

The Juniata Valley Network

Finding the Bandwidth for Health Care Telecommunications in the Juniata Valley



An Application for the FCC Rural Health Care Pilot Program



Submitted on Behalf of the Juniata Valley Network Consortium By

Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044



May 2nd, 2007

FCC Chairman Kevin J. Martin
Federal Communications Commission
236 Massachusetts Avenue, NE, Suite 110,
Washington, DC 20002

Dear Chairman Martin:

On behalf of the Juniata Valley Network consortium, Lewistown Hospital is pleased to present the consortium's application for FCC funding assistance under the new FCC Rural Health Care Pilot Program. Lewistown Hospital, JC Blair Memorial Hospital, Tyrone Hospital, the Fulton County Medical Center, all of the numerous participating rural health care facilities in the Juniata Valley, and our collaborating network partners, are all very excited about this new opportunity to improve the telecommunication capabilities for health care in our rural Appalachian region.

The need for advanced telecommunications in our region has become more apparent as Lewistown Hospital has been successfully implementing three different USDA Distance Learning and Telemedicine funded projects. The hospital has received \$1,400,000 in Federal funding so far for telemedicine projects and has matched this Federal funding with a local investment exceeding \$5,000,000. These local advancements in telemedicine applications require a faster pipeline as more and more of our local clinicians try to access the new services.

Technically there is no spot in America where you can not get a 100 Mbps connection as long as you are willing to pay the costs for building the connection and the ongoing costs for access to the Internet. In the current telecommunications environment of our rural region these costs are simply beyond our reach. However, with the FCC's assistance we are proposing to build the infrastructure we need to support our needs and have developed a sustainability model to make sure that once it has been built we can afford to keep it in operation.

Ultimately the true benefit of the proposed project goes to the citizens of the Juniata Valley as we improve our ability to use technology to improve the quality of the health care we provide them. My fellow CEO's at JC Blair Memorial Hospital, Tyrone Hospital, and Fulton County Medical Center along with all the health care facilities in the region are all committed to make this project a success. Thank you in advance for consideration of our proposal. If you have any questions about our proposal I encourage you to contact me directly.

Sincerely,

A handwritten signature in blue ink that reads "Kay Hamilton".

Kay Hamilton
President and CEO

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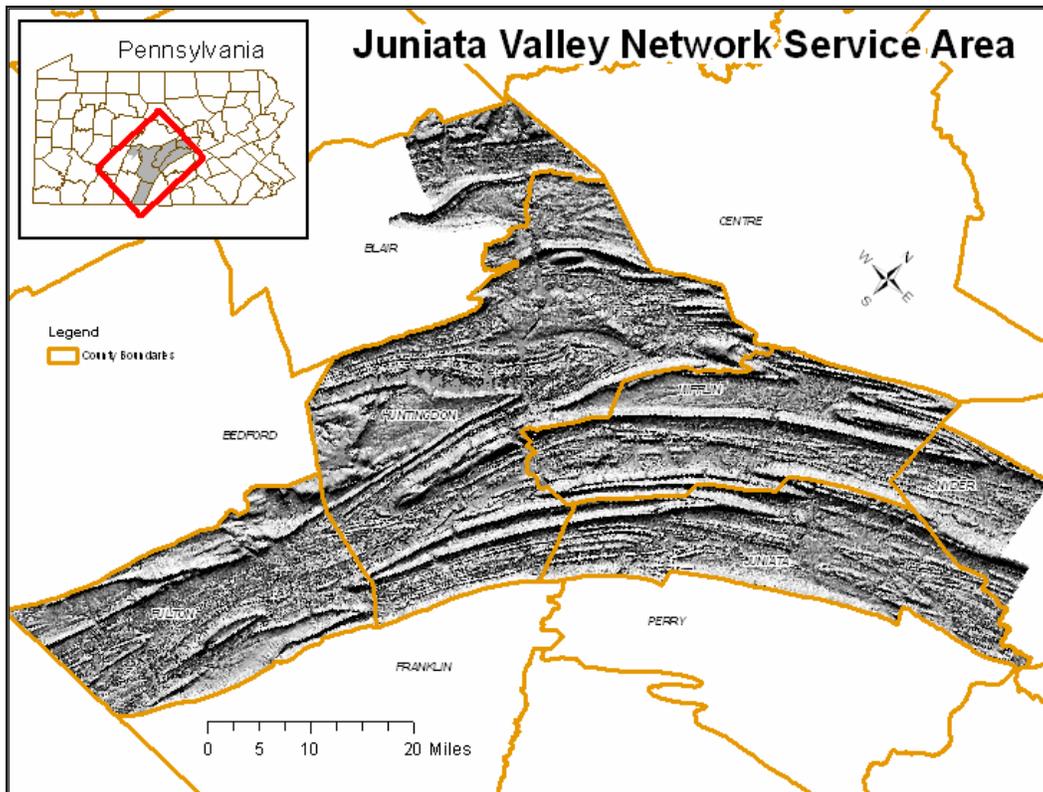
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Introduction

The Juniata Valley Network (JVN) has as its primary goal to establish a robust high bandwidth telecommunications network that will permit the participating health care facilities to use the new network for telemedicine applications such as teleradiology and accessing a patient’s electronic medical records. Additional health related applications include using the network to permit physicians and nurses to attend Pennsylvania State mandated continuing medical education workshops and using the network to permit the participating health care facilities to provide high quality wellness programs to local schools to improve the overall health outcomes of our communities and help the region meet Healthy People 2010 goals. Finally, the new telecommunications network will have connectivity to Internet2 and as such will make available national health care resources to our community.

The service area of the JVN is located in the rugged rural mountain and valley regions of the Appalachian Mountain range that cuts through Pennsylvania. This service area includes all of Mifflin County, Juniata County, Huntingdon County, Fulton County, and the rural portions of Snyder County and Blair County (see Figure 1). This area covers some 2,500 square miles with an average population density of 60 persons per square mile. Travel can be difficult during the winter months and the Appalachian Mountain ranges create barriers that add significant commute times when traveling the region as well as making wireless communications a significant challenge.

Figure 1: Map of Juniata Valley Network Service Area



The non-profit health care facilities that have joined forces to act as participants in the JVN include two rural community hospitals, two rural Critical Access Hospitals (CAH), two rural Federally Qualified Health Clinics (FQHC), three Federally designated Rural Health clinics, several rural health clinics, dozens of rural School Based Health Clinics, and a school of nursing. Adding to these non-profit health care facilities are several for-profit rural health clinics and rural medical offices. The entire region is rural eligible for accessing the Universal Services Administration Company (USAC) discounted telecommunications services. Numerous letters of support and memorandums of agreement from the participating health care facilities are found in Appendix A and Appendix B.

Lewistown Hospital, a non-profit rural hospital and the largest health care facility in the JVN, is the organization that will be legally and financially responsible for the conduct of activities supported by the FCC Rural Health Care Pilot Program. The JVN is requesting \$3,113,698 in FCC Rural Health Care Pilot Program funding for Fiscal 2006

The JVN represents several struggling health care facilities that are unable to afford the large upfront installation costs to build the robust high bandwidth telecommunications network that is required to support many telemedicine applications. Even with a significant grant from FCC, the JVN by itself could not sustain such a network with the limited resources that are available to the health care facilities. Therefore it is of critical importance that the JVN join forces with other non-profit organizations in the service area to make sure that the network will be able to sustain itself in years to come. These organizations include the Tuscarora Intermediate Unit 11 (TIU 11) and local county governments such as Mifflin County.

The TIU 11 is an organization that supports local school districts in a four county region including Mifflin, Juniata, Fulton, and Huntingdon. A partnership with the TIU 11 means that the JVN and the TIU 11 can combine their independent physical networks and take advantage of each other's infrastructure. For example, the TIU 11 is planning to build a network to the Fermanaugh Elementary School in Juniata County. The JVN can then build a tower on top of the school and reach two health care facilities for that last mile connection. The JVN network could not exist without the help of the TIU 11 network.

The TIU 11 is spending over \$1,800,000 dollars over the next couple of years on building out a high bandwidth network to local schools in the region, which include School Based Health Clinics. They are using a combination of FCC E-Rate funds along with Pennsylvania State Act 148 E-Funds. \$648,000 of the total project costs are coming from state funds and as such are eligible match funding for the Federal FCC funds. Every single school district in the TIU 11 service area has written a letter of support for this project. These can be found in Appendix A. In addition, as a significant partner of the JVN, the TIU 11 has also provided a letter of support for the project.

Additional benefits are achieved by the health care facilities with the TIU 11 partnership. One of the most important is the ability of the health care facilities to utilize the TIU 11

video bridging equipment. Currently the four major hospitals all have video conferencing equipment. The costs to operate this equipment are \$100 an hour. By using the new proposed network the hospitals will be able to utilize the TIU 11 video bridging equipment at a cost of \$40 per hour which will represent a significant savings to the health care facilities. Upgrades to this important element in the overall telecommunications network are included in the project costs.

Local county governments desire to provide wireless communications throughout the region. This has posed as a significant challenge to them and millions of dollars have been spent building communication towers on top of the various mountain ranges in the region. The JVN and the TIU 11 have reached agreements with these county governments to use the tower locations as wireless connection points to reach both schools and health care facilities. Mifflin County government is installing a new microwave link on the communications tower on Shade Mountain and is working with the JVN to allow for the use of this tower to connect to at least two rural health clinics plus support future broadband wireless initiatives. State 9-1-1 emergency funds are being used to build this new microwave link and as such are considered eligible match for the FCC funding. A letter of support from Mifflin County detailing this agreement along with letters of support from Juniata County and Huntingdon County are found in Appendix A.

Without the assistance of the collaborating partners in this project there would be no chance at all that the health care facilities would ever have a telecommunications network that could be used to support telemedicine and other health related activities in our rural region.

The proposed network is really a network within a network. The four major hospitals in the region will have an internal 100 Mbps secure connection to each other while each hospital will also have a 10 Mbps pipeline to the Internet. Through the 100 Mbps¹ connections to the TIU each hospital will also have secure access to Internet2. Smaller health care facilities will each have a minimum 7 Mbps connection to the JVN.

While the JVN is ready to move forward immediately with construction of the various licensed wireless, unlicensed wireless, fiber optic builds, and telecommunication equipment purchases needed to build the network if FCC funding is approved, there are other critical health care telecommunications needs that are required to build out the capabilities truly needed in our rural region. One unfulfilled need is the ability to provide a high speed broadband wireless network that home health care nurse can use to access patient records, upload health biometrics, and consult with a physician from the patient's home. Another application for this broadband network is to permit paramedics to communicate back to the hospital on critical trauma and cardiac patients. In order to deploy such a broadband high speed wireless network in our region extensive initial network planning studies must be conducted. Therefore in this application for FCC funding the JVN has requested fiscal 2006 funds to support the study with the hope that

¹ Upgradeable to Gig E.

the JVN could then reapply in the fiscal 2007 funding year to get funds to support the build out of this new component of the overall health care network.

The JVN will also pursue Appalachian Regional Commission (ARC) funds to support the broadband wireless build out. The Pennsylvania State Office of Appalachian Development and SEDA-COG, a Local Development District that would have to approve any ARC funding requests, have each given the JVN letters of support which can be found in Appendix A. In addition, Congressman John Peterson and the Pennsylvania USDA Rural Development office have also provided letters of support for the JVN project.

The FCC Rural Health Care Pilot Program does not require a formal evaluation methodology to measure the great impact that the proposed JVN telecommunications network will have on the rural health care facilities that are involved. The JVN would like FCC to consider this evaluation as an eligible expense for the use of grant funds. In lieu of that, the Mifflin County Board of Commissioners has agreed to provide up to \$78,000 of county funds to cover the costs of the evaluation. We feel that this evaluation will provide valuable information that will support the impact that this project will have on our communities and as such will be useful in proving to our local Boards of Directors of the usefulness of the project. The FCC will also be able to use this information to achieve a better understanding of how the program is operating. The JVN is planning on using the resources of the Pennsylvania State University to conduct the formal evaluation within accepted academic evaluation guidelines. The Penn State team's extensive qualifications to conduct an evaluation of this importance are found in Appendix C.

Community Background

Our service area is comprised of Mifflin County, Juniata County, Huntingdon County, and Fulton County along with some smaller municipalities located in western Snyder County and northern Blair County (see Figure 1). This rural area contains some 145,000 people spread over more than 2,500 square miles of rugged terrain located in the heart of the Appalachian Mountains in central Pennsylvania. The average population density is approximately 60 persons per square mile. The Juniata River runs along the verdant valleys and slices through narrow mountain passes to connect our residents together, which is why our area is called the Juniata Valley.

The proposed Juniata Valley Network (JVN) will provide many health related benefits to the communities in the Juniata Valley. For example, rural physician offices will be provided with access to their patients Electronic Medical Records (EMR) that are maintained by local hospitals along with their imaging and analysis reports via the JVN without the patients having to bring hard copy records, images, or reports with them to their appointments. The physicians will also be able to access the EMR's, digital images and various radiological and lab reports from their home offices when required for admitted critical care patients under their care without having to travel into the hospital to review these images and reports. It is this reduction in travel that is one of the significant benefits of our project to both the patients and the physicians.

Transportation barriers play a major role in access to health care in our region. These natural barriers include narrow roads that either meander along streams and creeks or crossover the mountain ranges that traverse our Appalachian Ridge region. These barriers are even more daunting given hazardous winter driving conditions caused by snow or ice covered roads. Low-income and senior citizens also face transportation issues, as there is no public transportation in our service area. Senior citizens and Medicaid-eligible persons can use the CART van system for transportation to regularly scheduled appointments with a weeks notice but not for urgent or emergency care. Low-income citizens have no access to any public transportation at all in our community. If a trip to a specialist is required the major support hospitals are over one and half hours drive away (in the summer).

Other benefits to our community include improved medical diagnosis for various chronic conditions our citizens face ranging from disease of the heart, stroke, chronic lower respiratory disease, cancer, and diabetes. The proposed JVN will result in improved patient safety and better health outcomes. For example, the ability for a physician to quickly and efficiently access historical images and reports so they can be compared to current images and reports will enable the physician to provide a more complete diagnostic picture, and therefore improve the health outcomes of the patient.

Another benefit to our community will result from the increased retention of qualified physicians. By improving our technological capability we will be able to provide these physicians with the same or similar resources they might have in a more urban community and in this way make it less likely they will leave our rural area. The Juniata

Valley hospitals have had historical difficulty attracting medical specialists such as orthopedic surgeons, urologists, and endocrinologists. One of the reasons is that any one hospital does not have enough business to attract a top specialist. We want to attempt to use the JVN to show new physicians that they can reach out to a larger service area with more patients by using the JVN.

Our community is a great community and is similar to many other rural communities across the country although we do have unique characteristics that make our region special to us. Our people want the best health care they can get just like any other rural community in America. Our rural location and unique circumstances make this a difficult endeavor for local health care providers. Before we go on to fully express our case for why the FCC should consider our community as an ideal pilot location for the FCC Rural Health Care Pilot Program we would like to present the background of our community. In order to present a complete picture of our community and our residents we will first discuss the demographics of our region.

Demographics

The population of our total service area is just about 145,000 persons based on 2000 US Census data. Mifflin County has a relatively flat growth rate and has not grown significantly in population since the 1950 census when overall population was about 46,000 people (Table 1). Juniata County, on the other hand, has seen significant growth with a 10.6 % increase in population from 1990 to 2000. It is believed that this growth is mostly coming from people who work in the nearby Harrisburg area who are looking for a lower cost of living. With the recent completion of a new four-lane highway north of Harrisburg, the commute to Harrisburg has become more convenient resulting in an increase in Juniata County’s population as people move further away from the urban areas to live in the country. Higher growth in Fulton County is explained by migration from Maryland as people try to move away from higher housing costs in Maryland. Huntingdon County’s growth is mostly occurring in the northern portion of the county that is close enough to State College to allow residents to commute to Penn State University. These growth rates are still very low when compared to a national growth rate of over 13 %.

Table 1: Service Area Population²

<u>US Census 2000</u>	<u>Mifflin</u>	<u>Juniata</u>	<u>Huntingdon</u>	<u>Fulton</u>	<u>Pennsylvania</u>
Population, 2000	46,486	22,821	45,947	14,673	12,281,054
Population, % change, 1990 to 2000	0.60%	10.60%	4.03%	6.04%	3.40%

² These demographic tables do not include population counts from the portions of Snyder County and Blair County that are in the service area.

The breakdown of our population by age groups is shown in Table 2.

Table 2: Age Group Breakdowns

<u>US Census 2000</u>	<u>Mifflin</u>	<u>Juniata</u>	<u>Huntingdon</u>	<u>Fulton</u>	<u>Pennsylvania</u>
Persons under 5 years old	6.30%	6.50%	5.80%	5.30%	5.90%
Persons under 18 years old	24.60%	25.00%	22.70%	22.50%	23.80%
Persons 65 years old and over	17.00%	15.20%	15.40%	15.60%	15.60%
Female persons	51.80%	50.30%	47.70%	50.30%	51.70%

Mifflin County’s 65 and over age group is a higher percentage of total population than the state average. Both Mifflin and Juniata have higher percentages of persons less than 18 years of age. Both of these groups require more health care resources than other age groups in our community. Compared to a national average of 12.4 % of people over age 65 years Mifflin County has a very high percent population over age 65.

The 65 and older age group also has a lower median household income level than state or national averages. Table 3 shows the breakdown of median household income using statistics from the 2000 US Census. These data indicate that our senior citizens are poorer than the average state or national senior citizen.

Table 3: Median Household Income by Age Group³

<u>Age Group</u>	<u>Mifflin County</u>	<u>Juniata County</u>	<u>Pennsylvania</u>	<u>National</u>
65 - 74	\$21,449	\$25,278	\$28,639	\$31,368
75 and older	\$16,615	\$17,730	\$20,359	\$22,259

We are also experiencing a higher growth rate for the population group age 65 and over. Table 4 shows the overall percent growth rate for our service area and then the growth rate for the 65 and over population bracket (data from 2000 US Census).

Table 4: Population Growth Rates

<u>County</u>	<u>Population</u>	<u>Growth Rate</u>	<u>Growth Rate 65 and over</u>	<u>Population over age 65</u>
Mifflin	46,435	0.5 %	6.7 %	17.0 %
Juniata	22,821	10.0 %	16.1 %	15.2 %

While the overall growth rate for Mifflin County is flat at 0.5 % the growth rate for the 65 and over population bracket is growing by 6.7 %. This means that the overall percentage of the population that is 65 and over will increase from the currently higher rate of 17.0 %. While Juniata County’s overall growth rate is 10 % the 65 and over

³ Data for Fulton County and Huntingdon County not included.

growth rate is even higher at 16.1 %. Our elderly population is growing at an alarming rate in relation to the rest of the population. The future impact of our aging population on health care demands in the county is expected to be significant and is expected to drive up the need for increased health care services. This aging population will also have more transportation problems.

When compared to national growth rates our data is very alarming. Census 2000 was the first time in the history of the census that the 65 years and over population did not grow faster than the total population. Between 1990 and 2000, the total population increased by 13.2 percent, from 248.7 million to 281.4 million people. In contrast, the population 65 years and over increased by only 12.0 percent. Our growth rates for the elderly far exceed the growth rates for the other segments of our population.

Another indicator of the growing elderly population is the increase in nursing homes within our service area, which includes twelve nursing homes with a total bed count of over 980. There is typically a waiting list to get admitted to a nursing home in our community. None of these nursing homes are operated by any of the health care facilities involved in the JVN. Over the last three years we have witnessed what can only be called phenomenal growth in the local nursing home industry. In Mifflin County we have had one brand new assisted living facility recently completed and three of the four existing nursing homes have greatly expanded. This is a clear indication of the growing elderly population in our community and also indicates the potential for increased health services to meet the demands of this growing population. The JVN will connect to one of the larger nursing homes, the Valley View Nursing Home in Belleville, Mifflin County, so we can pilot how we might be able to connect to these nursing homes and provide health services through the JVN.

An exploration of the demographics of patients who used imaging services at Lewistown Hospital also shows a preponderance of people over the age 65 benefiting from these services. In 2005, 37.1 % of imaging clients were age 65 or older. Another example of increased usage of medical care by elderly can be seen by examining admissions to Lewistown Hospital home health care/ hospice unit (Table 5).

Table 5: Patient Admissions Classified by Age Groups for 2004

Age Groups	0-18	19-44	45-64	65-74	75-84	85-100	TOTAL
Hospice	2	7	14	38	61	47	169
Home Care	18	60	97	119	165	97	556

69 % of home care admissions were age 65 or older.

The proposed Juniata Valley Network will help us address the needs of this elderly population. The fact that elderly patients use imaging services in twice the proportion of their population means that these elderly are more likely to have to drive to an imaging facility in the Juniata Valley to get hard copy images. With the JVN's ability to connect to multiple PACS located at multiple health care facilities we can help reduce the amount of driving our elderly will have to do which is a great benefit for them, and for other drivers on the road.

