warren		$ 30,300	200 Mbps	
Morrison	Rockfalls	$ 92,300		340 Mbps	
	Morrison		$ 30,300	200 Mbps	Morrison Comm. Hosp.
Rock Falls	Ohio	$ 92,300		340 Mbps	transport only

Attachment 8-Wireless Costs

Ohio	Mendota	$	92,300			340 Mbps	
	Mendota			$	30,300	200 Mbps	Mendota Comm. Hosp.
Ohio	Princeton	$	92,300			340 Mbps	
	Princeton			$	30,300	200 Mbps	Perry Memorial Hosp.
Princeton	Sheffield	$	92,300			340 Mbps	transport only
Sheffield	Kewanee	$	92,300			340 Mbps	
	Kewanee			$	30,300	200 Mbps	Kewanee Hospital
Kewanee	Geneseo	$	92,300			340 Mbps	
	Geneseo			$	30,300	200 Mbps	Hammond-Henry Hosp.
Kewanee	Galva	$	92,300			340 Mbps	
	Galva			$	30,300	200 Mbps	Regional Family Health Ctr.
Galva	Galesburg	$	92,300			340 Mbps	
	Galesburg			$	30,300	200 Mbps	St. Mary Medical Ctr.
Galesburg	Monmouth	$	92,300			340 Mbps	
	Monmouth			$	30,300	200 Mbps	Community Medical Center
Dixon	Amboy	$	92,300			340 Mbps	
	Amboy			$	30,300	200 Mbps	Sinnissippi Center
Monmouth	Mercer	$	92,300			340 Mbps	
	Mercer			$	30,300	200 Mbps	Mercer County Hospital
Pekin	Hopedale	$	92,300			340 Mbps	
	Hopedale			$	30,300	200 Mbps	Hopedale Medical Complex
Paxton	Gibson City	$	92,300			340 Mbps	
	Gibson City			$	30,300	200 Mbps	Gibson Area Hospital
Paxton	Cissna Park	$	92,300			340 Mbps	
	Cissna Park			$	30,300	200 Mbps	Cissna Park Medical Clinic
Cissna Park	Hoopeston	$	92,300			340 Mbps	
	Hoopeston			$	30,300	200 Mbps	Hoopeston Comm. Hosp.
Lincoln	Clinton	$	92,300			340 Mbps	
	Clinton			$	30,300	200 Mbps	Dr. John Warner Hosp.
Macomb	Table Grove	$	92,300			340 Mbps	
	Table Grove			$	30,300	200 Mbps	Table Grove Family Practice
Table Grove	Astoria	$	92,300			340 Mbps	
	Astoria			$	30,300	200 Mbps	Community Medical Ctr.
Astoria	Rushville	$	92,300			340 Mbps	
	Rushville			$	30,300	200 Mbps	Sarah D. Culbertson Mem. Hosp

Attachment 8-Wireless Costs

Astoria	Mason	$	92,300			340 Mbps	
	Mason			$	30,300	200 Mbps	Mason District Hospital
Jacksonville	Winchester	$	92,300			340 Mbps	
	Winchester			$	30,300	200 Mbps	Winchester Family Practice
Winchester	Pittsfield	$	92,300			340 Mbps	
	Pittsfield			$	30,300	200 Mbps	Illini Community Hospital
Springfield	Taylorville	$	92,300			340 Mbps	
	Taylorville			$	30,300	200 Mbps	St. Vincent Mem. Hosp.
Taylorville	Pana	$	92,300			340 Mbps	
	Pana			$	30,300	200 Mbps	Pana Comm. Hosp.
Effingham	Newton	$	92,300			340 Mbps	
	Newton			$	30,300	200 Mbps	Brush Creek Med. Ctr.
Newton	Robinson	$	92,300			340 Mbps	
	Robinson			$	30,300	200 Mbps	Crawford Mem. Hosp.
Litchfield	Hillsboro	$	92,300			340 Mbps	
	Hillsboro			$	30,300	200 Mbps	Hillsboro Area Hospital
Hillsboro	Vandalia	$	92,300			340 Mbps	
	Vandalia			$	30,300	200 Mbps	Fayett County Hospital
Litchfield	Carlinville	$	92,300			340 Mbps	
	Carlinville			$	30,300	200 Mbps	Carlinville Area Hospital
Carlinville	Greenfield	$	92,300			340 Mbps	
	Greenfield			$	30,300	200 Mbps	Boyd Fillager Clinic
Greenfield	Carrollton	$	92,300			340 Mbps	
	Carrollton			$	30,300	200 Mbps	Thomas Boyd Mem. Hosp.
Salem	Flora	$	92,300			340 Mbps	
	Flora			$	30,300	200 Mbps	Clay County Hospital
Flora	Fairfield	$	92,300			340 Mbps	
	Fairfield			$	30,300	200 Mbps	Fairfield Mem. Hosp.
Flora	Olney	$	92,300			340 Mbps	
	Olney			$	30,300	200 Mbps	Richland Mem. Hosp.
Olney	Lawrenceville	$	92,300			340 Mbps	
	Lawrenceville			$	30,300	200 Mbps	Lawrence County Mem. Hosp.
Lawrenceville	Mount Carmel	$	92,300			340 Mbps	
	Mount Carmel			$	30,300	200 Mbps	Wabash General Hosp. Dist.
Breese	Highland	$	92,300			340 Mbps	
	Highland			$	30,300	200 Mbps	St. Joseph Hospital

Attachment 8-Wireless Costs

Breese	Nashville	$ 92,300			340 Mbps	
	Nashville		$	30,300	200 Mbps	Washington County Hosp.
Nashville	Pinckneyville	$ 92,300			340 Mbps	
	Pinckneyville		$	30,300	200 Mbps	Pinckneyville Comm. Hosp.
Nashville	Sparta	$ 92,300			340 Mbps	
	Sparta		$	30,300	200 Mbps	Sparta Comm. Hosp.
Sparta	Chester	$ 92,300			340 Mbps	
	Chester		$	30,300	200 Mbps	Memorial Hospital
Sparta	Red Bud	$ 92,300			340 Mbps	
	Red Bud		$	30,300	200 Mbps	Red Bud Regional Hospital
Pinckneyville	DuQuoin	$ 92,300			340 Mbps	
	DuQuoin		$	30,300	200 Mbps	Marshal Browning Hosp.
DuQuoin	Murphysboro	$ 92,300			340 Mbps	
	Murphysboro		$	30,300	200 Mbps	St. Joseph Mem. Hosp.
Centralia	Mount Vernon	$ 92,300			340 Mbps	
	Mount Vernon		$	30,300	200 Mbps	Crossroad Comm. Hosp.
Mount Vernon	McLeansboro	$ 92,300			340 Mbps	
	McLeansboro		$	30,300	200 Mbps	Hamilton Mem. Hosp. Dist.
McLeansboro	Eldorado	$ 92,300			340 Mbps	
	Eldorado		$	30,300	200 Mbps	Ferrell Hospital
Mount Vernon	Benton	$ 92,300			340 Mbps	
	Benton		$	30,300	200 Mbps	Franklin Hospital
U of I Last Mile	Various	$ 400,000				
	Transport	$ 6,214,900				
	Local Loop		$	1,848,300		

Note: all locations and facilities are located within the State of Illinois.