Mifflin County has roughly double the population of Juniata County and a higher percentage of citizens at the poverty level (Table 6).

Table 6: Population below Poverty Levels

<u>County</u>	<u>Population</u>	<u>% below Poverty</u>	<u>% Children below 18 in poverty</u>	<u>% eligible for M.A.</u>
Mifflin	46,435	11.4	19.8	15.2
Juniata	22,821	9.5	12	8.2
Huntingdon	45,947	11.3	14.6	
Fulton	14,673	10.8	15.2	
State Average		11	16.5	

Mifflin County has 12.5 percent of the population with income below the poverty line and 19.8 percent of children under 18 living in poverty. The general poverty level compares to the state average poverty rate of 11 percent and the national average of 11.3 percent while the under 18 poverty level compares with the state average of 16.5 percent and the national average of 18.9 percent.

The entire service area of the JVN contains primarily White persons not of Hispanic origin. Juniata County has seen a growth in the Hispanic population due to an influx of workers at Empire Kosher. This group now represents 1.6 percent of the population of Juniata County and is believed to be growing (Table 7). In Huntingdon County we do have a significant African American community, mostly located in Mount Union, where African Americans had migrated in the 1920's to work in the brick factories that **used** to surround Mount Union and make this a viable community.

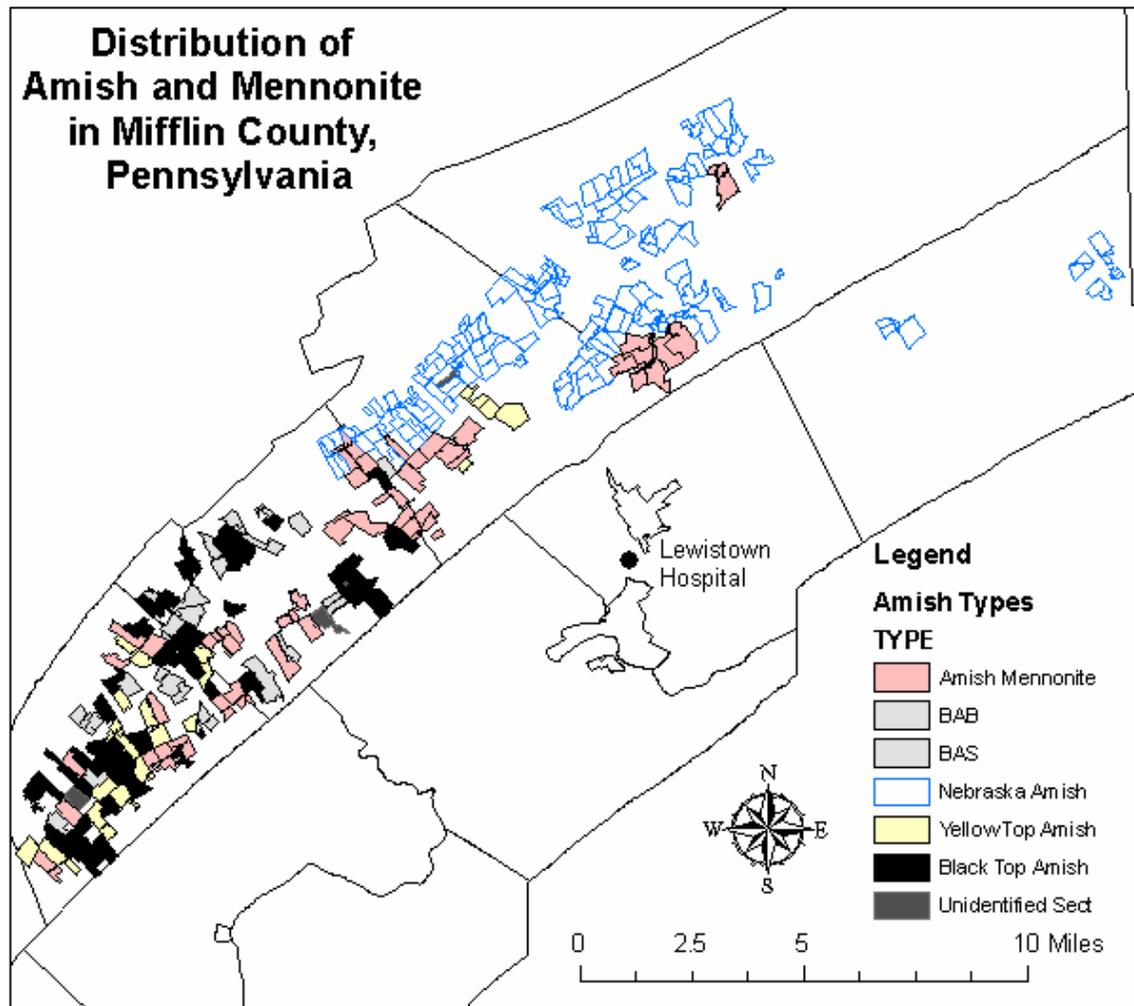
Table 7: Race and Ethnicity

<u>US Census 2000</u>	<u>Mifflin</u>	<u>Juniata</u>	<u>Huntingdon</u>	<u>Fulton</u>	<u>Pennsylvania</u>
White	98.50%	98.10%	93.70%	98.80%	85.40%
Black or African American	0.50%	0.40%	5.50%	0.70%	10.00%
American Indian and Alaska Native	0.10%	0.10%	0.10%	0.10%	0.10%
Asian persons	0.30%	0.20%	0.30%	0.10%	1.80%
White persons, not of Hispanic/Latino origin	98.20%	97.30%	92.50%	98.40%	84.10%
Persons of Hispanic or Latino origin	0.60%	1.60%	1.20%	0.50%	3.20%

There is also a large Amish community within the service area of the JVN and many of these families, while self-supporting, do not have health insurance. Many of the Amish are unable to pay for medical services and are covered under charity care by the hospital. Amish do not participate in government programs such as Medical Assistance nor do they purchase any form of health insurance. The Amish community shuns any government program for religious reasons and their children all go to private Amish schools. Transportation is a major problem for this community if they have to travel long distances due to the distance range of their horse and buggies.

Figure 2 below shows the distribution of the Amish community the area that is known as the Big Valley in Mifflin County. This area is also a federally recognized Medically Underserved Area. Spatial data such as this are not available for the balance of the JVN region nor does this data reflect the large distribution of the Amish-Mennonite group known as the Black Car Mennonite in the southern portion of Mifflin County and in other counties within the region.

Figure 2: Map of Amish and Mennonite farms in the Big Valley



While there are no exact figures for the Amish population we believe that some of the figures from the 2000 Census are indicative of the minimum population levels of the Amish community in Mifflin County. Two factors are well-known about this community. One is that they do not receive schooling past the 8th grade and the second is that they primarily speak a variation of German at home. For Mifflin/Juniata the percentage of people who had not received education past the 8th grade was 8.9/10.1 percent respectively while the percentage of people who did not speak English at home was 7.3/6.2 percent respectively. Considering that over 99 percent of the total population of both counties was born in the USA this indicates to us that we have an Amish population between 6 to 10 percent. In summary, many of the Amish are poor; they do not have health care insurance, and have transportation problems in getting to and from

health care facilities. The JVN has one health care facility in the heart of this community and there is also an emerging proposal to open a free health clinic in this community at the Big Valley Medical Clinic where Lewistown does lab test and also has an affiliated pharmacy located there. Currently there are no physicians at this location which is another reason that this location is being considered for a free clinic. The next topic of discussion is also related to why a free clinic is being considered for this region.

Health Insurance Availability

The US Census Experimental Small Area Health Insurance Estimates by County for the year 2000 estimates the following rates of uninsured people in the JVN region:

Mifflin County	10.7%
Juniata County	11.0 %
Huntingdon County	10.6 %
Fulton County	8.9 %

The Behavioral Risk Factor Surveillance System (BRFSS) conducted in 2004 in Mifflin and Juniata Counties indicated that 16 % of the population of in these two counties did not have health care insurance. This is slightly above the national average of 15.8 %. 11 % of the people surveyed indicated they did not have a personal health care provider and 9 % indicated they were unable to get medical care due to costs within the last year.

Huntingdon County also has a significant population that is without health insurance coverage. The estimate for uninsured population in Huntingdon County between the age of 18 and 64 is approximately 24 percent according to the latest Pennsylvania Medical Society report (2002).

Significant progress has been made by J.C. Blair Memorial Hospital to enroll eligible children and adults into the Pennsylvania Child Health Insurance Program (CHIP) and adultBasic Program. As of March, 2003 in Huntingdon County, 268 individuals were enrolled in adultBasic and 658 children were enrolled in CHIP (PA Department of Insurance, March, 2003).

Staff and providers for J.C. Blair Memorial Hospital report seeing an increase in the number of persons who cannot pay for their medical services, or who are “self-pay.” These persons are either 1) employed, but lack health insurance coverage; or 2) have insurance coverage but cannot pay for their deductible or co-payment. Employment trends in the county (the third highest unemployment rate in the state) and this observation suggest that the percentage of uninsured persons estimated for Huntingdon County may represent only persons who are “chronically” uninsured. The actual proportion of persons who do not have health insurance coverage at any point in time will probably be higher.

Currently, the single community acute care facility in Huntingdon County, J.C. Blair Memorial Hospital, has a significant fiscal challenge of meeting its community obligations and remaining financially solvent. Approximately 4 to 5 percent of total reimbursed revenues are typically provided as uncompensated care each year. The level

of uncompensated care has been higher in each subsequent year since 1996. A high proportion of its uncompensated care is due in part to the unavailability of primary care physicians in outlying communities within the county. Emergent care is handled all too often in the emergency room because primary care professionals are simply unavailable to those without insurance. That is to say, there are too few professionals to meet patient demands.

These data sources provide us with reasonable estimates of health insurance coverage in our community and the impact that this has on local health care providers. The JVN will support non-profit health care clinics and the hospitals that provide free health services to this segment of our population.

Local Economic Conditions

In terms of the local economy, the region has consistently experienced high unemployment rates peaking at 8.4 % back in 2002 in Huntingdon County. Several large employers closed manufacturing operations within the last two years resulting in permanent job losses in our community. Due to the combined factors of low income and high unemployment in the area, the availability of health insurance for many patients is a significant issue.

Table 8: Unemployment Trends in the JVN Region

Name	2001	2002	2003	2004	2005	Median Household Income
Pennsylvania	4.8	5.6	5.7	5.4	5	\$43,714
Fulton County	6	6.6	6	4.9	4.3	\$40,198
Huntingdon County	7.6	8.4	7.7	6.9	6	\$35,828
Juniata County	4.7	5.1	5.1	4.6	4.2	\$40,162
Mifflin County	6.2	7.5	6.8	6.7	5.8	\$35,392

Both Mifflin County and Huntingdon County still have higher than average unemployment than the state average unemployment. This is also reflected in the lower than state average median household income.

A review of the economic downturns in Mifflin County is reflective of what is happening throughout the region especially considering that citizens of the other nearby counties used to commute to Mifflin County to work. Many of our long time industrial operations have shut down or reduced operations. In February 2004, Lear Corp. shut its Lewistown plant, which made automotive carpeting, leaving 308 employees out of work. Lear, which operates plants in 34 countries, transferred the work that was done at Lewistown to other places, primarily Canada. The same month, Standard Steel, closed its steel ring mill. One of 49 U.S. steel companies that have declared bankruptcy since 1997, Standard Steel struggles with overseas competition, and while it continues to operate, 109 workers lost their jobs at the ring mill. Standard Steel also recently went through a Chapter 11 bankruptcy and changed ownership. As a result of this process 230 retirees lost the medical benefits they were supposed to be eligible for. The costs of having to self-insure

are often as high as \$5,000 a year. This added expense too many of our citizens places an additional strain on the local economy.

Mann Edge Tool Co., a manufacturer of striking tools that opened in the late 1800's and employed as many as 350 people 20 years ago, closed its Water Street plant in September of 2003, and laid off the remaining 49 workers. Last November, Guardian Industries, a glass manufacturer, closed its Lewistown plant, and laid off 69 workers sending the jobs to Mexico. Even our primary agricultural industry is under siege as many of our dairy farms are going bankrupt due to low prices for milk that do not cover their production costs. And then in 2007 Case New Holland Tractor, a manufacturer of farming implements, decided to close laying off 600 workers in Mifflin County. This has dealt a very severe economic blow to the hard working people of the Big Valley where the plant was located.

These plant closures have meant permanent job loses in our community as no other industrial operations have moved in to takeover the abandoned manufacturing facilities. An obvious indicator of the economic picture is that although we have had several plant closings we have had some new retail operations open in our community. Unfortunately, these are not high-end retailers but discount retailers such as the Dollar Store, Dollar General, and Ollie's Salvage and Discount Warehouse. Clearly the picture of our community has seen by outside economic forces is one where there is a need for low priced commodities. And the final blow is that the jobs offered by these new firms are primarily minimum wage with no medical benefits or if medical benefits are offered the costs sometimes can consume more then 50 % of the worker's income.

The overall economic condition of the region is very, very poor and we hope that the JVN will spur some economic development by showing to potential employers that we do have high tech resources for health care. We believe this will help induce some of these potential employers to locate to our region. The one troubling statistic in all of this is that instead of a manufacturing facility being the number one employer in Mifflin County it is the hospital, followed closely by the school district, and then county government. This was not the case twenty years ago.

Community Health Partnerships

The Pennsylvania State Health Improvement Plan (SHIP_ supports the two overarching goals of the U.S. Public Health Service's Healthy People 2010 Health Status Objectives for the Nation:

- To increase the quality and the years of healthy life
- To eliminate health disparities

U.S. Surgeon General David Satcher, M.D. identified ten Leading Health Indicators described in Healthy People 2010. Each of the Leading Health Indicators has several Healthy People 2010 Target Objectives associated with it, which can be used to help individuals and communities target actions to improve health and track their success. The Leading Health Indicators are:

Physical Activity
 Tobacco Use
 Responsible Sexual Behavior
 Mental Health
 Environmental Quality

Overweight/Obesity
 Immunization
 Substance Abuse
 Injury and Violence
 Access to Health Care

There are two primary local SHIP partnerships in the JVN that are focused on improving these health indicators. The Mifflin Juniata Partners Advancing Tomorrows Health (MJ-PATH) and the Huntingdon County Healthy Communities Partnership (HCHCP). MJ-PATH has been conducting monthly community meetings since May, 2003. Approximately 16 community organizations have been involved in this process to date, including Lewistown Hospital. Our community has organized in an attempt to pool community resources to address some of the health issues we face. Both MJ-PATH and HCHCP have shown strong support for our project and both have provided a letter of support (Appendix A). In addition the Mifflin Juniata United Way has also provided a letter of support for this project. Both of these local SHIP partnerships are focusing a lot of their efforts at reaching school age children with wellness and health education programs. The proposed JVN network will enable them to efficiently provide these programs throughout the entire service area.

Health Statistics

School health data indicates some of the health issues with our school children. As indicated in Table 9, Mifflin County has a higher percentage then the state average of children with asthma while Fulton County has a higher percentage then the state average of children with diabetes. By using the JVN, local health care providers and the local SHIP consortiums can target health education directly at those schools with higher rates of incidents of asthma and diabetes.

Table 9: School health (2003-2004 school year)

	Mifflin	Juniata	Huntingdon	Fulton	Pennsylvania
Students with Asthma	12.48%	9.05%	6.97%	7.91%	9.84%
Students with Diabetes	0.29%	0.33%	0.21%	0.47%	0.30%
Average daily enrollment	6,442	3,381	6,141	2,363	
Full Time Certified School Nurses	6	3	7	3	

* Source: Pennsylvania Department of Health County and State 2006 Profiles

Table 9 also reveals a startling statistic. There are only 19 Certified School Nurses managing 51 School Based Health Clinics. This indicates that each CSN serves an average of 964 students. This is not a good ratio. By linking to the JVN these oversubscribed CSN's can reach out for help to provide wellness and health education that they frankly hardly have the time to do themselves. These educational programs can have a positive impact on the health and wellness of the children in our community and would not be possible without the JVN.

Another leading indicator of the health status of our communities is the Causes of Death as shown in Table 10.

Table 10: Causes of Death in Service Area

Causes of Death	Mifflin	Juniata	Huntingdon	Fulton	Pennsylvania	National	HP 2010 Goal
Heart disease	259.1	217.2	247.8	222.2	247.1	222.7	166
Cancer	192.5	176.4	191.2	170	198.7	187.4	160
Stroke	56.1	43.9	50.7	26.9	53.3	51.1	48
C.L.R.D **	44.5	38.6	36.3	36.1	39.3	42.2	60
Diabetes mellitus	26.1	19.1	19.5	34.3	24.4	24.8	25

* Source: Pennsylvania Department of Health County and State 2006 Profiles and National Vital Statistics Reports, Vol. 54, June 28, 2006.

** Chronic lower respiratory disease

*** Accidents are the 5th leading cause of death but are not reported here

**** Rates per 100,000 people

Diseases of the heart and stroke are the number #1 and #3 causes of death in our communities. Mifflin County and Huntingdon County both have higher than state and national averages of diseases of the heart. Mifflin County has a higher than state and national average of stroke cases. The rural populations in our service area are faced with certain behaviors, attitudes, and access challenges that may contribute to their heightened risks of coronary heart disease and stroke. Among these include a comparatively decreased rate of lifestyle change from behaviors associated with heart disease such as smoking, high-fat diets, sedentary lifestyle, and decreased perception of heart disease risk especially among older rural women. Other factors include long travel distances to comprehensive post discharge care for heart failure, limited access to screening services, variances in utilization of antithrombotic therapy, availability of technology and specialists, and limited access to cardiac rehabilitation services. By increasing the availability of the network to connect clinical specialists to remote health care facilities the JVN hopes to reduce some of these risk factors.

Diabetes is a very prevalent disease in our region and is the sixth leading cause of death in the region. Fulton County's statistics are quite alarming. This county has a very high death rate for diabetes and coupled with the very high rate of diabetes in school children this is a matter of some concern. The Fulton County Medical Center began to provide diabetes education in 2003 through its Home Health Care Department. In 2005 the FCMC Diabetes Education Department was established. The Diabetes Education Department is vested in becoming the primary provider of diabetes education and instruction for Fulton County and surrounding areas. FCMC will be collaborating with Tri-State Community Health Center (a 501c3 organization receiving funds through section 3330 of the U.S. Dept. of Health & Human Services), all independent physician offices in Fulton County along with local school districts. Collaboration between FCMC and the local schools will also play an important role in the prevention and education of

diabetes as education materials are provided not only to educators but to all students and their families.

Through the JVN the other health care providers that have more resources will be able to share their diabetes educational programs via the JVN with FCMC. In addition, the JVN will provide FCMC with a link to the local schools in their county.

Another important issue we face is that we do not have an endocrinologist in our service area. Diabetics must face lengthy commutes from 30 to 125 miles depending on which direction they go to see a specialist. In 2002 Lewistown Hospital launched an innovative Diabetes Resource Center to provide diabetes education to the community. A support group was also formed. The new center has been recently recognized by the American Diabetes Association as meeting the national standards for diabetes self-management education and now has two dedicated staff. These staff can be a resource throughout the region if linked to other providers via the JVN.

Obesity is a primary indicator of future health problems. As part of the early collaboration between the Mifflin Juniata United Way and the Mifflin County Communities That Care organization in 2003 a survey was conducted of Mifflin County residents on diet and exercise that would relate to obesity in our community. The survey was mailed out with a United Way mailing and 171 responses were received. 96 percent of respondents indicated that they knew what a healthy diet would be for someone in their age group. 34 percent indicated that they do not read grocery store labels when buying food. 36 percent of the survey respondents also indicated that they do not eat a balanced diet. The data indicates we have a disconnect between what people know to be healthy and what they actually do eat.

Our citizens also reported they do not exercise regularly. Only 23 percent of adults exercise at least 45 minutes 3 to 4 times a week. 41 percent of teenagers reported exercising this much. 39 percent of adults and 42 percent of teenagers were aware of what local exercise activities are available to them. The Behavioral Risk Factor Surveillance System (BRFSS) survey indicated that 27.7 percent of adults did not participate in any kind of physical activity at all.

All of these factors lead to a risk of cardiac disease due to obesity and lack of physical activity. Our proposed JVN, while not directly affecting such issues as diet and exercise, will improve our ability to provide health and wellness educational programming to our community and help educate them on how to avoid these issues.

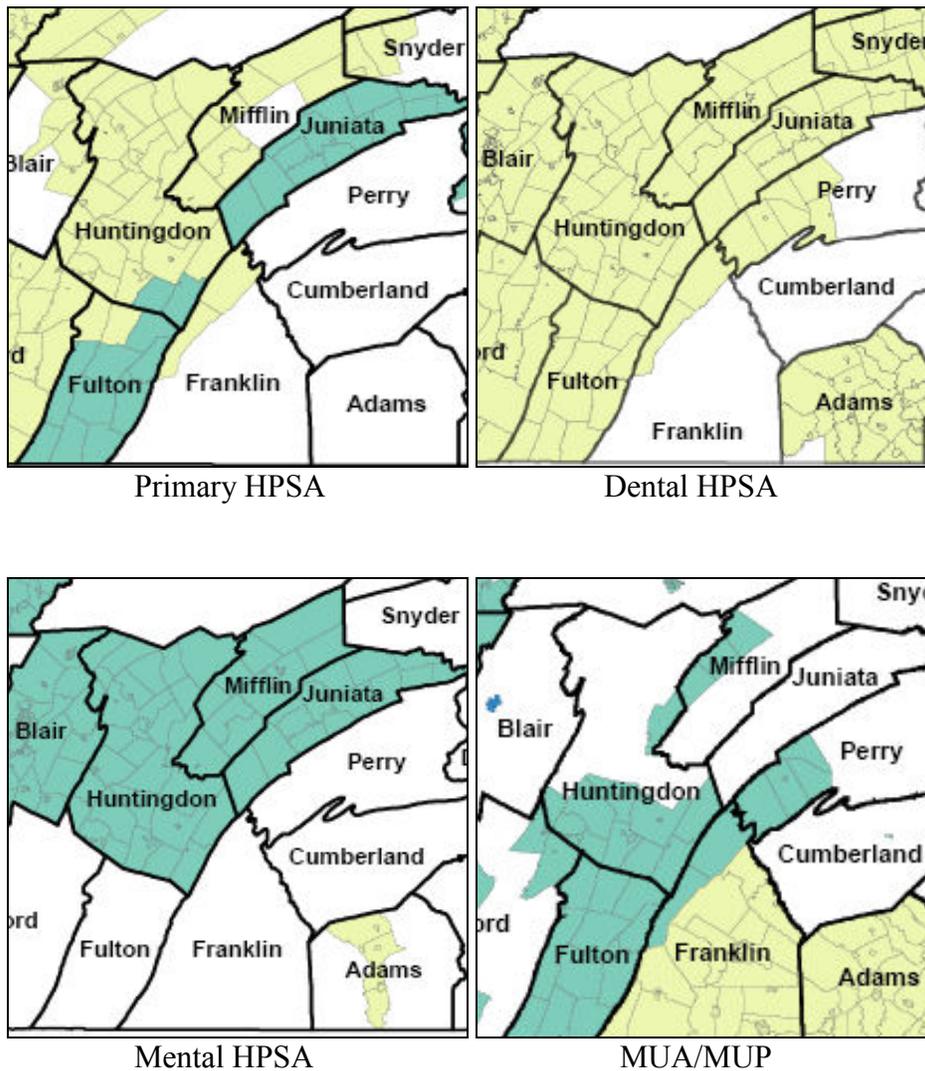
Medical Staffing Shortages

The health provider workforce in our rural communities reflects the difficulties in recruitment and retention that health care facilities face in our region. Rural physicians are professionally, and often physically, isolated. This isolation results in inadequate access to information and services available in secondary and tertiary level institutions. Such conditions create a barrier to optimal patient care and to the professional satisfaction that could potentially keep physicians practicing in the rural primary care setting. The

challenge of attracting doctors to rural areas is well documented. Physicians are hesitant to practice rural medicine because of the many obstacles inherent to the job. There is no one to discuss a case with or help confirm a diagnosis. In addition, it is difficult to find time to leave the typical rural practice to attend educational sessions.

The JVN service area has a shortage of health professionals in almost all categories. The maps shown in Figure 3 on the following page indicate the areas that are suffering shortages. Almost the entire service area is a Primary Health Health Professional Shortage Area (HPSA), all the area is a Dental HPSA, all but Fulton County is a Mental HPSA, and there are several Medically Underserved Areas/Populations. We need more doctors, dentists, psychologists and psychiatrists to meet the health needs of our rural community. The JVN offers hope of an alternative solution via telemedicine. But first we must build the network to enable us to even consider these solutions to our medical staff shortage problems.

Figure 3: Maps showing medical staff shortage population and geographic areas



* Source: Pennsylvania State Department of Health, 12/31/2006

Goals and Objectives

The Juniata Valley Network (JVN) has several goals and objectives for the proposed network. The overall goal is to create a new telecommunications network to tie the Juniata Valley health care communities of Juniata, Mifflin, Huntingdon, and Fulton Counties together. The principal hospitals will be Lewistown Hospital, JC Blair Memorial Hospital, Tyrone Hospital, and the Fulton County Medical Center. These hospitals will join forces with the Tuscarora Intermediate Unit 11, the Mifflin County Board of Commissioners, and the Mifflin County School District to build a robust network that will provide the infrastructure needed to accomplish the eight specific objectives listed below.

These eight objectives are discussed in detail below and they are also discussed in the Work Plan and Schedule section of this narrative:

Objective 1. Utilize the JVN to share patient Electronic Medical Records (EMR) between health care facilities.

The JVN will permit health care facilities to access a patient's EMR where such records exist. Not all health care facilities in the proposed JVN currently have EMR for their patients. Lewistown Hospital, JC Blair Memorial Hospital, Tyrone Hospital, and Fulton County Medical Center all have EMR's. Lewistown Hospital uses Cerner to manage all patient records and these records can be made available to local physicians through the JVN. A similar process is possible at JC Blair, Tyrone, and Fulton.

The rural health clinics of the Family Health Associates (FHA) are preparing a USDA Distance Learning and Telemedicine Grant/Loan application for fiscal 2007 that will fund the creation of EMR's for all patients that are seen at any of the five rural health clinics in the FHA network. With the newly revised USDA guidelines for funding EMR's this now becomes easier to get funding for EMR's. A section from the newly and completely overhauled USDA guidelines illustrates this:

In 2007, entire EMR systems are fully eligible under the Combination Loan/Grant Program. This is partly because "on campus" facilities are an eligible purpose under the Combo Program. Also, we implement the DLT Loan Programs (Combo and 100% Loan) differently than the 100% Grant Program. In the Loan Programs, features that are not exclusively medical but that are indirectly related to and very useful in the delivery of medical care are not considered administrative costs of the applicant. Thus a feature such as scheduling is an eligible purpose under the Combo Program. Another feature of the Combo Program is that it is operated on a first-come, first-served basis, not as a competition. Because EMR is a better fit in the Combo Program, and in support of the President's Electronic Medical Records Initiative, we have introduced special grant provisions for EMR in the 2007 Combo Program.

This change in the USDA Distance Learning and Telemedicine program opens up new funding opportunities for health care facilities to implement EMR's. The JVN will give them the means to share this vital patient information with other providers.

Objective 2. Utilize the JVN for telemedicine, teleradiology and telecardiology applications and enable sharing of images stored in the various health care facilities Picture Archiving and Communication Systems (PACS).

The JVN will allow for the high speed broadband connections that are needed for transmitting large files between health care facilities. Lewistown Hospital has received three USDA Distance Learning and Telemedicine grants in the last three years to develop telemedicine applications in EMR's, Home Health Care, and teleradiology and telecardiology. USDA pays for software and hardware for these applications but specifically excludes any telecommunication costs. Again we reference the USDA DLT application guidelines:

Acquiring, installing or constructing telecommunications transmission facilities is an ineligible expense for USDA DLT funding. Remember, although DLT projects are intended to deliver education or medicine between remote sites via telecommunications, they do not cover the transmissions facilities themselves. DLT eligible purposes end at the terminal equipment that connects to a transmission facility.

The FCC Rural Health Care Pilot program is therefore essential to the overall goal of incorporating the funded USDA telemedicine applications into reality.

Lewistown Hospital is not the only health care facility wanting to do telemedicine. Our three major hospital partners all have existing telemedicine applications up and running. The smaller clinics are also working on telemedicine applications. For example, the Federally Qualified Health Centers (FQHC) at the Broad Top Area Medical Center and Huntingdon Family Practice (BTAMC/HFP) participates as a training site with Saint Francis University and Lock Haven University Physician Assistant programs and is an active member of the PA Forum. BTAMC is partnering with the Center of Excellence for Remote and Medically Under-Served Areas (CERMUSA), Saint Francis University, Huntingdon County Wellness Improvement Network and System (WINS), Huntingdon County EMS Partnership, Southern Allegheny EMS, Community Integrated Service Network of Pennsylvania (CISNP), Huntingdon County Telehealth Work Group, Huntingdon County Chamber of Commerce Technical Committee, and Home Nursing Agency developing a Telehealth system capable of:

- Distance Learning for education of health students, EMS personnel, residents, providers and patients.
- Clinical Services for examination of patients at a distant site by Primary Care Physicians, Emergency Room Physicians and Consulting Physicians.
- Clinical Translation Services
- Transmission of imaging studies.

- Supervision of non-physician providers.
- Case management of patients with chronic illness in coordination with EMS and Home Nursing.
- Conferencing or networking to participation in meetings.

The JVN does not control or dictate what telemedicine activities individual health care facilities utilize; the JVN just provides the backbone they need to make it happen. Of course, every health care facility on the JVN will have access to telemedicine resources made available from the four major hospitals.

Objective 3. Pilot test applications for real time medical consults between practitioners at different health care facilities.

The JVN will enable health care facilities to interconnect to other health care facilities both within the JVN and beyond. There are many possible pilot applications that the various health care facilities intend to test. One of these is to use the JVN to video conference and connect to infectious disease specialists at Hershey Medical Center (HMC). Currently Lewistown Hospital has an agreement with HMC to permit these specialists to consult with the hospital. However they are not always on site in Mifflin County. If a special emergency case comes up then the physician at the hospital can connect with the specialist at HMC. The connection will be made through the JVN to the TIU 11 video bridging equipment and from there out to the Internet where it will be possible to connect to HMC via a Virtual Private Network connection. While HMC is not part of the JVN, the JVN will enable the hospital to use the JVN to reach outside the JVN to HMC.

Another application that is being investigated is to have the major hospitals in the region work together to recruit top notch medical specialists that would be shared amongst the facilities. If this specialist is at JC Blair, and an emergency occurs at Lewistown Hospital, the specialist would be able to video conference back to Lewistown Hospital and through a video teleconsultation would be able to assist with the emergency.

Without the JVN these applications would not be feasible.

Objective 4. Improve the ability for physicians, registered nurses, and advanced practice nurses to acquire Continuing Medical Education (CME) and Continuing Education (CE) experiences that are required to maintain their professional licenses in the State of Pennsylvania.

The State of Pennsylvania is responsible for licensing of medical professionals practicing in Pennsylvania. Physicians are required under the Pennsylvania State Board of Medicine within Chapter 16.19 to receive continuing medical education. Prior to January 1st, 2007, physicians were required to receive 25 hours of CME in the previous biennial period. Effective January 1, 2007, physicians are required to receive 100 hours of CME in the previous biennial period. This change in Pennsylvania Medical Code has quadrupled the CME requirement and has placed a large burden on rural physicians who do not have ready access to CME opportunities.

In order for our rural physicians to access many CME opportunities they have to travel outside the Juniata Valley to take course and workshops. The travel to a major city, such as Philadelphia, can take an entire day during which they are unable to practice medicine. Many younger physicians see this as a burden and as such take this fact into consideration when deciding where to locate a new practice. The Juniata Valley has a long history of major problems with retention and recruitment of new physicians.

Physicians are not the only ones with legal requirements for continuing education. In June 2006, Pennsylvania Gov. Edward G. Rendell signed the mandatory relicensure bill. Pennsylvania now requires continuing education (CE) in order to renew a nursing license. Pennsylvania stipulates 30 hours each 2-year renewal period. Advanced practice nurses must fulfill additional requirements related to their licenses.

There are a lot more nurses than physicians in the Juniata Valley. From nurses in the hospital to nurses in rural health clinics to rural school nurses this new requirement for continuing education is going to have a major impact on the ability for the region to retain nurses. All the hospitals in the region are facing significant retention issues. At Lewistown Hospital, the lack of staff nurses made it necessary to hire contract nurses at a cost that was threatening the fiscal viability of the hospital. This increased financial burden was placing the hospital in jeopardy of closure. Lewistown responded with the creation of the Lewistown Hospital School of Nursing so that the hospital could “grow” their own nurses pulled from local residents. The School of Nursing should be able to provide some of the CE that local community nurses need to keep their licenses. The new requirement for mandatory continuing education is going to cause another crisis that all the hospitals and clinics will now have to deal with. Just like physicians, nurses will see this as an obstacle to acquiring the necessary education and will then reasonably use this as a reason to not practice in our rural region.

The proposed Juniata Valley Network will provide every member site with sufficient bandwidth to conduct live video conferencing educational seminars without threatening the bandwidth needed for other medical purposes. Imagine a school nurse at a remote rural school in Huntingdon County simply taking two hours after school lets out to acquire training on new methods in determining indicators of diabetes in elementary school children. Instead of missing two full days of school to travel to Philadelphia to take a seminar, he or she can simply turn on their video conferencing equipment and connect to the live training seminar via the JVN and join his colleagues from across the mountainous region. The savings to the school district are very significant as they do not have to pay any travel expenses or wages for the time spent traveling. The impact on retention is also significant as the ability to acquire the necessary training without the burden of leaving our rustic community will serve to attract professionals to relocate to our region.

Objective 5. Improve the capability to broadcast medical educational programming to local schools in the region. These programs would include educational content on diabetes, nutrition, obesity, and asthma.

The various health care facilities will use the JVN to provide health and wellness educational programming directly to all of the schools located in the TIU 11 region. These programs will be targeted towards identified health concerns of the student population and their families. The partnership with the Mifflin School District is key in this objective. The Mifflin County School District has two state of the art studio broadcasting facilities located at the Indian Valley High School and at Lewistown High School that were built to support a new media program. The media program is designed to examine, analyze, and develop effective communication skills in order to produce effective and educational media for both the school and community. Within the program, students will learn the importance to work on a team and to produce material for both public and private viewing. Students will learn about the workings and procedures of television and stage production. Students are proficient in computer skills using software that combines a variety of multimedia including: text, still images, audio, video and web publishing. This program is designed to foster problem solving skills, promote community spirit, citizenship, and cooperative learning.

Health care in the region can utilize this media program and the students. With the students help Lewistown Hospital staff can record educational programming here and we can also live broadcast educational programming throughout the region from these facilities. Other members of the JVN can also broadcast from their own video conferencing facilities and the resources of the TIU 11 could also be used. The JVN will be connected to the outside Internet world (including Internet2) via a GIG E connection which will enable the JVN to accept programming from any outside source. This will really open up the things that we can do to help educate our youth about health issues that will affect their long term health outcomes.

Objective 6. Pilot test the use of the JVN to allow for critical backup of health care facility data at another health care facility for disaster recovery purposes.

One of the concerns that all the health care facilities have is the backup and security of electronic medical records and PACS imaging data. The JVN will allow the facilities to explore options for automated disaster recovery by backing up critical files across the JVN at a different facility. In the event of a catastrophic incident at one facility the data would be protected at another facility.

Objective 7. Complete an initial network planning study to study the costs and feasibility of creating a wireless broadband health care network in the entire JVN region that could be accessed by home health care nurses and paramedics.

There is a serious need for us to be able to connect to clinical staff that are located throughout the region. Home health care is the primary application for this. Lewistown Hospital did receive a USDA DLT grant to purchase all of the equipment and software to setup our home health care nurses so they could connect back to the hospital while in the

field. Unfortunately, the available broadband coverage from suppliers such as Verizon and Cingular simply do not provide the coverage that is needed in our rural community. If everyone lived next to US Highway 322 we would be okay but we have home health care clients spread out of several hundred square miles. These nurses travel everywhere in the region and the commercial signals are simply not available to support them. The only solution is to create our own network. Other home health care agencies operating in the region have similar issues.

We also want to enable the ability for ambulances and paramedics to be able to connect to the Emergency Departments when they are responding to emergency cases in the field. You may recall watching the TV show Emergency 51 back in 1975 where the paramedic's transmitted EKG readings back to the Emergency Room so the ER doctor could tell the paramedics what to do. That show did not seem like science fiction back then but here we are in the Juniata Valley thirty-two years later and it is science fiction without the broadband network in place to support it. We feel that our rural citizens should be able to have access to the same level of medical care that was available back in the 1970's to urban areas. It is time we caught up.

The proposed network study will enable us to fully understand the costs and feasibility of building a network and will give us the engineering network design that we need to pursue additional funding from local, state, and Federal sources. In addition to hiring an engineering firm to conduct the study, information technology staff time from each of the major hospitals and the TIU 11 will be required to complete the study.

Objective 8. Increase the interaction between local health care facilities, the Lewistown Hospital School of Nursing, and School Based Health Clinics.

The Lewistown Hospital School of Nursing (LHSN) assigns students to a variety of health clinics for practical clinical experience. The JVN is planning to pilot the use of the new network to enable teleconsults between nursing faculty and students who are working in School Based Health Clinics (SBHC). This effort will aid the SBHC Certified School Nurses (CSN) to meet the health needs of their students, provide the students with practical experience, and permit the nursing faculty to engage in Nursing Practice which is required to keep their licenses.⁴ Currently the LHSN has been having great difficulties placing students in pediatric situations. The school clinics offer an excellent pediatric location for these students. The LHSN needs to place at least ten students year round for 9 hours a week for 15 weeks. This would equal 1,350 hours of free clinical support for the schools during a given 15 week period.

The LHSN and the TIU 11 are also planning to submit a USDA Distance Learning and Telemedicine grant by June 11th, 2007, to support this project and purchase the video conferencing equipment that will be needed at each SBHC and the LHSN. Another pilot program is also being proposed where the SBHC will open their doors to the community after school hours to provide free clinical services to local residents. This objective is

⁴ The LHSN is seeking approval from the Pennsylvania State Board of Nursing to approve these teleconsult situations for Faculty Practice and supervision requirements for student nurses.

another excellent example of how the JVN and the TIU 11 are integrating their networks to serve the health needs of the community.

The JVN will directly impact the students in these schools. The story below illustrates one mother's comments on how the JVN will affect her son:

My son Sam is 10 years old and a Type 1 insulin dependent diabetic. He attends Juniata Valley Elementary School. There are only 2 schools in the Juniata Valley School District located on the same campus in Alexandria. There is one school nurse for approximately 800 students.

Sam is required to test his blood sugar every day before lunch and adjust his insulin both before and after lunch. He works closely with the school nurse in making these adjustments. But this year, the school nurse is in the high school when Sam has his scheduled lunch. So he goes to the nurse's office and tests on his own, writes down his number, adjusts his insulin and goes to lunch. After lunch, the nurse is in the elementary school, so he works with her to make any additional adjustments after lunch.

This situation makes the school nurse very nervous. She has petitioned the school board to hire an aide for her, but there is no money in the budget to support an aide. So she takes a risk every day when she is not available to monitor Sam's diabetes appropriately.

If the technology proposed in this grant would be available, Sam could be visually communicating with the nurse even when she is in another building. We would all feel more secure in knowing that Sam was being properly monitored.

The JVN would also permit Sam to connect to a nurse anywhere within the JVN in case his local school nurse was not in that day.

Telecommunication System Plan

The proposed telecommunications network is the result of a combined effort of four primary entities; The Juniata Valley Network (JVN), the Tuscarora Intermediate Unit 11 (TIU 11), Mifflin County Board of Commissioners (MCBOC), and the Mifflin County School District (MCSD). All four entities are partnering together to build a very complex integrated telecommunications network that builds on the efforts of each of the partners. The rural Juniata Valley region could not sustain four individual networks so this partnership is a fundamental prerequisite for a sustainable network.

The TIU 11 has long been interested in connecting schools with high speed broadband in their service area which contains Mifflin, Juniata, Fulton, and Huntingdon Counties. This includes 9 school districts and at least 51 individual school buildings. It is important to note that for the purposes of the FCC Rural Health Care Pilot program this means that the TIU 11 is also connecting to 51 rural School Based Health Clinics.

In 2007 they received a multi-year grant from the Commonwealth of Pennsylvania. This grant program is called Act 183 E-Fund and represents a non-Federal match for the FCC Rural Health Care Pilot program. These funds will be expended over the next two years. The TIU 11 is leveraging the FCC E-Rate funds available to the TIU 11 by adding \$648,000 of funds from Act 183 to build a brand new network. This network is shown in Figure 4. The TIU 11 network is the foundation upon which additional connections can be made throughout the communities of the Juniata Valley.