Attachment 9-Fiber Optic Costs

Illinois Rural HealthNet
Fiber Optic Network Costs

Location & Facility	Fiber Infrastructure Costs	Equipment Costs	Speed
City of Belvidere			
Northwest Suburban Community Hosp	$69,514.00	$15,000.00	1 Gbps
City of Belleville			
Memorial Hospital	$42,240.00	$77,000.00	1 Gbps
City of Braceville			
Repeater Station	$87,120.00	$43,000.00	1 Gbps
City of Canton			
Graham Hospital	$10,000.00	$45,000.00	1 Gbps
Coleman Clinic Rural Health Clinic	$16,500.00	$15,000.00	1 Gbps
City of Carthage			
Memorial Hospital	$326,700.00	$77,000.00	1 Gbps
Women & Family Medical Care	$8,250.00	$4,000.00	1 Gbps
City of Centralia			
St. Mary's Hospital	$104,544.00	$77,000.00	1 Gbps
City of Chenoa			
OSF Medical Group - Chenoa	$130,680.00	$77,000.00	1 Gbps
City of Danville			
Provena USMC	$33,000.00	$45,000.00	1 Gbps
Danville Pediatric Center	$9,500.00	$4,000.00	1 Gbps
City of Decatur			
Decatur Memorial Hospital	$25,750.00	$80,000.00	1 Gbps
St. Mary's Hospital	$130,680.00	$15,000.00	1 Gbps
City of DeKalb			
NIU	$528,033.00		1 Gbps
Kishwaukee Community Hospital		$15,000.00	1 Gbps
Ben Gorden Center		$4,000.00	1 Gbps
DeKalb County Health Department		$15,000.00	1 Gbps
City of Dixon			
Katherine Shaw Bethea Hosptial	$178,596.00	$77,000.00	1 Gbps
City of East St. Louis			
Kenneth Hall Regional Hospital	$41,250.00	$77,000.00	1 Gbps
City of Effingham			
St. Anthony's Memorial Hospital	$56,100.00	$77,000.00	1 Gbps
Mid-Il Medical Care Assoc. LLC	$2,500.00	$4,000.00	1 Gbps

Attachment 9-Fiber Optic Costs

City of Eureka			
Eureka Community Hospital	$15,000.00	$77,000.00	1 Gbps
Town and Country Rural Health Care Clinic	$2,500.00	$4,000.00	1 Gbps
City of Freeport			
FHN Memorial Hospital	$429,792.00	$77,000.00	1 Gbps
City of Galena			
Galena-Stauss Hosp & HC Center	$247,420.00	$45,000.00	1 Gbps
City of Germantown			
Clinton Co. Rural Health Clinic	$32,175.00	$77,000.00	1 Gbps
City of Jacksonville			
Passavant Area Hospital	$52,800.00	$77,000.00	1 Gbps
City of Kankakee			
Provena St. Mary's Hospital	$44,000.00	$77,000.00	1 Gbps
Riverside Medical Center	$90,200.00	$15,000.00	1 Gbps
City of Lincoln			
Abraham Lincoln Memorial Hosp	$261,360.00	$77,000.00	1 Gbps
Lincoln Rural Health Clinic	$7,500.00	$4,000.00	1 Gbps
City of Litchfield			
St. Francis Hospital	$100,188.00	$77,000.00	1 Gbps
Litchfield Family Practice Center	$9,000.00	$4,000.00	1 Gbps
Village of Malta			
Tri-county Community Health Center		$15,000.00	1 Gbps
City of Mattoon			
Sarah Bush Lincoln Health Center	$40,000.00	$90,000.00	1 Gbps
City of Macomb			
McDonough District Hospital	$87,120.00	$77,000.00	1 Gbps
City of Naperville			
Cross Connect from I-55 to Naperville Fiber	$606,925.00		1 Gbps
IRU From Naperville	$31,500.00		1 Gbps
City of Normal	$305,085.00		
ISU		$45,000.00	1 Gbps
BroMenn Health Care		$15,000.00	1 Gbps
OSF St. Joseph Medical Center		$15,000.00	1 Gbps
City of Onarga			
The Onarga Clinic	$15,000.00	$45,000.00	1 Gbps
City of Paris			
Paris Community Hospital	$12,000.00	$45,000.00	1 Gbps
Paris Family Medical Center	$1,200.00	$4,000.00	1 Gbps