The TIU 11 administration building is located in the heart of the JVN Region surrounded by corn fields. In this innocuous looking building is a bonanza of technical equipment and highly trained professional information technology staff to manage and maintain it. The TIU 11 has served as a location for video bridging equipment that has been used by schools in the region. Other organizations outside the region have also used the TIU 11 equipment. The TIU 11 often absorbs the costs of video bridging but when they do charge it is at rate that is 60 % below commercial video bridging services. In order for the health care facilities to use the TIU 11 video conferencing bridge for telemedicine applications the current video bridging equipment needs to be upgraded to high resolution equipment. The TIU 11 will serve as the networks video bridge central facility and as such is a key element on the overall network as needed by health care professionals in the service area. Without the new video bridging equipment there will be no network. The increased traffic that will be channeled through the TIU 11 will also require an additional GIG E fiber connection to handle the increased bandwidth resulting from the use of high resolution video by the health care facilities.

The TIU 11, and the school districts in the TIU 11, does have some existing high speed network connections to many school buildings in the various districts. These are not part of the new network build the TIU 11 has planned and as such the ongoing costs for these existing connections are not included in the project budget but will be used to connect to the School Based Health Clinics in those buildings.

The TIU 11 is contracting with Sting Communications to deploy the network shown in Figure 4. This network deployment provides direct benefit to the Juniata Valley Network as the infrastructure capital investment made by Sting for the TIU 11 network overlays the JVN and translates into significantly reduced costs to connect JVN health care facilities.

Some examples of this network interconnectivity are as follows:

- 1) Sting is opening up a local Fiber POP in Huntingdon County.
- 2) Huntingdon HS is a short distance from JC Blair Hospital. This allows vastly reduced fiber build out costs to that hospital.
- 3) New towers used in TIU 11 wireless build out such as Jacks Mountain, Loop Lookout, and Hilltop Tuscarora allow us to reach locations such as Fulton County Medical Center, Juniata Valley Medical Center and Pediatrics and Beyond at a reduced cost because the UPS, survey fees, up front fees, permits, (typically \$10,000 per tower) to get on those towers are already covered in the TIU 11 project.
- 4) Sting is building a tower on Round Knob Mountain for TIU 11 that allows Line of Sight (LOS) access to the Broad Top Medical Center.
- 5) Fermaugh-Mifflintown Elementary allows us to reach Juniata Medical Center and Mountain View Medical Center by using the school as a hub for 2 wireless links.
- 6) Stings existing backbone links allow the fiber POP in State College to provide redundancy to the network with only one link charge Little Flat Tower to the Mifflin County Jacks Tower.

Without the TIU 11 network the JVN network connections would not be economically feasible. Our rural region can not afford to build independent networks but must partner together to insure long term sustainability of the proposed solution. The final feather in the hat on the TIU 11 partnership is that the TIU 11 already has an Internet 2 connection. Everyone who taps into the TIU 11 network will therefore be able to access Internet2 resources.

The JVN network that will ride on the TIU 11 network can be seen on Figure 5. Specific details on the bandwidth of each link can be seen in Table 11. As previously mentioned many of the connections to health care facilities are only possible by routing through the TIU 11 network. And vice versa, the connection to MCSD is through Lewistown Hospital.

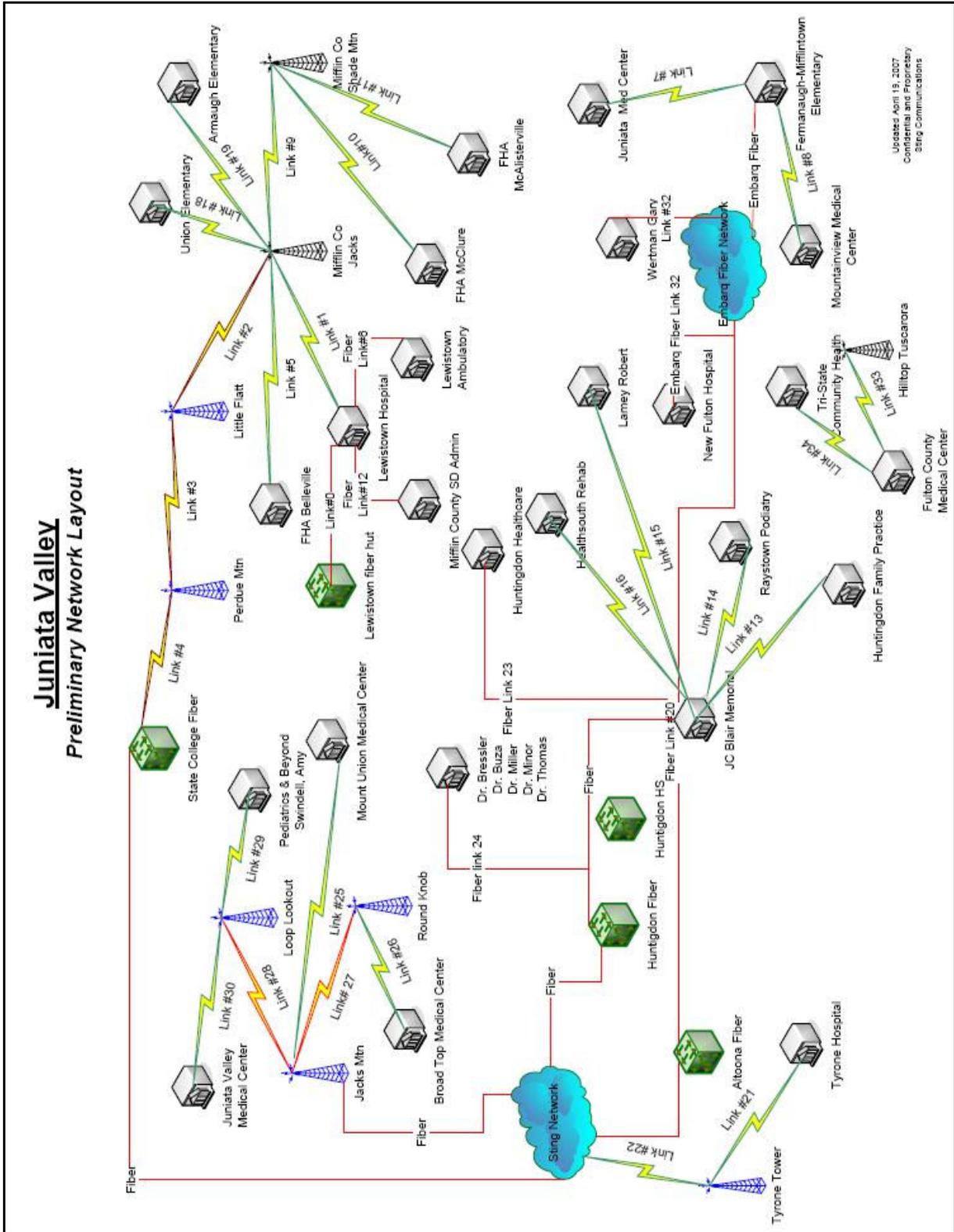


Figure 5: Diagram of Proposed JVN Network Build

Table 11: JVN Network Links

Link #	Type	Proposed Bandwidth	Notes / Tie-in to TIU-11 Project
0	Fiber	100Mbps	Capable of growth to GigE. This fiber build from Lewistown fiber POP to Main Hospital Bldng.
1	Licensed	NxOC3	Lewistown Hospital to Jacks Mtn Mifflin Co- new build
2	Licensed	NxOC3	New link - Mifflin County to Little Flat (redundant)
3	Licensed	NxOC3	Existing link from Little Flat Mntn to Purdue Mountain
4	Licensed	NxOC3	Existing link from SC fiber POP to Purdue Mountain
5	License Free	7Mbps	New Build-Mifflin Co Jacks to FHA Belleview
6	Fiber	10Mbps	Connect LACC by Fiber to Hospital-New Build
7	License Free	7Mbps	New build from Fermanaugh -Mifflintown, wireless link to Juniata Med Center
8	License Free	7Mbps	New build from Fermanaugh -Mifflintown, wireless link to Mountainview Medical Center
9	License Free	50Mbps	New Build out Mifflin County Jacks to Mifflin Co Shade
10	License Free	7Mbps	Shade Mntn to FHA Mc Clure-new Build
11	License Free	7Mbps	Shade Mountain to FHA McAlisterville-new build
12	Fiber	100 Mbps	New Build-Connect Mifflin County SD Admin to Healthcare Network(Lewistown Hospital)
13	License Free	7 Mbps	New Build-JC Blair to Huntingdon Family Practice.
14	License Free	7 Mbps	New Build-JC Blair to Raystown Podiatry
15	License Free	7 Mbps	New Build- JC Blair to Lamey Robert
16	License Free	7 Mbps	New Build-JC Blair to Healthsouth Rehab
17	License Free	7 Mbps	New Build- JC Blair to Dr. Savory
18	License Free	100 Mbps	Mifflin County Jacks to Union Elementary
19	License Free	100 Mbps	Mifflin County Jacks to Armaugh Elementary
20	Fiber	100Mbps	Capable of growth to GigE. Huntingdon HS to JC Blair Hospital-new build
21	Licensed	100 Mbps	Tyrone Tower to Sting Network-new build
22	Licensed	100 Mbps	Tyrone Tower to Tyrone Hospital- new build
23	Fiber	10 Mbps	Huntingdon Healthcare to JC Blair -new Build
24	Fiber	10 Mbps	Drs Bressler, et all to JC Blair Hospital-new build
25	License Wrles	100 Mbps	Mount Union Medical Center-new build
26	License free	50 Mbps	Broad Top Med Center to Round Knob Tower
27	Licensed	100 Mbps	Existing Round Knob to Jacks Mountain
28	Licensed	100 Mbps	Existing Jacks Mountain to Loop Lookout
29	License Free	7 Mbps	New Build- Loop Lookout to Pediatrics and Beyond
30	License Free	7 Mbps	New Build- Loop Lookout to JVMC
31	Licensed	100 Mbps	New Build to Fulton County Medical Center
32	License Free	10 Mbps	New Build to Dr. Wertman (SHMC)
33	Fiber	100 Mbps	Build to new Fulton Hospital on Peach Orchard Rd
34	License Free	7Mbps	New Link - Original Fulton County Medical Center to Tri-State Community Health Center

(Link #'s match Figure 5 link #'s)

The JVN network brings in two additional partners that are not part of the TIU 11 network. The first partner is the Mifflin County Board of Commissioners and the Mifflin County Office of Public Safety.

Over the last two years the Mifflin County Office of Public Safety has undertaken a project to lay the ground-work for an information technology program for Emergency Service Providers. During this time it has been recognized that this backbone infrastructure can not only be utilized by first responders by it can also serve as a crucial building block for the entire community and many business providers in Mifflin and surrounding counties such as health care facilities.

Due to system age and capacity limitations, the Mifflin County Office of Public Safety found that it was necessary to replace an aging analog microwave network that was used to link the Mifflin County 911 Center to its remote dispatch points located on surrounding mountain ridges. The replacement system that was selected utilizes digital technology and is capable of transmitting and receiving much more information than the original system was ever capable of. This excess capability is the stepping off point for the expansion in communications planning and capabilities for the future. The 911 system is also using Alcatel equipment; therefore it may be compatible with the JVN proposed equipment.

Based on tower location and current use, it is already recognized that well over 85% of the County is accessible from the existing tower sites. Using other newer technology, the decision was made to begin exploring the possibility of offering County-wide broadband access for Public Safety purposes. First responders will now have the capability to see diagrams of the buildings they are responding to, photo's of those structures in relation to their surroundings and the ability to have video-conferencing with subject matter experts when more help is needed. Partnering with neighboring counties, additional tower sites can be used or developed which would allow for regional communications interoperability between our voice and data systems.

This level of connectivity also allows each of the counties to eliminate their remote back-up sites which for years have been fraught with accessibility and operational limitations. Each 911 Center will now be able to include slightly increased capacity which will then allow it to operate as an instant back-up to an existing 911 Center. There will no longer be a delay while dispatchers have to dash up a mountain road in the middle of winter to open a back-up dispatch and call-taking center.

Mifflin County has also recognized that some of this data capability could be useful to others in our community. Schools could support distance education, doctor's offices could have test results double-checked by field experts and businesses could operate more quickly and efficiently with greater wireless access to the Internet. The Mifflin County Board of Commissioners has been exploring the creation of a wireless network within the County with the possibilities of expanding into the surrounding counties. This has been explored by the Mifflin County 911 Director and the MIS Director. There have been several meetings with vendors of wireless technology and both are attending a conference specifically addressing these topics.

The Mifflin County 911 Center is in the process of connecting its 911 system to Snyder County. Once connected to Snyder County, the network will have access to Mifflin, Snyder and Juniata Counties. Near future expansion in the microwave network will link these counties with Huntingdon and Fulton Counties. Of specific concern to this project is the expansion at the Snyder County Shade Mountain Tower. Mifflin County will be spending \$120,000 to install NxOC3 transmission equipment on this tower. The JVN network can then simply add two 7 Mbps transmitters to this tower and then reach two of the FHA rural health clinics. The network can then ride on the Mifflin County network back to Jacks Mountain tower and from there ride a wireless connection to Lewistown Hospital. Without the county expenditure of \$120,000 the JVN network would be unable to reach these two rural health clinics.

The Mifflin County Office of Public Safety will play a prominent role in the proposed initial network study of a broadband network to be built in the region since we hope to use every single one of their towers. Therefore, we have allocated some budget funds to cover their time spent on working on the study.

The Mifflin County School District (MCSD) is another important partner. The Mifflin County School District was not part of the Act 183 project as originally proposed by TIU 11. Here is an excellent example of how the networks are intertwined. The connection to the MCSD will be made through a fiber connection run through Lewistown Hospital and the MCSD will then be able to go back through the hospital and through wireless to Jacks Mountain Tower and then connect to two of their school buildings where School Based Health Clinics are located.

The JVN network will connect to the MCSD Administration building which is three blocks away from Lewistown Hospital via a fiber optic connection. From the MCSD administration building the MCSD connects to all thirteen of their School Based Health Clinics. Two of these clinics do not have affordable high speed network connections. These are the Union Elementary and Armagh Elementary clinics. The JVN network will permit them to connect via 100 Mbps wireless transmitters at a fraction of the cost they are paying now for T-1 connections at 1.5 Mbps. The funds that the MCSD will be able to pay the JVN are an important part of the sustainability strategy for the entire network to pay the ongoing monthly maintenance costs after the FCC grant expires. Plus we can use their modern state of the art broadcast facilities for health educational programming as mentioned earlier in the narrative.

It is really a win-win situation for the JVN and MCSD. JVN gets funds towards sustainability and MCSD saves significant ongoing costs. An added bonus for the MCSD is that this will connect them to the TIU 11 where they can get an Internet 2 connection for a lot less than offered by Carnegie Mellon. About \$30,000 less per year! JVN also benefits by being able to link to thirteen School Based Health Clinics. As an added bonus the JVN will extend the fiber through the MCSD administration building to the non-profit rural health clinic Lewistown Ambulatory Care in Burnham so the one fiber run will serve to connect to two significant locations.

The JVN will also tap into existing fiber infrastructure that has already been built around the campuses of both Lewistown Hospital and JC Blair Memorial Hospital. As one might imagine several for-profit physicians' offices have located near the hospital campuses. Over the years the hospitals have built out fiber to these close proximity medical offices. It will be relatively cost-free to connect all of these for-profit medical offices to the JVN. These for-profit medical offices will pay their fair share of Internet connection costs and these revenues will greatly aid in the long term sustainability of the JVN.

Description of Equipment Utilized

The JVN and the TIU 11 network are comprised of several types of connections ranging from licensed and unlicensed wireless to fiber optic connections. In addition there will be other equipment costs that will include Uninterrupted Power Supply (UPS) for the towers, optical nodes, demark switches, backbone switches, core network equipment, video bridging equipment, and firewalls. This section of the narrative will discuss each of the various types in order to make it clear what telecommunications and equipment technologies are being deployed by the JVN.

One of the more common connection types is an unlicensed 7 Mbps wireless connection. These connections will utilize Alvarion B-14 transmitters with 7 Mbps throughput in both directions.



Alvarion B-14

These transmitters are part of the BreezeNET B family of wireless point-to-point bridging solutions that operate in unlicensed bands and provide an efficient and highly secure solution for building-to-building connectivity and backhauling. They are an alternative to expensive leased lines, providing a near-instant link for connecting remote health care facilities to hospitals. The network will also deploy 11 Mbps wireless connections. These connections will utilize the Alvarion B-28 transmitter. 35 Mbps connections will utilize the Alvarion B-100.

The network will also utilize 50 and 100 Mbps unlicensed transmitters. These units will be Motorola OS-Spectra transmitters. OS-Spectra transmitters support high-bandwidth enterprise applications in environments where wired networks are either too expensive or impossible to implement. It efficiently uses the frequency spectra to reduce interference and boost performance for business-critical applications.



Motorola OS-Spectra

The network will deploy licensed wireless transmitters as well. The unit that will be used is the Alcatel 9500 MXC microwave transmitter. The 9500 MXC is a State-of-the-Art split architecture radio platform aimed at fulfilling the need of a wide range of wireless point-to-point applications. It provides highly reliable communications for transmission of TDM, SONET and Ethernet traffic. The 9500MXC offers capacities from 6 Mbps to 311 Mbps, in the 6 GHz to 23 GHz frequency bands. An important feature of these units is that they are expandable as the demand for network traffic grows with the health care facilities utilizing more and more bandwidth.



Alcatel 9500

Fiber optic cable will also be used where it is feasible and up to Gig E speeds are required. The fiber used will be single mode which allows for longer distance runs as opposed to multi-mode which is used for short distance connections. If Sting Communications, with its existing close partnership with First Energy, is the selected vendor it will make working with the utility to rent poles to run the fiber a much more simplified process. When Mifflin County, in partnership with Lewistown Hospital and the Mifflin County School District, built the Mifflin County Municipal Area Network (MCMAN) with funds from the Pennsylvania Technology Infrastructure Authority, the rental of poles was one of the biggest challenges that network faced. The proposed JVN and TIU 11 network will not have this issue for this project which will be a huge relief.

At the TIU 11 central administration building and heart of the JVN and TU 11 network there will be a requirement for video bridging equipment and high resolution core network equipment.

Table 12 details the core network equipment upgrades required to support the JVN.

Table 13 details the video bridging equipment required to support the JVN.

Table 12: JVN Core Network Equipment Upgrades

Upgrade to TIU Network Core	
Description	Qty
7206 Router for redundancy with existing 7200	
7206VXR with NPE-G1 includes 3GigE/FE/E Ports and IP SW	1
Two 128MB mem modules (256MB total) for NPE-G1 in 7200	1
Cisco 7200 Compact Flash Disk for NPE-G1, 64 MB Option	1
Power Cord,110V	2
IPS SVC,ONSITE24X7X4 7206VXR NPE-G1, 3 F	1
Cisco 7200 Redundant AC Power Supply Option (280W)	1
Cisco 7200 AC Power Supply Option	1
Cisco 7200 Series IOS ENTERPRISE	1
4510R Chassis switch, redundant supervisors, 18 fiber GBICs and 48-port 10/100/1000PoE	
Catalyst 4500 Chassis (10-Slot),fan, no p/s,Red Sup Capable	1
AC POWER CORD NORTH AMERICA (110V)	1
24x7x4 Onsite Svc, Catalyst 4500 Chassis (10-Slot),fan, no	1
GE SFP, LC connector SX transceiver	18
Cat 4500 IOS-based Supervisor, Compact Flash, 128MB Option	2
Catalyst 4500 4200W AC dual input Power Supply (Data + PoE)	2
Cisco IOS ENHNCD L3 C4500 SUP4/5,3DES(OSPF,EIGRP,IS-IS)	1
Catalyst 4500 6-Port 10/100/1000 PoE or SFP (Optional)	3
Catalyst 45xxR Redundant Supervisor V (2 GE),Console(RJ-45)	1
Catalyst 4500 Supervisor V (2 GE),Console(RJ-45)	1
Catalyst 4500 PoE 802.3af 10/100/1000, 48-Ports (RJ45)	1
Packeteer PacketShaper ISP model 10000, 1 gig each	
PS10000-L001G-2500	2
CSP Support	1

Table 13: Video Bridging Equipment Upgrades

Desktop Video Bridge
RADVision Click to Meet 50-User Application
Subscription/Help Desk Includes: subscription and help desk bundle, 1-year contract
Polycom Video Bridging Upgrade
Polycom RMX2000 80-Port Configured and Licensed System. Equipped with 2 fully-populated Media Processing Modules and a Rear Transition Module for IP
On-Site Installation Service for RMX2000 80-Port System
Premier Plus, One Year, RMX2000
RMX2000 Package
Polycom ReadManager SE200 Network Appliance
On-Site Installation Service for ReadManager SE200 or IAM w/o Outlook Scheduling
Premier Plus, One Year, ReadManager SE200 or IAM Base Unit w/o Outlook Scheduling, 25 licenses.
ReadManager SE200 Appliance
ReadManager SE200 Management Suite w/o Outlook Scheduling - License Expansion Pack - 100
Premier Plus, One Year, ReadManager SE200
ReadManager SE200 Software
Polycom RSS2000 Video Recording and Streaming Solution. 1U appliance that provides 2 recording ports and up to 60 web viewers as well as up to 10 IP viewers.
On-Site Installation Service for RSS2000
Premier, One Year, RSS2000

At the individual end user sites additional telecommunications network equipment will be needed. These include optical nodes, demarcation switches, backbone switches, UPS, and firewalls.