Attachment 9-Fiber Optic Costs

City of Paxton			
The Paxton Clinic	$30,000.00	$77,000.00	1 Gbps
City of Peoria			
Pekin Hospital	$32,720.00	$77,000.00	1 Gbps
Pekin Hospital	$119,361.99		1 Gbps
PeoriaNet System		$90,000.00	
City of Perry			
Repeater Station	$87,120.00	$45,000.00	1 Gbps
City of Pontiac			
OSF St. James- JW Albrecht MC	$24,750.00	$77,000.00	1 Gbps
City of Quincy			
Blessing Hospital	$15,015.00	$77,000.00	1 Gbps
City of Rochelle			
Rochelle Community Hospital	$7,500.00	$77,000.00	1 Gbps
Your Family Doctor	$2,500.00	$15,000.00	1 Gbps
City of Rock Falls			
CGH Medical Center	$180,040.00	$45,000.00	1 Gbps
IRU With Rock Falls			
City of Rockford			
U of I Medical Center	$261,360.00	$15,000.00	1 Gbps
Rockford Memorial Hospital		$77,000.00	1 Gbps
Swedish American Hospital		$15,000.00	1 Gbps
OSF St Anthony Medical Center		$15,000.00	1 Gbps
Van Matre Health South Rehb Hosp.		$15,000.00	1 Gbps
City of Salem			
Salem Township Hospital	$278,784.00	$77,000.00	1 Gbps
City of Springfield			
St. John Hospital	$17,248.00	$77,000.00	1 Gbps
Memorial Medical Center	$78,820.00	$15,000.00	1 Gbps
City of Staunton			
Community Memorial Hospital	$217,800.00	$77,000.00	1 Gbps
Staunton Family Practice	$21,450.00	$15,000.00	1 Gbps
City of Tuscola			
Carle Clinic - Tuscola	$34,650.00	$77,000.00	1 Gbps
City of Urbana			
Provena Covenant Medical Center	$27,500.00	$77,000.00	1 Gbps
University of Illinois		$45,000.00	1 Gbps
City of Warsaw			
Hamilton-Warsaw Clinic	$148,104.00	$77,000.00	1 Gbps

Attachment 9-Fiber Optic Costs

State of Illinois				
McLeod IRU		$1,117,950.00		n/a
NIUNet				
Build out Costs to Rockford w/DNTP		$800,000.00	$500,000.00	n/a
City of Chicago				
Starlight		$320,000.00	$120,000.00	1 Gbps
MREN				
	Fiber Cabling	**$8,014,394.99**		
	Fiber Equipment		**$3,679,000.00**	

Note: all locations and facilities are located within the State of Illinois.

Attachment 10-Ongoing Fiber Optic Costs

Illinois Rural HealthNet
Fiber Maintenance Costs

Location	Estimated Fiber Length	Estimated Annual Fiber Costs or Mainteance	Estimated Annual Equipment Costs
City of Belvidere			
Northwest Suburban Comm Hosp	4,213	$1,053	$1,200
City of Belleville			
Memorial Hospital	2,560	$640	$6,160
City of Braceville			
Repeater Station	5,280	$1,320	$3,440
City of Canton			
Graham Hospital	300	$75	$3,600
Coleman Clinic Rural Health Clinic	1,000	$250	$1,200
City of Carthage			
Memorial Hospital	19,800	$4,950	$6,160
Women & Family Medical Care	500	$125	$320
City of Centralia			
St. Mary's Hosptial	6,336	$1,584	$6,160
City of Chenoa			
OSF Medical Group - Chenoa	7,920	$1,980	$6,160
City of Danville			
Provena USMC	2,000	$500	$3,600
Danville Pediatric Center	500	$125	$320
City of Decatur			
Decatur Memorial Hospital	1,500	$375	$6,400
St. Mary's Hospital	7,920	$1,980	$1,200
City of DeKalb			
NIU	32,002	$8,001	
Kishwaukee Community Hospital			$1,200
Ben Gorden Center			$320
DeKalb County Health Department			$1,200
City of Dixon			
Katherine Shaw Bethea Hosptial	10,824	$2,706	$6,160
City of East St. Louis			
Kenneth Hall Regional Hospital	1,500	$375	$6,160
City of Effingham			
St. Anthony's Memorial Hospital	3,400	$850	$6,160
Mid-Il Medical Care Assoc. LLC	500	$125	$320

Attachment 10-Ongoing Fiber Optic Costs

City of Eureka			
Eureka Community Hospital	500	$125	$6,160
Town and Country Rural Health Care Clinic		$0	$320
City of Freeport			
FHN Memorial Hosptial	19,536	$4,884	$6,160
City of Galena			
Galena-Stauss Hosp & HC Ctr	14,955	$3,739	$3,600
City of Germantown			
Clinton Co. Rural Health Clinic	1,950	$488	$6,160
City of Jacksonville			
Passavant Area Hosptial	3,200	$800	$6,160
City of Kanakee			
Provena St. Mary's Hospital	1,600	$400	$6,160
Riverside Medical Center	3,280	$820	$1,200
City of Lincoln			
Abraham Lincoln Memorial Hosp	15,840	$3,960	$6,160
Lincoln Rural Health Clinic	500	$125	$320
City of Litchfield			
St. Francis Hosptial	6,072	$1,518	$6,160
Litchfield Family Practice Center	500	$125	$320
Village of Malta			
Tri-county Community Health Center			$1,200
City of Mattoon			
Sarah Bush Lincoln Health Ctr	1,500	$375	$7,200
City of Macomb			
McDonough District Hospital	5,280	$1,320	$6,160
City of Naperville			
Cross Connect from I-55 to Naperville Fiber	22,070	$5,518	
IRU From Naperville	110,880	$4,725	
City of Normal	20,339	$5,085	
ISU			$3,600
BroMenn Health Care			$1,200
OSF St. Joesph Medical Center			$1,200
City of Onarga			
The Onarga Clinic	300	$75	$3,600
City of Paris			
Paris Community Hospital	500	$125	$3,600
Paris Family Medical Center		$0	$320

Attachment 10-Ongoing Fiber Optic Costs

City of Paxton			
The Paxton Clinic	300	$75	$6,160
City of Peoria			
Pekin Hospital	32,311	$16,800	$6,160
Pekin Hospital	7,234	$1,808	
PeroriaNet System			$7,200
City of Perry			
Repeater Station	5,280	$1,320	$3,600
City of Pontiac			
OSF St. James- JW Albrecht MC	1,500	$375	$6,160
City of Quincy			
Blessing Hospital	910	$228	$6,160
City of Rochelle			
Rochelle Community Hospital	15,840	$3,600	$6,160
Your Family Doctor	3,800	$1,800	$1,200
City of Rock Falls			
CGH Medical Center	9,002	$2,251	$3,600
IRU With Rock Falls			
City of Rockford			
U of I Medical Center	9,504	$2,376	$1,200
Rockford Memorial Hospital			$6,160
Swedish American Hospital			$1,200
OSF St Anthony Medical Ctr			$1,200
Van Matre Health South Rehb Hsp			$1,200
City of Salem			
Salem Township Hosptial	16,896	$4,224	$6,160
City of Springfield			
St. John Hosptial	748	$187	$6,160
Memorial Medical Center	3,310	$828	$1,200
City of Staunton			
Community Memorial Hospital	13,200	$3,300	$6,160
Staunton Family Practice	1,300	$325	$1,200
City of Tuscola			
Carle Clinic - Tuscola	2,100	$525	$6,160
City of Urbana			
Provena Covenant Medical Center	1,000	$250	$6,160
Univiersity of Illinois			$3,600
City of Warsaw			
Hamilton-Warsaw Clinic	8,976	$2,244	$6,160