The optical nodes are Alcatel 1692 Metrospan Edge units. The Alcatel-Lucent 1692 Metrospan Edge addresses operators' requirements for cost-effective, scalable networks to meet their growing business and data networking needs. Based on coarse wavelength division multiplexing (CWDM) technology, it provides a cost-optimized, managed platform supporting different services and suitable for applications in diversified network topologies. The system can support up to 8 wavelengths and can be configured as a terminal or OADM (Optical Add Drop Multiplexer).



Alcatel 1692 Metrospan Edge

The 1692 Metrospan Edge shares many of the same winning features already available on the "1696 Metrospan" and "1696 Metrospan Compact" DWDM products, including the 4xANY TDM concentrator and optical layer protection. The 4xAny TDM concentrator, which multiplexes several low-speed client signals into a standard managed 2.5 Gb/s SDH/SONET signal, allows operators to respond to varying service demands quickly and without the need to upgrade the network. Optical layer protection is supported on the 1692 Metrospan Edge for both point-to-point and ring topologies and gives operators an option to offer robust, fault tolerant services to their end users.

The demarcation switches are Alcatel OmniSwitch 6850 units. The OS6850 switch family addresses the needs of modern enterprise and triple-play networking: flexible, stackable configuration; power over Ethernet, high availability, first-packet wire-speed performance, and dramatically improved network response time. Similar to the existing Alcatel OmniSwitch, the OS6850 series uses the Alcatel Operating System (AOS). This ensures an easy and economical way to upgrade or deploy a new Ethernet network. The flexible configuration options offered by the OS6850 family make them suitable for a small/medium network in the core or at the edge of a large network. Also, the OS6850 is future proof for networks with native support of IPv4 and IPv6 switching.



Alcatel OmniSwitch 6850

The backbone switches are Alcatel ESS7450 units. The Alcatel 7450 ESS is the industry's first Ethernet service switch with carrier high availability. More than ever, high availability is at the forefront of the service provider's criteria for consumer and business Ethernet services. The demand for high availability has been most pronounced at the service provider edge where thousands of connections are hosted and availability options may be limited for WAN Ethernet services and service-aware Ethernet aggregation for consumer triple - play services. The Alcatel 7450 ESS architecture has been developed to meet the stringent requirements for supporting mission-critical applications and services, and a number of high availability features have been designed into the 7450 ESS.



Alcatel ESS7450

We will also be installing Uninterrupted Power Supply at the towers using model APC Smart-UPS 3000VA with the base specifications as shown below.

Output Power Capacity : 2250 Watts / 3000 VA
Max Configurable Power: 2250 Watts / 3000 VA
Nominal Output Voltage: 100V



APC Smart-UPS 3000VA

At each of the four hospitals we will need a Cisco ASA 5520 VPN/Firewall with SSM-AIP-10 - 4 x 1000Base-T , 1 x 10/100Base-TX - VPN/Firewall. The Cisco ASA 5520 Adaptive Security Appliance delivers a wide range of security services with Active/Active high availability and Gigabit Ethernet connectivity for medium-sized enterprise networks, in a modular, high performance appliance. Using its four Gigabit Ethernet interfaces and support for up to 25 VLANs, businesses can easily deploy these security services into multiple zones within their network. The Cisco ASA 5520 Adaptive Security Appliance scales with businesses as their network security requirements grow, delivering solid investment protection. Businesses can extend their IPSec and SSL VPN capacity through multiple means to support a larger number of mobile workers, remote sites, and business partners. VPN capacity can be increased by taking advantage of the integrated VPN clustering and load-balancing capabilities of the Cisco ASA 5520 Adaptive Security Appliance, as well as more than doubling each platform's VPN capacity through the installation of a VPN upgrade license.



Cisco ASA 5520 VPN/Firewall

The advanced application layer security and anti-x defenses provided by the Cisco ASA 5520 Adaptive Security Appliance can be extended by deploying a high performance Security Services Module. Using the optional security context capabilities of the Cisco ASA 5520 Adaptive Security Appliance, businesses can deploy up to 10 virtual firewalls

within an appliance to enable compartmentalized control of security policies on a departmental level. This virtualization strengthens security and reduces overall management and support costs while consolidating multiple security devices into a single appliance.

At each of the five Family Health Associate rural health clinics we will need a Cisco ASA 5505 50-User Bundle - 8 x Fast Ethernet Management, 3 x USB 2.0 , 1 x Console - VPN/Firewall for network security purposes.



Cisco ASA 5520

The Cisco ASA 5505 Adaptive Security Appliance is a next-generation, full-featured security appliance for small business, branch office, and enterprise teleworker environments that delivers high-performance firewall, SSL and IPsec VPN, and rich networking services in a modular, "plug-and-play" appliance. Using the integrated Web-based Cisco Adaptive Security Device Manager, it can be rapidly deployed and easily managed, enabling businesses to minimize operations costs. The Cisco ASA 5505 features a flexible 8-port 10/100 Fast Ethernet switch, whose ports can be dynamically grouped to create up to three separate VLANs for home, business, and Internet traffic for improved network segmentation and security.

In addition to the base costs of the specific equipment the JVN network has required that each piece of equipment come with a 5 year warranty and maintenance agreement to insure the reliability of the equipment. The warranty costs are included in the individual equipment costs and will insure that there are no unanticipated costs related to equipment failure for at least the first five years of the project.

There are also associated installation costs for all the equipment listed in this section. These are listed as a total installation cost in the budget. All labor will be provided by the vendor.

Project Leadership and Management

Lewistown Hospital is the organization that will be legally and financially responsible for the conduct of activities supported by the fund. As such, Ms. Kay Hamilton, President and Chief Executive Officer for Lewistown Hospital will be ultimately responsible for the conduct of activities under this grant and will be the only authorized person to sign any contracts with the FCC. Reporting directly to Ms. Hamilton is Mr. Ron Cowan, Vice President of Information Management and Chief Information Officer for the Lewistown Hospital. Mr. Cowan will have direct project responsibility and will lead the Juniata Valley Network Consortium towards accomplishing the objectives that are set forth in this application for assistance from the FCC Rural Health Care Pilot program.

The members of the JVN consortium will all participate in managing the project. The key members are the three other hospitals; JC Blair Memorial Hospital, Tyrone Hospital, and Fulton County Medical Center. Joining them are the key partners, the Tuscarora Intermediate Unit 11, the Mifflin County School District, and the Mifflin County Office of Public Safety. These principal organizations will be responsible for the direct leadership and management of the project. They will also be responsible for coordination throughout the region and to the rest of Pennsylvania.

Members of the JVN will also be searching for organizations outside the JVN who can assist the JVN in meeting our objectives. The Broad Top Area Medical Center has been very aggressive and successful in seeking outside organizations to help our rural area. We will try to build on their success in establishing partnerships outside our community by coordinating meetings with all the JVN partners to learn about what these outside organizations can offer to us once we have our JVN fully functional. SEDA-COG has recently started a broadband advisory board. The JVN shall be actively involved on this organization.

JVN participants such as rural health clinics, School Based Health Clinics, and for-profit health care facilities will all be members of the JVN. As such they will be encouraged to participate in the anticipated monthly JVN meetings and they will be kept fully informed of the progress and status of the JVN project. To encourage participation we will conduct all of our JVN management meetings using video conferencing equipment running through the JVN video bridge and as such it will be relatively simple for them to attend any of our management or stakeholder meetings.

Work Plan and Schedule

The Juniata Valley Network Consortium will follow a specific work plan and schedule to accomplish the objectives of our project. The over all schedule is shown in Figure 6 below and is discussed in more detail in this section.

Figure 6: JVN Work Plan and Schedule

Work Item	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	5th Qtr	6th Qtr	7th Qtr	8th Qtr
FCC Approval								
Sign FCC Contract								
Issue FCC Form 465								
Select Vendor								
Vendor Preparation								
Vendor Install								
Acceptance Tests								
JVN Live								
JVN Objectives Implemented								
Evaluation Stakeholder Meeting								
Evaluation Pre-Survey								
Evaluation Interviews								
Evaluation Post Surveys								
Evaluation Analysis and Report								
Final Report to FCC								

Upon receipt of approval of our application for funding from the FCC Rural Health Pilot program we will await further instructions from the FCC in regards to any legal contract we may need to sign. If all we have to do is to file a FCC Form 465 we will immediately proceed with preparation of a formal Request for Proposals (RFP) and submit the FCC Form 465 via the existing mechanism with the Universal Service Administrative Company (USAC). We will require that any vendor respond to the entire JVN network build requirements and not just cherry pick certain elements of the network. We will then wait 28 days for vendor responses.

After 28 days we will select a vendor. Upon selecting a vendor we will immediately proceed with awarding a contract and start construction on our JVN. The project path details are shown in the Table 14 on the next page.

Table 14: Vendor Work Plan and Responsibilities

Task	Description	JVN Requirements
Complete Site Prep Form	The site prep form captures and confirms important details that ensure the timeliness and quality of the install process.	Complete Site Prep.
Schedule Onsite Survey	Vendor will contact the primary Point of Contact (POC) to schedule the onsite walkthrough(s)	Ensure schedule is communicated to all participating parties. Re-confirm prior to site visit
Complete Site Walkthrough	Vendor and subcontractor will conduct the site walkthrough as scheduled.	Ensure complete building access and availability of key personnel
SOW Review Call	Vendor will provide the Scope of Work and schedule a call to review it prior to commencement of install.	Review and validate all details of the SOW
Schedule Install	Vendor will contact the primary POC to schedule all install activities.	Ensure schedule is communicated to all participating parties. Re-confirm availability of personnel prior to all installation visits.
Install Local Loop	Vendor and subcontractors will complete the fiber or wireless install.	Ensure complete building access and availability of key personnel
Test Local Loop	Remote testing of the local loop install to ensure connectivity.	Provide building and site access if needed for troubleshooting
Configure Customer Equipment	Configure routers to ensure access to network as designed.	Provide access for vendor to configure (if contracted) or complete configuration of customer equipment
Formal Acceptance Testing	Complete testing of connectivity and network access.	Sign-off on acceptance testing documents

In addition to specific vendor responsibilities the JVN will also have specific work plan responsibilities as shown in Table 15 below.

Table 15: JVN Work Plan Responsibilities

Role	Responsibilities
JVN Point of Contact (POC)	<ul style="list-style-type: none"> • Manage scheduling of personnel, tasks and building access • Escalate issues, if needed. • Assist with information and support for permit acquisition
Maintenance Supervisor/Director	<ul style="list-style-type: none"> • Provide access to buildings • Assist with building layout information and questions
Administrative Sponsor	<ul style="list-style-type: none"> • As needed, provide oversight and sign-off on purchase orders and project tasks • If needed, support with local zoning authorities
IT Professionals	<ul style="list-style-type: none"> • Coordinate technical information about health care facility networks and configuration • Allocate IP addresses for servers • Install and configure (or coordinate with vendor) new network device

Once the network construction has been completed by the selected vendor the JVN will be ready to start using the network to accomplish the various objectives that have been outlined for the project. Some of these objectives will be immediately deployed. For example, the health care facilities with current telemedicine projects will be able to start using the JVN right away to transmit information to participating health providers. The specific work plan for each objective is listed in Table 16 starting on the next page.

Table 16: Objectives Work Plan and Tasks

Objectives	Key Action Steps	Data Source & Evaluation Method	Outcome & Measurement	Person/Area Responsible	Comments
Objective 1. Utilize the JVN to share patient Electronic Medical Records (EMR) between health care facilities.	1.A. HCF ⁵ need to sign forms insuring compliance with HIPAA ⁶ regulations	1.A. Will record the number of HCF accessing EMR's via JVN during initial evaluation pre-test. Evaluation will baseline how frequently clinicians are using EMR resource	1.A. Will increase the number of HCF accessing EMR's. We will record the current HCF and then track how many additional HCF start using EMR and imaging	1.A. The CIO at each hospital, and individual rural health clinics	Will also track any increases in usage due to improved bandwidth and ease of access.
	1.B. USDA DLT grants submitted to support new EMR applications	1.B. Will track the number of current EMR applications in utilization	1.B. Will increase the number of HCF using EMR to manage patient data.	1.B. TIU, school districts, and hospitals	1.B. Plan on two submissions to USDA this summer
Objective 2. Utilize the JVN for telemedicine, teleradiology and telecardiology applications and enable sharing of images stored in the various health care facilities Picture Archiving and Communication Systems (PACS)	2.A. Must install PACS imaging web software at HCF facilities and train clinicians in how to use the PACS viewing software	2.A. Will record current number of providers using PACS via evaluation pre-survey and then track new users	2.A. Will increase the number of HCF's utilizing PACS	2.A. Hospitals, HCF's, and Pen State evaluation team	2.A. All four hospitals have PACS now but not all HCF's are accessing imagery.
Objective 3. Pilot test applications for real time medical consults between practitioners at different health care facilities.	3.A. Must identify pilot application(s) to test as determined by Medical Staff	3.A. Will record details of each pilot test and determine usefulness	3.A. Pilot test applications will assist hospitals in providing specialist coverage not currently available at hospital	3.A. Hospitals and medical staff	3.A Applications will likely be in key specialty shortages such as orthopedics, urology, endocrinology, and infectious disease

⁵ HCF stands for Health Care Facility

⁶ HIPAA stands for Health Insurance Portability and Accountability Act

Objectives	Key Action Steps	Data Source & Evaluation Method	Outcome & Measurement	Person/Area Responsible	Comments
<p>Objective 4. Improve the ability for physicians, registered nurses, and advanced practice nurses to acquire Continuing Medical Education (CME) and Continuing Education (CE) experiences</p>	<p>4.A. Determine which educational workshops will be provided over the JVN</p>	<p>4.A. Will track the number of educational workshops offered and record the attendees</p>	<p>4.A. Will reduce the time spent traveling outside the region to attend workshops</p>	<p>4.A. Hospitals Departments of Continuing Education and Penn State evaluation team</p>	<p>4.A. At first we will access currently available educational resources but will also develop new educational workshops</p>
<p>Objective 5. Improve the capability to broadcast medical educational programming to local schools in the region. These programs would include educational content on diabetes, nutrition, obesity, and asthma.</p>	<p>5.A Will immediately setup a diabetes training broadcast using MCSD broadcasting facilities. Then will increase range of offerings to local schools.</p>	<p>5.A. Will track number of educational offerings and record the attendees</p>	<p>5.A. Will increase number of educational offerings. Will evaluate student response to programming both short term and long term outcomes.</p>	<p>5.A. Hospitals Diabetes resource centers, schools, and Penn State evaluation team.</p>	<p>5.A. There is already developed educational material that can be used to broadcast to schools.</p>
<p>Objective 6. Pilot test the use of the JVN to allow for critical backup of health care facility data at another health care facility for disaster recovery purposes.</p>	<p>6.A. Will need to arrange for redundant data storage servers in at least two HCF</p>	<p>6.A. Will record the time it takes to back up large imagery files across the JVN</p>	<p>6.A. Will test the response time in a simulated disaster to restore files to source HCF</p>	<p>6.A. Hospital CIO and IT staff</p>	<p>6.A. This will be tested between JC Blair and Lewistown Hospital</p>

Objectives	Key Action Steps	Data Source & Evaluation Method	Outcome & Measurement	Person/Area Responsible	Comments
<p>Objective 7. Complete an initial network planning study to study the costs and feasibility of creating a wireless broadband health care network in the entire JVN region that could be accessed by home health care nurses and paramedics</p>	<p>7.A. Prepare RFP for network design study, place for bids, and select vendor</p>	<p>7.A. The report will analyze broadband needs for health care applications</p>	<p>7.A. A final network study report will be prepared</p>	<p>7.A. Hospital CIOs, TIU 11, Mifflin County government MIS and Public Safety Department</p>	<p>7.A. Study will cover a four county area</p>
<p>Objective 8. Increase the interaction between local health care facilities and School Based Health Clinics.</p>	<p>8.A. Assign clinical rotations to nursing students. Receive approval from state Board of Nursing for faculty supervision of clinical experiences</p>	<p>8.A. Will track number of hours spent by students in clinics and number of incidents where teleconsults are completed or video conferencing is used to aid students</p>	<p>8.A. Increase the health care coverage for school clinics.</p>	<p>8.A. School nurses, LH School of Nursing, and Penn State evaluation team.</p>	<p>8.A. Need to insure geographic distribution of student nurses across service area of JVN</p>

Budget

Table 17: Detailed Budget Table, Budget Summary, and Description of Other Funds

Line Item No.	Description	Unit Cost	No.	Extended Cost
1	Alvarion 7 Mbps Connections	\$22,800	14	\$319,200
2	Motorola OS-Spectra 100 Mbps Connections	\$37,000	2	\$74,000
3	Motorola OS-Spectra 50 Mbps Connections	\$34,000	2	\$68,000
4	Alcatel 9500 MXC NxOC3 Connections	\$52,000	6	\$312,000
5	TIU Microwave Connections			\$842,400
6	JVN Fiber Build-out			\$625,373
7	TIU Fiber Build-out			\$512,300
8	TIU Networking Equipment			\$242,800
9	Demarcation switches	\$10,904	27	\$294,408
10	Optical nodes			\$102,500
11	Backbone switches			\$82,000
12	UPS Tower Backup			\$68,000
13	TIU Installation			\$202,500
14	JVN Installation			\$244,609
15	Core Network /Video Bridging equipment			\$501,108
16	Gigabit Routers and Firewalls			\$54,300
17	Mifflin County Shade Mtn Tower			\$120,000
18	Network Planning Study Wireless			\$175,000
19	Penn State Formal Evaluation			\$78,000
20	Monthly Access and Maintenance	\$11,550	20	\$231,000
				\$5,149,498

A.			FCC Project Budget (Sum of Overall Budget Extended Costs)	\$5,149,498
B.			Less Proposed Cash Match (as documented)	\$768,000
C.			Less Proposed Federal E-Rate Funding	\$1,152,000
D.			Less Other Funds	\$115,800
E.			FCC Grant Request (A-B-C-D = E)	\$3,113,698

Line Item No.	Description of Other Funds	Unit Cost	No.	Extended Cost
1	Monthly Network Access Fee (20 For-profits at \$105 per month for 18 months)			\$37,800
2	Mifflin County government evaluation costs			\$78,000
	Other Funds Total			\$115,800

Detailed Budget Narrative

This narrative will explain more details about the individual line items that appear in the Table 17: Detailed Budget Table, Budget Summary, and Description of Other Funds.

Line Item #1: Alvarion 7 Mbps Connections

This is the most common wireless connection the JVN will be using (14 connections) to connect to smaller individual health care facilities. In addition to the wireless Alvarion units and switching equipment at both ends of the connection, other hardware, mounting, wiring, etc is included in the price.

A typical wireless installation consists of an antenna with an integrated outdoor unit, indoor unit, mounting hardware, and cabling. The outdoor antenna (2' x 3') is a grid type antenna mounted on a mast. The indoor unit (4"x 5"x 2") is installed either in a rack inside the building or on the wall in the server room of the building.

The type of mounting hardware used depends on several factors including desired speed, LOS (Line of Site) and location restrictions. The mounting hardware chosen takes into account all factors. The engineered solution is the minimum equipment required to establish the desired link. The costs also include a five year warranty and maintenance agreement.

One type of mount is a non-penetrating roof mount with a 10' mast. This mounting method involves the assembly of a small base on vinyl padding to protect the roof. The base is 3'x 3' and is held in place using 8 cinder blocks, the total weight is 260 lbs. The outdoor rated CAT5 (Ethernet) cabling will be used.



The other type of mount proposed for this project is a ballast roof mount with 50' of tower sections. This mounting method involves the assembly of a small base on vinyl padding to protect the roof. The base is 10'x 10' and is held in place using 40 cinder

blocks, the total weight is @1700 lbs. Three guy wires will be installed on the tower sections at 40'. The outdoor rated CAT5 (Ethernet) cabling will be used.

Line Item #2: Motorola OS-Spectra 100 Mbps Connections

There are two of these types of connections. These are used where the network is aggregating and more bandwidth is required. In addition to the actual transmitters and associated equipment this includes all the hardware, tower permit install fees, mounting brackets, and wiring. The costs also include a five year warranty and maintenance agreement.