Attachment 10-Ongoing Fiber Optic Costs

State of Illinois			
Mcleod IRU	1,133	$339,900	
NIUNet			
Buildout Costs to Rockford w/DNTP		$180,000	
City of Chicago			
Starlight		$32,000	
MREN		$38,000	
	Totals	$693,634	$244,720

Estimated Annual Operational Costs	**Year 1**
Maintenance Costs Estimate	$938,354.00
2 Network Operations Personnel @$80K/FTE	$160,000.00
Total Estimated Annual Operational Costs	**$1,098,354.00**

Attachment 11-Ongoing Wireless Costs

Illinois Rural HealthNet
Wireless Maintenance Costs

From City	To City	Transport Costs	End Link Costs	Yearly Maintenance
Sandwich	Aurora	$ 92,300		$ 4,615
	Sandwich		$ 30,300	$ 1,515
Harvard	Belvidere	$ 92,300		$ 4,615
	Harvard		$ 30,300	$ 1,515
Rockford	Byron	$ 92,300		$ 4,615
	Byron		$ 30,300	$ 1,515
Byron	Davis Junction	$ 92,300		$ 4,615
	Davis Junction		$ 30,300	$ 1,515
Byron	Oregon	$ 92,300		$ 4,615
	Oregon		$ 30,300	$ 1,515
Oregon	Forreston	$ 92,300		$ 4,615
	Forreston		$ 30,300	$ 1,515
Forreston	Lannark	$ 92,300		$ 4,615
	Lannark		$ 30,300	$ 1,515
Lannark	Mt. Carroll	$ 92,300		$ 4,615
	Mt. Carroll		$ 30,300	$ 1,515
Mt. Carroll	Savanna	$ 92,300		$ 4,615
	Savanna		$ 30,300	$ 1,515
Freeport	Pecatonica	$ 92,300		$ 4,615
	Pecatonica		$ 30,300	$ 1,515
Freeport	Lena	$ 92,300		$ 4,615
	Lena		$ 30,300	$ 1,515
Freeport	Orangeville	$ 92,300		$ 4,615
	Orangeville		$ 30,300	$ 1,515
Lena	Stockton	$ 92,300		$ 4,615
	Stockton		$ 30,300	$ 1,515
Stockton	Warren	$ 92,300		$ 4,615
	Warren		$ 30,300	$ 1,515
Morrison	Rockfalls	$ 92,300		$ 4,615
	Morrison		$ 30,300	$ 1,515
Rock Falls	Ohio	$ 92,300		4,615
Ohio	Mendota	$ 92,300		$ 4,615
	Mendota		$ 30,300	$ 1,515

Attachment 11-Ongoing Wireless Costs

Ohio	Princeton	$	92,300			$	4,615
	Princeton			$	30,300	$	1,515
Princeton	Sheffield	$	92,300				4,615
Sheffield	Kewanee	$	92,300			$	4,615
	Kewanee			$	30,300	$	1,515
Kewanee	Geneseo	$	92,300			$	4,615
	Geneseo			$	30,300	$	1,515
Kewanee	Galva	$	92,300			$	4,615
	Galva			$	30,300	$	1,515
Galva	Galesburg	$	92,300			$	4,615
	Galesburg			$	30,300	$	1,515
Galesburg	Monmouth	$	92,300			$	4,615
	Monmouth			$	30,300	$	1,515
Dixon	Amboy	$	92,300			$	4,615
	Amboy			$	30,300	$	1,515
Monmouth	Mercer	$	92,300			$	4,615
	Mercer			$	30,300	$	1,515
Pekin	Hopedale	$	92,300			$	4,615
	Hopedale			$	30,300	$	1,515
Paxton	Gibson City	$	92,300			$	4,615
	Gibson City			$	30,300	$	1,515
Paxton	Cissna Park	$	92,300			$	4,615
	Cissna Park			$	30,300	$	1,515
Cissna Park	Hoopeston	$	92,300			$	4,615
	Hoopeston			$	30,300	$	1,515
Lincoln	Clinton	$	92,300			$	4,615
	Clinton			$	30,300	$	1,515
Macomb	Table Grove	$	92,300			$	4,615
	Table Grove			$	30,300	$	1,515
Table Grove	Astoria	$	92,300			$	4,615
	Astoria			$	30,300	$	1,515
Astoria	Rushville	$	92,300			$	4,615
	Rushville			$	30,300	$	1,515
Astoria	Mason	$	92,300			$	4,615
	Mason			$	30,300	$	1,515
Jacksonville	Winchester	$	92,300			$	4,615
	Winchester			$	30,300	$	1,515

Attachment 11-Ongoing Wireless Costs

Winchester	Pittsfield	$	92,300			$	4,615
	Pittsfield			$	30,300	$	1,515
Springfield	Taylorville	$	92,300			$	4,615
	Taylorville			$	30,300	$	1,515
Taylorville	Pana	$	92,300			$	4,615
	Pana			$	30,300	$	1,515
Effingham	Newton	$	92,300			$	4,615
	Newton			$	30,300	$	1,515
Newton	Robinson	$	92,300			$	4,615
	Robinson			$	30,300	$	1,515
Litchfield	Hillsboro	$	92,300			$	4,615
	Hillsboro			$	30,300	$	1,515
Hillsboro	Vandalia	$	92,300			$	4,615
	Vandalia			$	30,300	$	1,515
Litchfield	Carlinville	$	92,300			$	4,615
	Carlinville			$	30,300	$	1,515
Carlinville	Greenfield	$	92,300			$	4,615
	Greenfield			$	30,300	$	1,515
Greenfield	Carrollton	$	92,300			$	4,615
	Carrollton			$	30,300	$	1,515
Salem	Flora	$	92,300			$	4,615
	Flora			$	30,300	$	1,515
Flora	Fairfield	$	92,300			$	4,615
	Fairfield			$	30,300	$	1,515
Flora	Olney	$	92,300			$	4,615
	Olney			$	30,300	$	1,515
Olney	Lawrenceville	$	92,300			$	4,615
	Lawrenceville			$	30,300	$	1,515
Lawrenceville	Mount Carmel	$	92,300			$	4,615
	Mount Carmel			$	30,300	$	1,515
Breese	Highland	$	92,300			$	4,615
	Highland			$	30,300	$	1,515
Breese	Nashville	$	92,300			$	4,615
	Nashville			$	30,300	$	1,515
Nashville	Pinckneyville	$	92,300			$	4,615
	Pinckneyville			$	30,300	$	1,515

Attachment 11-Ongoing Wireless Costs

Nashville	Sparta	$	92,300			$	4,615
	Sparta			$	30,300	$	1,515
Sparta	Chester	$	92,300			$	4,615
	Chester			$	30,300	$	1,515
Sparta	Red Bud	$	92,300			$	4,615
	Red Bud			$	30,300	$	1,515
Pinckneyville	DuQuoin	$	92,300			$	4,615
	DuQuoin			$	30,300	$	1,515
DuQuoin	Murphysboro	$	92,300			$	4,615
	Murphysboro			$	30,300	$	1,515
Centralia	Mount Vernon	$	92,300			$	4,615
	Mount Vernon			$	30,300	$	1,515
Mount Vernon	McLeansboro	$	92,300			$	4,615
	McLeansboro			$	30,300	$	1,515
McLeansboro	Eldorado	$	92,300			$	4,615
	Eldorado			$	30,300	$	1,515
Mount Vernon	Benton	$	92,300			$	4,615
	Benton			$	30,300	$	1,515
				Maintenance		**$**	**383,160**

Attachment 12-Implementation Management Costs

Illinois Rural HealthNet
Implementation Management

Project Management Office *5 FTEs @$100,000 each* *Two years*	$	1,150,000
Engineering and Design *2 FTEs @$100,000* *for overall integrations* *two years*	$	460,000
Project Management *2 FTEs @$100,000* *for overall integrations* *two years*	$	460,000
	$	2,070,000

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