Line Item #3: Motorola OS-Spectra 50 Mbps Connections

There are two of these types of connections. These are used where the network is aggregating and more bandwidth is required. In addition to the actual transmitters and associated equipment this includes all the hardware, tower permit install fees, mounting brackets, and wiring. The costs also include a five year warranty and maintenance agreement.

Line Item #4: Alcatel 9500 MXC NxOC3 Connections

These are the primary tower to tower microwave links. There will be six of these used. Costs include all equipment, hardware, wiring, and a five year warranty and maintenance agreement.

Line Item #5: TIU Microwave Connections

This includes all of the costs for the TIU connections as shown in Figure 4 of this narrative. These costs also include the construction of two communications towers that are not only used for the TIU network, but will also be used to connect to rural health care facilities by the JVN network.

Line Item #6: JVN Fiber Build-out

These are the total costs for installing fiber connections for the JVN network as shown in Figure 5 and detailed in Table 11. The costs include all fiber costs and pole renovations required to install the fiber. Some poles will require replacement due to the existing infrastructure. For example, the photo below shows a pole that may need to be replaced in order to install the JVN fiber onto the pole.



The fiber build-out costs also include a five year warranty and maintenance. This will cover the JVN in case of damage caused to the lines by squirrels and in case a driver takes out one of the poles.

Line Item #7: TIU Fiber Build-out

These are the costs for the TIU fiber build-out as shown in Figure 4.

Line Item #8: TIU networking equipment

These are the costs for demarcation switches, optical nodes, and backbone switches for the various network links as shown in Figure 4.

Line Item #9: Demarcation switches

These are the Alcatel OmniSwitch 6850 that will be used at 27 end user locations. The costs also include a five year warranty and maintenance agreement. All of this is detailed in the equipment technical specifications section of this narrative.

Line Item #10: Optical Nodes

These are the Alcatel 1692 Metrospan optical nodes that will be used to convert the fiber light signal to Ethernet. The costs also include a five year warranty and maintenance agreement. All of this is detailed in the equipment technical specifications section of this narrative.

Line Item #11: Backbone Switches

These are the primary Alcatel ESS7450 switches for the fiber network. The costs also include a five year warranty and maintenance agreement. All of this is detailed in the equipment technical specifications section of this narrative.

Line Item #12: UPS Tower Backup

These are the Uninterrupted Power Supply: APC Smart-UPS 3000VA that will be used at the various tower locations in case of an electrical grid power failure. The region does suffer from these during the winter months and remote tower locations are especially susceptible to these kinds of power failures. The costs also include a five year warranty and maintenance agreement. All of this is detailed in the equipment technical specifications section of this narrative.

Line Item #13: TIU installation

This covers all installation costs for building the fiber and wireless connections for the network.

Line Item #14: JVN Installation

This covers all installation costs for building the fiber and wireless connections for the network.

Line Item #15: Core Network/Video Bridging Equipment

This equipment includes a 7206 Router, a 4510R Chassis switch, redundant supervisors, 18 fiber GBICs, a 48-port 10/100/1000PoE, a Packeteer PacketShaper ISP model 10000, 1 gig each, a Polycom RMX2000 80-Port Configured and Licensed System equipped with 2 fully-populated Media Processing Modules and a Rear Transition Module for IP, RADVision Click to Meet 50-User, a ReadManager SE200 Appliance, and ReadManager SE200 Software that is required to operate the ReadManager networking equipment. All of this is detailed in the equipment technical specifications section of this narrative. This equipment will be installed at the central TIU core hub of the entire TIU and JVN networks enabling telecommunications between the various health care facilities

Line Item #16: Gigabit routers and Firewalls

The gigabyte routers, Cisco ASA 5520 VPN/Firewall with SSM-AIP-10 - 4 x 1000Base-T , 1 x 10/100Base-TX - VPN/Firewall, will be installed at each hospital to allow for interconnection between the JVN and the hospital's internal network. Five firewalls, Cisco ASA 5505 50-User Bundle - 8 x Fast Ethernet Management, 3 x USB 2.0 , 1 x Console - VPN/Firewall, will be required at the FHA rural health clinic locations. All of this is detailed in the equipment technical specifications section of this narrative.

Line Item #17: Mifflin County Shade Mountain Tower upgrades

These are the costs for providing the microwave link from the Shade Mountain tower to the Jacks Mountain tower. Costs include equipment, hardware, and installation.

Line Item #18: Network Planning Study Wireless

These are the costs for conducting an initial network planning study to install a broadband wireless network for the four county region that makes up the JVN. Costs includes engineering consulting costs (\$140,000) plus staff costs incurred by the primary participating partners in working with the engineering consultant in preparing the study.

Line Item #19: Penn State Formal Evaluation

This is the cost to contract a formal evaluation of the entire JVN project by Penn State University as detailed in the narrative. Since the FCC does not cover administrative costs, no administrative costs will be paid to Penn State. If the FCC does not approve this as a valid use of FCC funds then the Mifflin County government is going to directly pay for the costs of this formal evaluation as discussed in the narrative.

Line Item #20: Monthly access and maintenance

These monthly recurring costs are broken down as follows:

Tower rents:	\$ 6,700
Network Management fee:	\$ 850
Internet Access:	<u>\$ 4,000</u>
Total:	\$11,550

Explanation of Budget Summary

FCC Total Project Budget

This is the sum total of the complete project.

Less Proposed Cash Match

These matching funds represent \$648,000 of Commonwealth of Pennsylvania Act 148 E-Funds being spent by the TIU and \$120,000 of state funds being spent by Mifflin County Government. Without these funds being spent on various network components that the JVN is utilizing to connect to health care facilities the JVN could not exist. The FCC requires a 15 % match which would equal \$467,055. The match proposed equals that amount plus an additional \$300,945 of match. In addition to this match, Mifflin County government is contributing \$78,000 cash towards the cost of the Penn State formal evaluation. We also anticipate receiving revenue from the for-profit health care providers in the amount of \$37,800 during the project period. So we have more match money then required by FCC for this project.

Less Proposed Federal E-Rate funding

While not shown as a match since we can not use Federal money to match Federal money, the JVN is leveraging \$1,152,000 of E-Rate funding for this project.

Less Other Funds

This is \$37,800 in revenue from for-profit health care facilities and \$78,000 in funds from Mifflin County towards the costs of the evaluation if required.

FCC Grant Request

The JVN is requesting \$3,113,698 in FCC Rural Health Care Pilot Program funding for Fiscal 2006.

Sustainability

Our goal is to create a health care high speed broadband network that is within our means to sustain after federal funding has been completed. One of our long-term costs is going to be the telecommunication costs that will be necessary to connect each member to the network. Our for-profit partners will be paying these costs during the grant period. We need to have our local practitioners pay these costs themselves at the beginning of the project so when our grant period expires they will already be covering one of our significant expenses. Their commitment to pay these costs is evident in the individual Memorandums of Agreement (MOA) that the for-profit practitioners have signed (see Appendix B)⁷. Our objective has been to convince them upfront that the costs of the telecommunications are justified by the benefit they will receive from access to the JVN. The vast majority of all practitioners in the service area of Lewistown Hospital have already signed similar MOA to participate in the projects funded by the USDA DLT grants the hospital has received. During the process of having the practitioners sign these earlier MOA they were so happy at the thought of gaining access to our clinical information system that the costs seemed inconsequential to them.

In regards to telecommunications costs for the major hospitals, and for the non-profit health clinics, these health care facilities have already been incurring significant costs for connecting to the Internet at speeds that are inadequate for future proposed telemedicine projects. For what the hospitals are currently paying for T-1 lines they will be getting speeds up to 100 Mbps for the same cost. It is really a no-brainer for the CEO's of these organizations to agree to continue to participate and pay the ongoing telecommunications costs. The JVN will charge non-profit rural health clinics the same rate as for-profit rural health clinics once the grant expires. We anticipate at this time that these costs will be less than \$105 per month. Each of the hospitals and most of the non-profit clinic have also signed a MOA and these can be found in Appendix B.⁸

We will also vigorously pursue additional grants from USDA and other sources, such as the Appalachian Regional Commission, to build new telemedicine applications that will now be possible with the JVN in place. In addition funding will be sought to support further expansion of the JVN such as broadband wireless. Our area does have a proven track record of finding Federal funds to support telemedicine applications and we have also shown that we know how to handle these funds effectively and create successful projects that provide great health outcome benefits to our community.

Lewistown Hospital has incorporated our telemedicine network into our existing clinical information system, thereby folding the long-term costs into our existing cost for maintaining information systems. It is important to understand that from the hospital's perspective practitioners such as physicians are customers in much the same way that patients are. By providing them with access to our telemedicine network we are giving

⁷ We did not get every possible for-profit to sign the MOA in time for the submission of the grant.

⁸ At the time of submission two of the non-profit facilities, Mount Union Area Medical Center and Broad Top Area Medical Center, did not have a board meeting scheduled before the submission date. We anticipate the boards will approve participation in the JVN.

them a service that other hospitals may not be offering them and therefore encourage them to utilize our facilities. This access to the technology they need to provide better service to their patients is also related to retention issues. We hope to show new physicians that we have the same access to technology that larger and better funded hospitals have. By having the technological benefits that these new physicians might get at a larger hospital we can equalize the playing field to some degree. After that we then have to stress the higher quality of life in our rural environment to counteract the lower annual earnings for a physician in our service area. This same principle applies across the region to all the participating health care facilities.

But nonetheless the hospital will face long-term recurring costs for software and hardware maintenance. It is clear that the hospital must fund this system regardless once the quite substantial initial investment is made. To pull the plug on the network would be to pull the plug on the hospital itself and that is just not going to happen. We have convinced our Board of Directors that information technology (IT) is important to the future of the hospital. One way that this is evident is through the recent promotion of our CIO to be on the senior management team reporting directly to the CEO. This gives IT the exposure needed to insure proper levels of funding for future years.

Funding for telemedicine services through reimbursements will be an ongoing challenge for all the health care facilities in the JVN. We will need to continually address this issue and keep vigilant in understanding new legislation and new methods to try to recover some of our costs. Here is an area where the JVN Consortium members can make connections with other telemedicine networks in the nation and try to share information amongst ourselves to learn more about cost recovery methods.

The passage of Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 (BIPA) made it easier to get reimbursement for some Telemedicine activities. These changing legislations must each be closely reviewed to see how reimbursement policies change. One way we think that new legislation will benefit us is with teleradiology. This will benefit us when we utilize teleradiology because we will be able to charge Medicare a \$20 fee each time our system is used. However other store and forward techniques such as lab work or cardio-pulmonary are not currently covered by Medicare. We plan to work closely with our state office of rural health on this issue and also to identify this as a problem to our local Community Health Partnership.

The members of the JVN are all interested in accessing advanced telemedicine services that the larger urban health centers in Pennsylvania such as Hershey Medical Center, Geisinger, and the University of Pittsburgh Medical Center (UPMC) wish to offer our small, financially strapped rural health care facilities. We are aware that some of these facilities are also applying for FCC funding. We will coordinate our JVN activities with these larger urban facilities. Ultimately the larger urban health care facilities must understand that our smaller facilities can not afford the telecommunication connection costs that they would like us to pay. They need to understand that they need to bear a fair portion of these costs and they need to build these costs into their business model. While we would like to access all available telemedicine services we can also not afford to go bankrupt doing so as this would in the end not benefit the citizens of our service area.

Statement of Experience

There are several partners that have formed a consortium to work together on the Juniata Valley Network. First we will discuss the experiences of Lewistown Hospital who is the primary applicant organization for the FCC Rural Health Care Pilot program funding.

Lewistown Hospital is well positioned to successfully implement this project and to act as the fiscally responsible organization for managing FCC Rural Health Care Pilot Program funding. Lewistown Hospital was recognized as one of the nation's 100 Top Hospitals in 2002. The ninth annual 100 Top Hospitals: National Benchmarks for Success study identifies industry benchmarks by recognizing hospitals that demonstrate superior clinical, operational and low cost performance. The Solucient Institute annually performs an objective, statistical analysis of publicly available data from over 5,600 hospitals and our hospital was one of twenty selected in the medium community category (100 to 250 beds). This recognition is a strong indication of our hospital's ability to provide reliable health care services to our patients and our community on a sustainable basis.

The management and technical staff of the Management Information Systems (MIS) Department are looking forward to working on this new project. Our staff is very excited that we are moving forward with another significant phase of our telemedicine project and they have been heavily engaged in working on the three existing USDA DLT funded projects. They are experienced at managing complex IT projects and within the last two years have completed several major projects such as the establishment of a PC network with over 675 nodes and the recent installation of the Cerner Millennium system. Just last year the MIS Department brought up 19 different Cerner applications all at the same time. The successful and timely completion of these projects have shown yet again that the IT staff is always ready for a new challenge and yet another opportunity to better serve the medical staff and other healthcare practitioners by providing new and improved IT systems.

Leading the MIS team at Lewistown Hospital is Ron Cowan, our VP of Information Management/CIO. Mr. Cowan has been working at the hospital since 1982 and was then promoted to Director of Management Information Systems in 1986. During his tenure he has provided leadership and vision to establish a network that included 675 plus microcomputers, 105 plus laser printers, and 20 file servers. The network infrastructure consists of fiber optics and copper wire that supports all systems including the core hospital information systems, ancillary systems, microcomputers, and some clinical equipment.

As chair of the Hospital Information System (HIS) Steering Committee he provided guidance to install a complete HIS and has also successfully completed the necessary upgrades to keep the system current. This process included educating committee members for hospital wide representation, creating multi-year budgets for the project, gaining Board of Trustee approval, and managing various consultants used to complete

projects in the process. Mr. Cowan has the management experience to oversee a project of this magnitude and importance.

The Lewistown Hospital Telemedicine Network, now called LINX for Lewistown Information Network eXchange, is a new initiative of the hospital. However, certain elements of the network are already in place due to the hospital's participation in other projects. Some of these elements have been acquired very recently and some are the result of the hospital's active participation in our local community's efforts to create a new digital community in our rural area. First, we will discuss the recent acquisition of key elements of our new network.

The hospital has an existing agreement with the Hershey Medical Center and the Penn State Cancer Institute. As part of our association agreement, the hospital agreed to create a video conferencing facility to permit telemedicine encounters between the hospital's practitioners and the researchers at Hershey Medical Center. In addition to this application, the agreement covers the provision of distance learning to local practitioners. The video conferencing equipment has already been purchased through a grant of \$10,000 that the hospital received from Verizon and is operational, but a little choppy, utilizing four 128 Kbs ISDN lines.

In February 2003, the hospital installed the first pieces of a new Picture Archiving Communication System (PACS). This system allows the hospital to store digital images from our radiology equipment such as MRI, CT-Scan, ultrasound, and nuclear medicine and we can connect this system to our LINX. This is the start of our new teleradiology system and another piece of our Telemedicine network. In 2006 the hospital received a \$500,000 USDA DLT grant that will add CR and CR Mammography as well as digital imaging for the Cardiovascular Department. Once connected to LINX, we can then allow any authorized user to view these images. Of course, without the JVN, not everyone is going to be able to view these images.

Another related community project is known as the Mifflin County Municipal Area Network. This project was funded by the Pennsylvania Technology Investment Authority with \$250,000 of state funds and matched with another \$250,000 of local funds. This combined fiber optic and high-speed wireless network connects governments, businesses, non-profit organizations such as Lewistown Hospital, and local school districts together on one Municipal Area Network (MAN). The MAN is a municipal network where the fiber is leased for 99 years by the MAN. The JVN will use this MAN to communicate to schools that are already connected. The CIO of Lewistown Hospital has been involved with this project since the beginning.

Lewistown Hospital's telemedicine experience has been recently acquired over the last three years. Prior to starting to implement telemedicine we also acquired experience in trying to link our community together to share resources across a network. The development of the new JVN places the hospital in a better position to effectively increase our community's interconnectivity and will be yet another example of how our small, economically depressed, rural Appalachian community can work together to attempt to improve the conditions for our citizens.

J. C. Blair Memorial Hospital has over five years of experience with telemedicine in the Huntingdon County area. The Information Technology department is led by Mr. Stephen C. Gildea, with over 24 years of experience in the IT industry. Mr. Gildea has most recently provided project management for the successful implementation of a Picture Archiving and Communication System (PACS) at J. C. Blair. This project will provide radiology images to physicians via the hospital's internal network and to the homes and offices via the internet. It is part of a long-range strategy to use Information Technology to provide for more efficient patient care, while improving patient safety.

J. C. Blair has also recently piloted patient education programs, broadcast via Internet-based Video Tele-Conferencing (VTC) from the hospital's main campus in Huntingdon, to remote locations at physician offices in Broad Top and Mount Union, Pennsylvania. The initial class was presented for Asthma patients. A series of classes will be offered to patients over the next 5 months on subjects such as Diabetes, COPD, Congestive Heart Failure, Influenza and Hypertension. In addition, efforts are underway to use VTC for telehealth consults to specialists and trauma centers from the hospital's Emergency Department and primary care physician offices.

The IT department at Tyrone Hospital is also led by Mr. Gildea. At Tyrone hospital, Mr. Gildea is leading an effort to begin to use VTC to provide tele-health physician visits from the Tyrone Hospital Emergency Department to Nursing Home patients. These telehealth office visits will help to provide physician care to Nursing Home patients where previously the patient would have been transported to a local Emergency Room for the same care. Tyrone Hospital is also implementing Electronic Medical Records and PACS which will provide access to vital patient data to physicians in their offices or homes.

In 2006, Mr. Gildea was instrumental in a successful bid for funding for tele-homecare technology by Home Nursing Agency, a regional home care provider, based in Altoona, Pennsylvania. This project is placing tele-homecare monitors in the homes of patients in rural Huntingdon, Bedford and Fulton counties. Chronic disease patients are provided these monitors upon discharge from the acute care setting. The patients are provided educational content through the computer-based monitors that is consistent with the education they received on the proper care of their chronic condition while in the hospital. Vitals are gathered daily through the system and reported back to a central nurse. If the patient's critical values are out of an acceptable range, the nurse can dispatch a visiting nurse to the patient's home. This project has proven to improve the outcomes of the chronic disease patients through reduced ER visits and hospital readmissions.

Daniel Berger is the Coordinator of Educational Technology at the Tuscarora Intermediate Unit. In this position he served as the Project Coordinator of TRENDS (the Tuscarora Regional Educational Network Delivery System). This network was funded in part by the Act 183 grant administered by the Pennsylvania Department of Education. TRENDS will connect 24 buildings in the school districts located in Fulton, Huntingdon and Juniata counties. As a result of this network each building will enjoy a 100Mb

connection to a core network, which will allow students, teachers and administrators to collaborate with each other and share multimedia resources. The TRENDS project is designed to stimulate and support life-long learning and economic development. The broadband network will be the backbone which will deliver classes, job training and retraining to district sites in order to reach the learner in their back yard. The network will bring education and training to the student rather than the old model of taking the student to the education and training.

Mr. Doug Cunningham at the Mifflin County School District oversees an extensive network of 13 schools. MCSD has 8 schools on private gigabit fiber network to the administration building. The remaining 3 schools are connected through T1's or Frame Relay circuits. The district has approximately 1700 computers, 30 servers, and 6800 users. Mr. Cunningham has been with the school district since Sept. 2006 but has over 12 years experience in the technology field. He manages a staff of 7 people. He has managed multiple projects that expand multiple locations. His responsibilities also include overseeing the department budget, all hardware, software and networking.

The Mifflin County Office of Public Safety has been overseeing the creation of a telecommunications network that links three counties together to share 9-1-1 resources. Mr. Phil Lucas, Director of Emergency Management, has been instrumental in building this new network. His experience brings to the table an extensive understanding of wireless communications and issues relating to tower construction.

The Mifflin County Commissioners have made available their MIS Director, Mr. Patrick Cronin, to assist in any way to help with this project. He has been working with Mr. Lucas in the implementation of the wireless network and will be trained on the maintenance of the microwave network utilizing the management tools for the network. Mr. Lucas and Mr. Cronin have also been investigating the potential of a wireless network for the residents and businesses of the county. They have had several meetings with vendors and attended webinars to learn more about how the implementations are being done in various communities around the country. In May of 2007 they are going to attend a conference in Chicago that addresses broadband wireless for better managed cities, <http://www.w2idigitalcitiesconvention.com/>. Mr. Cronin brings 10 years of Information Technology experience in both the private and public sector to this endeavor as well as having a business degree from The Pennsylvania State University with a major in Accounting. He has managed a variety of projects in the County, including an overhaul of the courthouse infrastructure during a renovation project, upgrading and maintaining the multiple servers used in daily operations and getting and keeping the up to 200 workstation up to date.

The selected telecommunications vendor will also assign experienced staff to the JVN project. The vendor roles and responsibilities are as listed in Table 18.

Table 18: Vendor Roles and Responsibilities

Project Manager	<ul style="list-style-type: none"> • Overall coordination of project tasks • Manage change order requests • Report project status • Primary Point of Contact for general questions
Scheduler	<ul style="list-style-type: none"> • Schedule onsite walkthroughs • Schedule installation technicians
Network Coordinator	<ul style="list-style-type: none"> • Technical interface for IPs, I2, DNS, Network Interface, etc. • Procure and allocate IP addresses • Set up and configure new DNS hosting • Coordination of CPE equipment design • Provide customer router configuration template • General technical design and troubleshooting
Wireless Field Coordinator	<ul style="list-style-type: none"> • Provide wireless microwave field support and troubleshooting
Install Technicians	<ul style="list-style-type: none"> • Conduct Site Walkthroughs • Physical install of local loop and Demarc • Extend Demarcs where required • Configure customer equipment (if needed) • Conduct acceptance testing
Permit Coordinator	<ul style="list-style-type: none"> • Coordinate local permits for fiber and wireless installation

The JVN will competitively bid the project per the guidelines required for the FCC Rural Health Care Pilot Program. It is expected, however, that Sting Communications will be the only vendor capable of delivering the project to reach all the health care facilities in the region. For this reason we outline Sting Communications experience in Pennsylvania.

Sting Communications, a Pennsylvania-based, Enhanced Telecommunications Provider, is one of the fastest growing mid-Atlantic Carrier Ethernet network service companies. From its roots as a wireless internet service provider (WISP), Sting Communications has evolved over the past two years to play an integral role in providing broadband Internet and wide area networks for the education, commercial and rural residential markets in Pennsylvania.

Sting Communications, as an alternative transport and access provider, is delivering cost effective broadband and managed-IP (Internet Protocol) services, from single location

connectivity to multi-location internetworking. Sting combines customers’ data, voice and IP video through a single interface for less than traditional data- telecommunications services. Their hybrid network combines a fiber optic, MPLS core (Multi Protocol Label Switching) for transport and licensed/ license free fixed broadband wireless ”last mile” access to interconnect customers to its switched “Carrier Ethernet” network. A switched native IP backbone allows companies and organizations to take advantage of the convergence of traditional voice communications to the IP protocol. A “Carrier Ethernet” network is capable of delivering a myriad of native IP services in a managed fashion. These services include: Internet, Internet2, Voice-over-IP (VoIP) and Video. For example, many Companies are implementing Voice-over-IP (VoIP) at a rapid pace. Others have taken this to another level, replacing expensive tie-lines with corporate Intranet services already in place, saving literally thousands per month.

Sting is also the largest service provider to the K-12 market in Pennsylvania as a result of Act 183 (E-Fund) regional WAN projects. Sting serves over 34% of the market; 184 school districts and 7 Intermediate Unit’s. Sting Communication’s service area in Pennsylvania is shown in Figure 7 below.

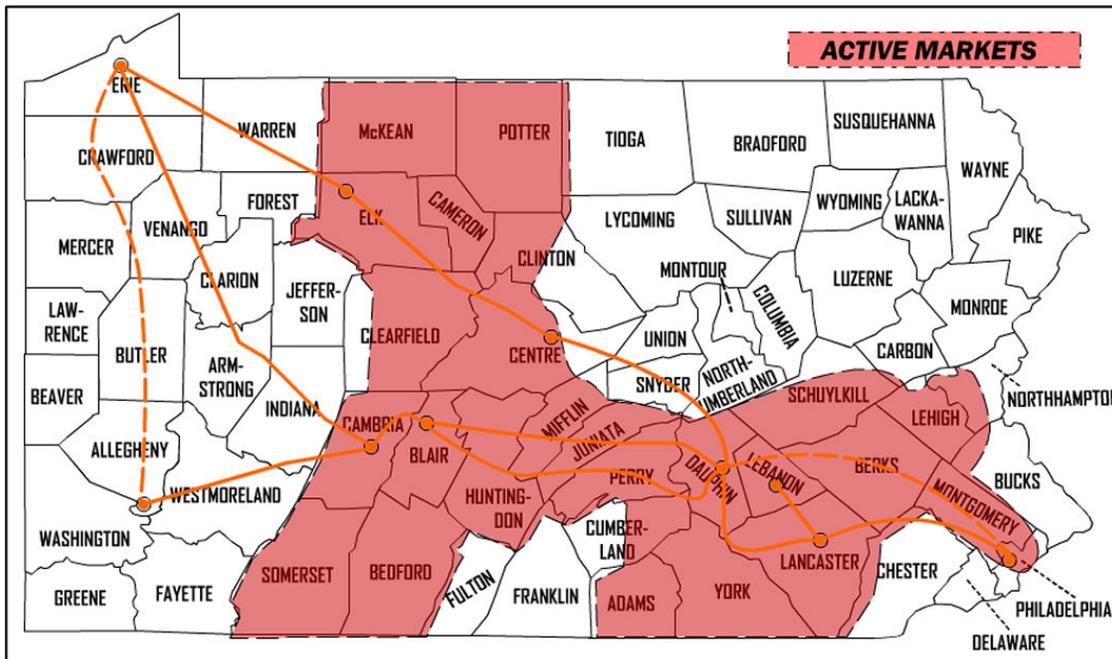


Figure 7: Sting Communication Active Markets

Formal Evaluation

While not a specific requirement of the FCC Rural Health Care Pilot Program, the participating health care facilities all feel very strongly that an independent, formal evaluation of the proposed JVN project will be of great benefit not only to the JVN and our collaborating partners, but also to the FCC as the FCC tries to understand how this new pilot program will impact rural health care facilities. Therefore, we are proposing an independent formal evaluation of the project that would be managed and completed by the Pennsylvania State University. Due to the importance that Mifflin County government places on our project, they have committed to fund up to \$78,000 of the evaluation costs should the FCC approve our application for funding (see letter of support in Appendix A). We may also pursue additional funding to support the evaluation in order to try to leverage the Mifflin County funding.

The evaluation model that we have chosen to follow for the JVN project is the Center for Disease Control (CDC) Evaluation Model. This formal evaluation model was developed specifically for public health practice. Prior to 1997 there was no formal evaluation model for public health. The CDC recognized that there was a great need for a formal evaluation methodology that would address these key points of the CDC;

- Use science as a basis for decision-making and action;
- Expand the quest for social equity;
- Perform effectively as a service agency;
- Make efforts outcome-oriented; and
- Be accountable

The CDC established an Evaluation Working Group (EWG) to develop a new evaluation methodology that would be used internally for CDC public health projects. They have developed an extensive evaluation model that can be used not only by the CDC, but by other organizations involved in public health projects. The end result of this EWG's efforts was a formal framework for program evaluation in public health. The framework guidelines were published to the web and the resources are available for anyone to utilize for their public health project. Since our JVN project is a public health project it is very logical for us to use this same evaluation framework developed by CDC. By following these guidelines for our evaluation we will be utilizing an accepted and tested methodology that will help us insure that the results of our evaluation are valid and reliable. And most important, the results will be very useful for all the stakeholders involved in the project.

The CDC evaluation model places emphasis on six key steps in the evaluation framework. These steps are sequential and should be completed in the order they occur within the model. These key steps are shown in Figure 8 below.

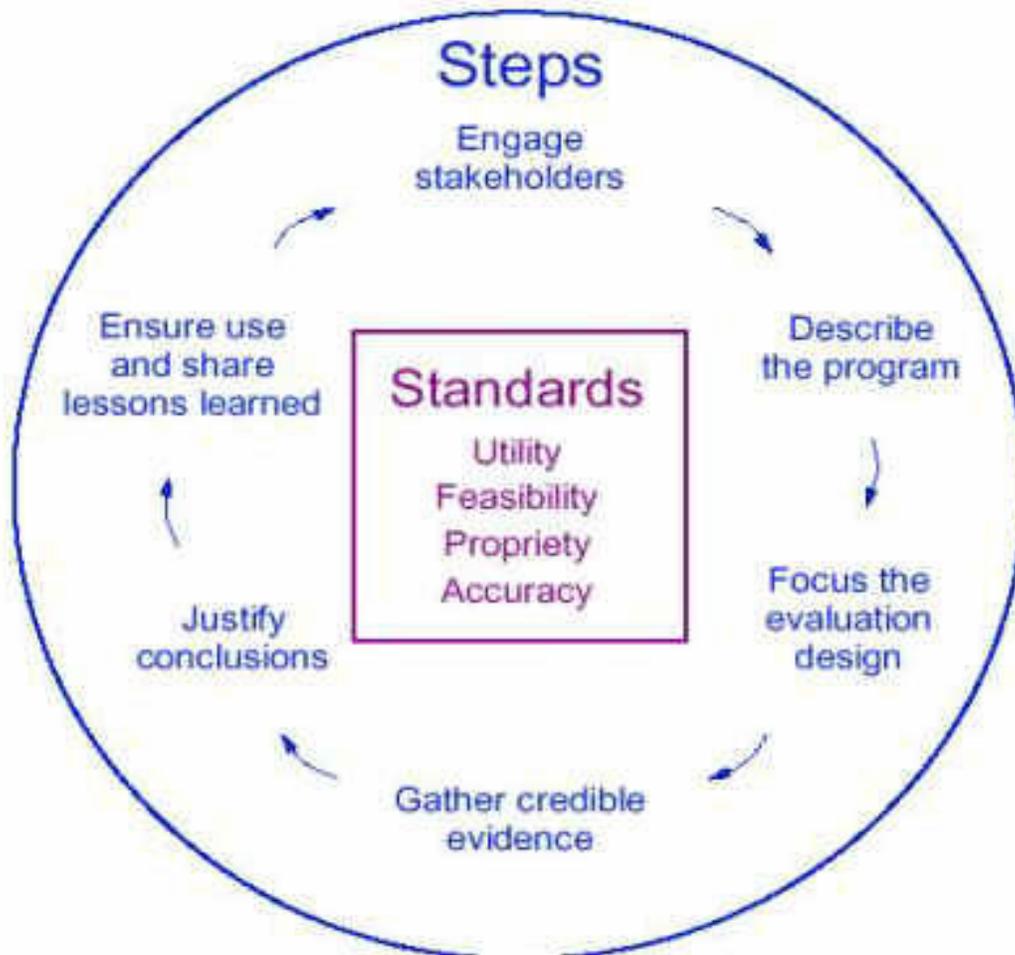


Figure 8: CDC Evaluation Model

The foundation of the CDC model is to engage the stakeholders. It is very important that we engage all the stakeholders in this project so that their input will be utilized in designing the evaluation and we can make sure that the evaluation addresses each stakeholder group's specific concerns. The stakeholders are discussed in detail later in this section.

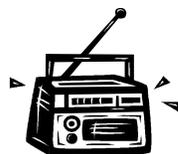
The second step in the CDC model is the description of the program. The narrative that has been written in application for FCC funding fulfills this step. Of course, any evaluation is an ongoing process and a good evaluation can provide immediate feedback that could modify the description of the program. After the first round of stakeholder meetings and interviews we may well discover that we need to modify the program based upon a more thorough analysis of their inputs. The ability to use the evaluation to modify the project while it is in progress is a good thing for the project.

The third step is to focus our evaluation on the key issues of concern to the stakeholders. The JVN has a limited budget to do this evaluation and we will have to focus the evaluation on these key concerns identified by the stakeholders. We will not make premature decisions on what needs to be evaluated in our program. During this step we will also choose the specific questions that need asked of specific groups of stakeholders.

The fourth step in the CDC model is to gather credible evidence. We will use proven methods to test the reliability and validity of our surveys prior to using them to gather data. We will involve the stakeholders in this process so they are more likely to accept the data that is collected. We will integrate both quantitative and qualitative data to enhance the evaluations credibility. By outsourcing the entire evaluation to Penn State we will also improve the credibility of the evaluation. Dr. Rama Radhakrishna, College of Agricultural Sciences, Department of Agriculture Extension and Education, will manage the development of the survey instruments and he will use his extensive evaluation experience to prove the reliability and validity of the test instruments. In addition, he will oversee the statistical analysis of the results. Dr. Madhu Reddy, College of Information Science and Technology, will provide content experience to make sure our questions are relevant to the health informatics being used while Dr. Carleen Maitland, College of Information Science and Technology will provide content experience in telecommunications. Both Drs. Reddy and Maitland are also experts in qualitative evaluation methods. The use of experts in their respective fields will provide great credibility to the evaluation. The curriculum vitas of these respected Penn State professors are found in Appendix C.

The fifth step is to justify the conclusions. We will establish standards for evaluating the results of the surveys. The Penn State team will be responsible for the analysis and synthesis of the results along with the interpretation of the results. In conjunction with the JVN management team, a series of recommendations will be made to guide the JVN into further growth and development.

Finally, the last step is to make sure the results are used and the lessons learned are shared with the stakeholders in the JVN project and outside organizations. Here is where we get back to step one. As long as we actually incorporate the stakeholder's real concerns we will insure that they are interested in leaning the results. The stakeholders will need feedback on the evaluation process before, during, and after the evaluation is complete. The last step is to disseminate the report. A mixed reporting strategy will yield the best results. Of course, Penn State will prepare a formal report and it is expected that more then one scholarly research journal article will result from this project, but Penn State will also prepare press releases suitable for printing in our local papers, radio announcements, and simplified media for distributing the results to a varied audience of stakeholders so we can get the message out to everyone.



Now let us return to a more detailed discussion of the stakeholders involved in our JVN project. CDC divides stakeholders into three distinct groups. The first group is comprised of those that are involved in program operations. In the case of the JVN these include the following groups:

FCC: The FCC is the primary funding agency for the JVN and is very interesting in assessing what impact their funding will have on health care facilities in our rural region. They will use our evaluation to gauge possible future changes to the FCC programs that provide telecommunications support to rural health care facilities.

Commonwealth of Pennsylvania: Through the Act 148 E-Fund Pennsylvania is also a significant funding agency for this project. They will be very interested in learning how Act 48 has been leveraged to combine telecommunication needs for educational facilities with health care facilities.

Local County Governments: In the case of the JVN, Mifflin County government is providing free usage of communication towers and permitting the JVN to use transmission resources to connect to rural health clinics. The other county governments in the JVN region are also interested in participating in the network planning study for broadband to see how their county government can act as a significant collaborator in the JVN.

Tuscarora Intermediate Unit 11 (TIU 11): The TIU 11 is a major collaborator for this project and will play a serious role in the management and technical operations of the combined TIU 11 and JVN projects. They will want to know more about how the JVN will collaborate with their member school districts to support the school based health clinics and to provide health and wellness education to students in the region. How this program impacts what the TIU 11 does in the future with telecommunications is a great concern.

Local School Districts: These school districts have the same concerns that the TIU 11 has. How will this program impact their students and does the program have appositive impact. If so, then continued support from the school districts can be based on a solid evaluation that can be shard with the elected members of the various school boards who need to make sure that further investments are in the best interest of the students of the school district. Each of these school districts has significant Information Technology staff that will be involved with the project. These district level staff will support the individual school based health clinics.

Hospitals: The four hospitals that are part of the JVN are the key health care facilities involved with the management and technical operations of the project. They have the management and technical staff to oversee the operations of the network and provide technical support to the smaller rural health clinics.

The second group of stakeholders are those that are served or affected by the proposed JVN project. This group includes the following;

Patients: The primary beneficiary of the entire JVN are the patients that go to the health care facilities whether it be to one of the hospitals for major surgery or to one of the school based clinics due to a case of the sniffles. The evaluation will have to include this group in the evaluation.

Clinical Staff: This includes physicians, physician assistants, nurse practitioners, registered nurses, and certified school nurses. These are the medical professionals who will be accessing patient data from the JVN or using the JVN to attend educational opportunities.

The third group of stakeholders are the ones who will use the results of the evaluation. In the case of the JVN this group is almost identical to the first group of stakeholders with a couple of additions as noted below:

Outside organizations: There are many other organizations in the Commonwealth of Pennsylvania, and beyond, who will look to this evaluation to determine what has worked, and what has not worked, in our FCC funded project. The lessons we learn, and document through the formal evaluation process, will be of great benefit to others.

There will be some barriers and obstacles that will need to be overcome for this project. One of the biggest is that we will have to really work hard to coordinate the evaluation with the very busy schedules of our rural physicians and other clinical staff. Many of these clinical staff see thousands of patients and do not have a lot of extra free time. The evaluation team will have to be timely and precise when working with this group of stakeholders. We will also be faced with many stakeholder requests for evaluation data that is beyond the proposed budget. We will have to carefully select which questions we are going to try to answer and do an effective job of conveying the limitations of the evaluation to the stakeholder groups. Another way we will overcome the time obstacles faced by various stakeholders is that we will conduct many meetings using Penn State Adobe Connect web meeting software. This will connect to the stakeholders via the JVN and allow them to fit in meetings without any need for travel.

The specific objectives for this project are clearly identified and described in some detail in the project narrative within the Objectives and Goals section. These objectives are also outlined in detail in Table 16: Objectives Work Plan and Tasks found within this narrative. The objectives are broken down and indicate the key action steps, data sources and evaluation method, outcomes and measurement, and the person or area responsible.

At this preliminary stage of the project we believe that a mixed methodology evaluation approach will yield the best results. We tentatively propose the following evaluation design which is also expressed in the work plan and schedule section of the overall project narrative.

- initial stakeholder meetings
- conduct an evaluation assessment
- finalize evaluation design
- prepare and test surveys for reliability

- pilot test surveys
- conduct a pre-survey of stakeholder groups to establish a baseline
- during the project conduct qualitative field interviews with stakeholders
- towards the end of the project conduct a post-survey
- analysis of results
- preparation of final report

Penn State will be responsible for insuring this evaluation design is developed in accordance with the CDC model and accepted academic standards. A brief review of the steps involved with the evaluation design will now be discussed.

Penn State will organize various stakeholder meetings with the groups that have been discussed. These meetings will be held in person throughout the JVN region and will also be held using Adobe Connect net meetings. Based on these stakeholder meetings Penn State will focus the evaluation on areas of key concern as expressed by the stakeholders.

An evaluation assessment will be conducted to determine the most appropriate methodologies to use in order to evaluate the program. A preliminary logic model has been developed and is shown in Figure 9.

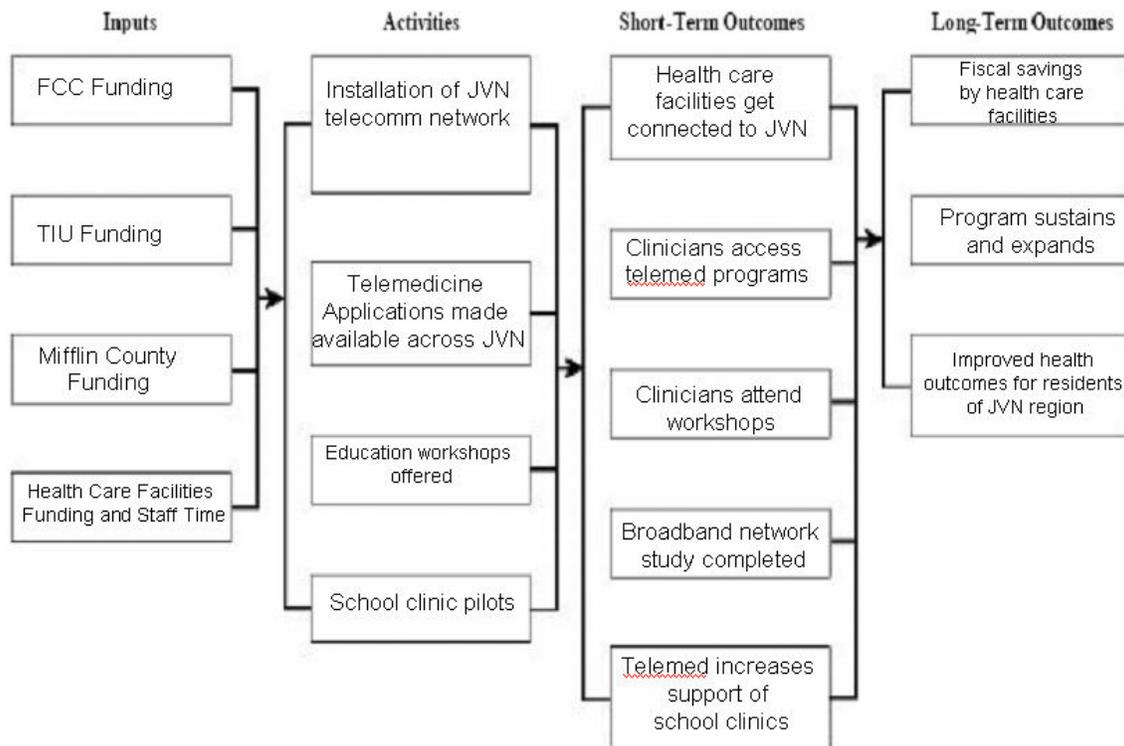


Figure 9: JVN Evaluation Logic Model

Once the evaluation assessment is completed a formal evaluation design will be presented to the stakeholders for approval. Part of this design will include a literature review to survey existing research into the effects of advanced telecommunications facilities on

rural health care in America. This literature review may provide valuable suggestions and suggest specific areas of research for the current evaluation. It will also advise the Penn State team of any known obstacles to conducting this type of evaluation in a rural environment.

The next stage will be to develop the pre and post surveys. Based on stakeholder input the Penn State team will develop a series of pre and post surveys to be given to various groups of stakeholders. There will be more than one survey as each stakeholder group will have different parameters. For example, patients might be given one survey to gauge their perceptions of how the JVN affects them while clinicians would receive a different survey. The surveys will be developed with assistance from these groups and experts in those areas. Once the survey is completed it will be field tested by these groups to insure that the questions are valid and appropriate. This would be a face validity test. After that the survey will be pilot tested to insure the reliability of the individual questions. Once the survey is finalized it will be given. Specific methods for delivering the survey may include mailings, email surveys, and web based surveys. The specific methods used will be determined in the evaluation design as planned by Penn State.

The evaluation design will also include a plan to develop qualitative questions that will be administered via personal interviews (possibly conducted via web based meetings) and through the use of focus groups (again possibly through the use of web based meetings). A plan will be developed for interpreting the qualitative results and will attempt to place these in a framework that will allow for analysis of the findings.

The survey sample rates and number of people to be interviewed will be part of the evaluation design and will keep in mind the budget available for the evaluation. Here again the Penn State team will be careful to not overreach the evaluation beyond the means that are available to conduct the program. All data will be kept in a secure location and Penn State and the information will remain confidential. Penn State will go through the Penn State Institutional Review Board (IRB) to gain approval to conduct the evaluation per Penn State academic research policies.

During the entire program Penn State will conduct scheduled stakeholder meetings to gauge the progress of the project and discover if any changes are occurring or need to occur. Any findings from these scheduled meetings will be immediately conveyed to the project management team for corrective actions if these are required.

A post survey will be conducted of various stakeholder groups towards the end of the project. This will be designed to measure outcomes of the project and see how the project has done on the performance indicators for each identified objective. Penn State will also be tracking progress of specific objectives during the project.

The final analysis and interpretation of the results will require several different data analysis methods. The surveys will be analyzed statistically and statistical reports of the survey results will be compiled. The evaluation design will determine how qualitative data will be interpreted and these data will also be compiled via the data analysis methods determined during the design phase of the evaluation.

Penn State will be responsible for insuring that the evaluation stays within the specified budget and will prepare quarterly status reports to be delivered to the JVN project management team. Penn State will also be responsible for insuring that the evaluation stays within the guidelines established by the IRB.

A final report will be prepared and this report will be made available in multiple delivery forms to make sure the results of the evaluation get widely disseminated throughout the community.

Background of Key Participant Health Care Facilities

Lewistown Hospital

Established in 1905, Lewistown Hospital is a 139 bed acute care non-profit community hospital accredited by the Joint Commission on the Accreditation of Healthcare Organizations. The hospital serves a population of approximately 80,000 in Mifflin, Juniata and surrounding counties. Lewistown Hospital's mission is to provide personal, high quality, and economical healthcare to the residents of the Juniata Valley region in central Pennsylvania. Our service area comprises both Mifflin County and Juniata County along with some smaller municipalities located in neighboring Huntingdon County and Snyder County.

Fulton County Medical Center

The Fulton County Medical Center (FCMC) currently operates 25 acute care inpatient beds and 57 nursing home beds plus a wide array of outpatient services. These services include but are not limited to a 24-hour emergency department which received over 10,000 visits last fiscal year; a wide range of specialty care clinics staffed by visiting physicians; inpatient and outpatient surgery; diagnostic testing including a full service laboratory, CT scanning, Magnetic Resonance Imaging (MRI), nuclear medicine, and mammography; and therapeutic services including a home care program; physical, speech, and occupational therapies; and a cardiopulmonary rehabilitation program. The facility serves the 14,500 residents of Fulton County and additional 10-15,000 residents of surrounding counties. In April of 2006 FCMC broke ground on 22 acres of land as the first step in the construction of a \$37.5 million dollar new facility. Since that time, construction has been underway and they look forward to opening their new doors in December of 2007.

JC Blair Memorial Hospital

J.C. Blair Memorial Hospital is a 104-bed, non-profit community hospital located on "Hospital Hill," overlooking the community of Huntingdon. Founded by Kate Fisher Blair in 1911, in memory of her late husband John Chalmers Blair, the hospital has undergone numerous expansion and renovation projects to continuously meet the changing healthcare needs of residents in its surrounding communities.

Currently, J.C. Blair's inpatient services include medical, surgical, intensive care, obstetric, gynecological, pediatric, and psychiatric. Outpatient services include emergency care, ambulatory surgery, lab, radiology, behavioral health, cardiopulmonary and wound healing. With an active medical staff of nearly 60 physicians, over 400 employees and more than 50 active volunteers, J.C. Blair stands ready to provide care 24 hours a day, 7 days a week, 365 days a year.

Tyrone Hospital

On September 20, 1954 Tyrone Hospital opened its doors and accepted its first patient. Over the years, the hospital has grown to bring personalized health care not only to the residents of Northern Blair County but also to communities in neighboring counties. That growth has included state of the art medical equipment, an expanded range of services, and a diverse medical staff. Tyrone Hospital is a Critical Access Hospital with less than 100 beds.

Family Health Associates

Established in 1991 as a non-profit organization, Family Health Associates came into existence to establish, support, manage, and furnish facilities, personnel and services to provide ambulatory health care services and to promote community healthcare.

In 2007, Family Health Associates employs twenty-five full-time physicians, two part-time physicians, and eight allied health practitioners (also known as mid-level providers) within eight specialties (family practice, internal medicine, obstetrics and gynecology, pediatrics, occupational medicine, urology, hospitalist, and emergency medicine). Provider offices are located in both Mifflin and Juniata counties.

Today, FHA looks to continue growth of its primary care and hospitalist services. In addition, FHA is analyzing the possible employment or acquisition of three specialty groups by the end of fiscal year 2007. To support its provider network, FHA expects to continue to improve its operational efficiencies and revenue cycle management and anticipates the implementation in fiscal year 2008 of a new provider compensation and incentive plan which is expected to both improve productivity and to match productivity with compensation, as well as provide incentives to providers not only for productivity but also for quality of service.

To support and enhance the services to our patients, FHA expects to continue to explore opportunities for the recruitment of new physicians, employment of existing physicians, or the acquisition of existing physician practices in a controlled and financially responsible manner.

Mount Union Medical Center

The Mount Union Area Medical Center was founded in December, 1976. It is a designated Rural Health Clinic. We are a non-profit corporation that is run by a board of directors. There are 2 doctors and 2 physician assistants who practice here. We have about 10,000 active patients. Our purpose is to foster, provide and maintain a medical center for all citizens of the community. Our location makes us accessible for patients from both Huntingdon and Mifflin Counties.

Broad Top Area Medical Center

The Broad Top Area Medical Center is a 501c3 corporation organized in 1972, governed by a community board, having added Huntingdon Family Practice in April of 2002. The Broad Top Area Medical Center (BTAMC) and Huntingdon Family Practice (HFP) serve Huntingdon, Fulton, Bedford, Mifflin, Juniata, Centre, and Blair counties. This is a low income area with minimal employment opportunities. The clinic is a Federally Qualified Health Center.

Four physicians, one nurse practitioner and one physician assistant provide ambulatory care at the Broad Top and Huntingdon sites and inpatient care at JC Blair Memorial Hospital in Huntingdon. Nursing home care at Huntingdon Manor and Westminster Woods. School Health services to Tussey Mountain and Forbes Road School Districts. BTAMC trains Physician Assistants from St. Francis and Lock Haven Universities. BTAMC partners with CERMUSA in Telemedicine. BTAMC participates in the SBIRT collaborative project with Pa Dept of Health. The service area lost 6 primary care providers between 2003 and 2006. An additional provider dropped hospital practice. BTAMC is recruiting a physician in 2007, while retaining our current staff.

List of Participating Health Care Facilities

Non-Profit Health Care Facilities

Lewistown Hospital
JC Blair Memorial Hospital
Tyrone Hospital
Fulton County Medical Center, Critical Access Hospital
Broad Top Area Medical Center, Federally Qualified Health Center (FQHC)
Tri-State Community Health Center, Federally Qualified Health Center (FQHC)
Mount Union Area Medical Center, Federally Designated Rural Health Clinic
Family Health Associates, Lewistown, Rural Health Clinic
Family Health Associates, McAlisterville, Rural Health Clinic
Family Health Associates, McClure, Rural Health Clinic
Family Health Associates, Belleville, Rural Health Clinic
Juniata Medical Center, Rural Health Clinic
Lewistown Ambulatory Care Corporation, Rural Health Clinic
Lewistown Hospital School of Nursing
Huntingdon Family Practice, Federally Qualified Health Center (FQHC)
Southern Huntingdon County Medical Center, Federally Designated Rural Health Clinic

School Based Health Clinics

Mifflin County School District

Armagh Elementary School
Brown Elementary School
Buchanan Elementary School
East Derry Elementary School
Highland Park Area Elementary School
Lewistown Elementary School
Strodes Mills Elementary School
Union Elementary School
Indian Valley Middle School
Lewistown Middle School
Strodes Mills Middle School
Indian Valley High School
Lewistown Area High School

Juniata County School District

Fayette Elementary School
Fermanaugh-Mifflintown Elementary School
Lack-Tuscarora Elementary School
Monroe Elementary School
Mountain View Elementary School

Susquehanna Elementary School
Thompsontown-Delaware Elementary School
Tuscarora Valley Elementary School
Walker Elementary School
Tuscarora Junior High School
East Juniata Junior-Senior High School
Juniata High School

Central Fulton School District

McConnellsburg Elementary School
McConnellsburg Middle School and Senior High School

Forbes Road School District

Forbes Road Elementary School
Forbes Road Junior-Senior High School

Huntingdon Area School District

Brady-Henderson-Mill Creek Elementary School
Jackson-Miller Elementary School
Southside Elementary School
Standing Stone Elementary School
Huntingdon Area Middle School
Huntingdon Area Senior High School

Juniata Valley School District

Juniata Valley Elementary School
Juniata Valley Junior-Senior High School

Mount Union Area School District

Mapleton Union Elementary School
Mount Union/Kistler Elementary School
Shirley Township Elementary School
Mount Union Junior-Senior High School

Southern Fulton School District

Southern Fulton Elementary School
Southern Fulton Junior-Senior High School

Southern Huntingdon County School District

Rockhill Elementary School

Shade Gap Elementary School
Spring Farms Elementary School
Trough Creek Elementary School
Southern Huntingdon County High School/Middle School

Career and Vocational Schools

Fulton County Area Vocational-Technical School
Huntingdon County Career and Technology Center
Mifflin-Juniata Career and Technology Center

For Profit Health Care Facilities

Huntingdon Family Care Associates, LLC, Rural Health Clinic
Surgical Associates (Drs. Schall and Cesare), Medical Office
Dr. James Savory, Medical Office
Pediatrics & Beyond, LLC, Medical Office
Dr. Robert Lamey, Medical Office
Drs. Waddle and Gaugler, Medical Office
Drs. Bressler, Buza, Miller, Minor and Thomas, Medical Offices
Huntingdon HealthCare, Inc., Medical Office
Juniata Valley Medical Center, Federally Designated Rural Health Clinic
Raystown Podiatry, Medical Office
Huntingdon Pediatrics, Medical Office

List of Health Care Facilities with addresses and RUCA Codes

Non-Profit Health Care Facilities

Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044
(717) 248-5411
RUCA CODE = 4.0

JC Blair Memorial Hospital
1225 Warm Springs Ave.
Huntingdon, PA 16652
(814) 643-2290
RUCA CODE = 4.0

Tyrone Hospital
One Hospital Drive
Tyrone, Pa 16686
(814) 684-1255
RUCA CODE = 2.0

Fulton County Medical Center (current)
216 South First Street
McConnellsburg, PA 17233
(717) 485-3155
RUCA CODE = 10.0

Fulton County Medical Center (new facility)
214 Peach Orchard Road
McConnellsburg, PA 17233
(717) 485-3155
RUCA CODE = 10.0

Broad Top Area Medical Center
P. O. Box 127
Broad Top, PA 16621
(814) 635-2916
RUCA CODE = 10.5

Tri-State Community Health Center
525 Fulton Drive
McConnellsburg, PA 17233
(717) 485-3850
RUCA CODE = 10.0

Mount Union Area Medical Center
100 S. Park Street
Mt. Union, Pa 17066
(814) 542-8627
RUCA CODE = 5.0

Family Health Associates, Lewistown
400 Highland Avenue
Lewistown, PA 17044
(717) 242-7332
RUCA CODE = 4.0

Family Health Associates, McAlisterville
RR01, Box 400
McAlisterville, PA 17049
(717) 463-2121
RUCA CODE = 10.4

Family Health Associates, McClure
16 North Brown Street
P. O. Box 7
McClure, PA 17841
(570) 658-2131
RUCA CODE = 5.0

Family Health Associates, Belleville
Five Hedgeapple Drive
Belleville, PA 17004
(717) 667-9030
RUCA CODE = 10.5

Juniata Valley Medical Center
HC 63, Box 48C
Mifflintown, PA 17059
(717) 436-5578
RUCA CODE = 10.4

Lewistown Ambulatory Care Corporation
215 North Beech Street
Burnham, PA 17009
(717) 242-7332
RUCA CODE = 4.0

Lewistown Hospital School of Nursing
400 Highland Avenue
Lewistown, PA 17044
(717) 248-5411
RUCA CODE = 4.0

Huntingdon Family Practice
835 Washington Street
Huntingdon, PA 16652
(814) 643-1414
RUCA CODE = 4.0

Southern Huntingdon County Medical Center
P.O. Box 40
Orbisonia, PA 17243
(814) 447-5556
RUCA CODE = 10.0

School Based Health Clinics

McConnellsburg Elementary School
151 East Cherry Street
McConnellsburg, PA 17233-1400
717-485-4438
RUCA CODE = 10

McConnellsburg Middle School and Senior High School
151 East Cherry Street
McConnellsburg, PA 17233-1400
717-485-3195
RUCA CODE = 10

Forbes Road Elementary School
143 Red Bird Drive
Waterfall, PA 16689
814-685-3865
RUCA CODE = 10

Forbes Road Junior-Senior High School
159 Red Bird Drive
Waterfall, PA 16689
814-685-3866
RUCA CODE = 10

Brady-Henderson-Mill Creek Elementary School
Box B
Mill Creek, PA 17060
814-643-3038
RUCA CODE = 5

Jackson-Miller Elementary School
RD2 Box 173
Huntingdon, PA 16652
814-667-3767
RUCA CODE = 4

Southside Elementary School
RR3 Box 1B
Huntingdon, PA 16652
814-627-1100
RUCA CODE = 4

Standing Stone Elementary School
10 29th Street
Huntingdon, PA 16652
814-643-0771
RUCA CODE = 4

Huntingdon Area Middle School
2500 Cassady Avenue
Huntingdon, PA 16652
814-643-2900
RUCA CODE = 4

Huntingdon Area Senior High School
2400 Cassady Avenue, Suite 1
Huntingdon, PA 16652
814-643-1080
RUCA CODE = 4

Fayette Elementary School
RR2 Box 483
McAlisterville, PA 17049
717-463-2236
RUCA CODE = 10.4

Fermanaugh-Mifflintown Elementary School
HC 63, Box 7D
Mifflintown, PA 17059
717-436-2111
RUCA CODE = 10.4

Lack-Tuscarora Elementary School
RD1, Box 164
Honey Grove, PA 17035
717-734-3172
RUCA CODE = 10

Monroe Elementary School
HC 63, Box 7A
Richfield, PA 17086
717-694-3961
RUCA CODE = 6

Mountain View Elementary School
HC 67, Box A-1
Mifflin, PA 17058
717-436-6816
RUCA CODE = 10

Susquehanna Elementary School
RD1
Liverpool, PA 17045
717-444-3457
RUCA CODE = 2

Thompsontown-Delaware Elementary School
6 School Street
Thompsontown, PA 17094
717-535-5520
RUCA CODE = 10.4

Tuscarora Valley Elementary School
401 Eighth Street
Port Royal, PA 17082
717-527-4635
RUCA CODE = 10

Walker Elementary School
RD2, Box 65
Mifflintown, PA 17059
717-436-6469
RUCA CODE = 10.4

Tuscarora Junior High School
RR4, Box 118
Mifflintown, PA 17059
717-436-2165
RUCA CODE = 10.4

East Juniata Junior-Senior High School
RR2, Box 2411
McAlisterville, PA 17049
717-463-2111
RUCA CODE = 10.4

Juniata High School
RR4, Box 259
Mifflintown, PA 17059
717-436-2193
RUCA CODE = 10.4

Juniata Valley Elementary School
7855 Juniata Valley Pike
PO Box 318
Alexandria, PA 16611
814-669-4422
RUCA CODE = 4

Juniata Valley Junior-Senior High School
7775 Juniata Valley Pike
PO Box 318
Alexandria, PA 16611
814-669-4401
RUCA CODE = 4

Armagh Elementary School
283 Broad Street
PO Box 308
Milroy, PA 17063
717-667-2153
RUCA CODE = 4

Brown Elementary School
96 Kish Road
Reedsville, PA 17084
717-667-3124
RUCA CODE = 4

Buchanan Elementary School
100 Franklin Avenue
Lewistown, PA 17044
717-248-0179
RUCA CODE = 4

East Derry Elementary School
2316 Back Maitland Road
Lewistown, PA 17044
717-543-5615
RUCA CODE = 4

Highland Park Elementary School
490 Sixth Street, Highland Park
Lewistown, PA 17044
717-248-0145
RUCA CODE = 4

Lewistown Elementary School
1 Manor Drive
Lewistown, PA 17044
717-242-5823
RUCA CODE = 4

Strodes Mills Elementary School
185 Chestnut Ridge Road
McVeytown, PA 17051
717-248-7154
RUCA CODE = 5

Union Elementary School
95 North Penn Street
PO Box 978
Belleville, PA 17004
717-935-2512
RUCA CODE = 10.5

Indian Valley Middle School
125 Kish Road
Reedsville, PA 17084
717-667-2123
RUCA CODE = 4

Lewistown Middle School
212 Green Avenue
Lewistown, PA 17044
717-242-5801
RUCA CODE = 4

Strodes Mills Middle School
205 Chestnut Ridge Road
McVeytown, PA 17051
717-248-5488
RUCA CODE = 5

Indian Valley High School
700 Cedar Street
Lewistown, PA 17044
717-248-5441
RUCA CODE = 4

Lewistown Area High School
2 Manor Drive
Lewistown, PA 17044
717-242-1401
RUCA CODE = 4

Mapleton Union Elementary School
RR
Mapleton Depot, PA 17052
814-542-4401
RUCA CODE = 6

Mount Union/Kistler Elementary School
154 School Street
Mount Union, PA 17066
814-542-2595
RUCA CODE = 5

Shirley Township Elementary School
RR2, Allenport
Mount Union, PA 17066
814-542-9381
RUCA CODE = 5

Mount Union Junior-Senior High School
706 North Shaver Street
Mount Union, PA 17066
814-542-2518
RUCA CODE = 5

Southern Fulton Elementary School
3072 Great Cove Road
Warfordsburg, PA 17267
717-294-3400
RUCA CODE = 3

Southern Fulton Junior-Senior High School
13083 Buck Valley Road
Warfordsburg, PA 17267
717-294-3251
RUCA CODE = 3

Rockhill Elementary School
PO Box 184
Rockhill Furnace, PA 17249
814-447-3631
RUCA CODE = 10

Shade Gap Elementary School
22251 Shade Valley Road
Shade Gap, PA 17255
814-259-3137
RUCA CODE = 10

Spring Farms Elementary School
RR1, Box 1876
Three Springs, PA 17264
814-448-3411
RUCA CODE = 10

Trough Creek Elementary School
HCR1, Box 27
Cassville, PA 16623
814-448-3255
RUCA CODE = 6

Southern Huntingdon County High School/Middle School
RR2, Box 1124
Three Springs, PA 17264-9730
814-447-5529
RUCA CODE = 10

Fulton County Area Vocational-Technical School
151 East Cherry Street
McConnellsburg, PA 17233
717-485-5813
RUCA CODE = 10

Huntingdon County Career and Technology Center
PO Box E
Mill Creek, PA 17060
814-643-0951
RUCA CODE = 5

Mifflin-Juniata Career and Technology Center
700 Pitt Street
Lewistown, PA 17044
717-248-3933
RUCA CODE = 4

For-Profit Health Care Facilities

Huntingdon Family Care Associates, LLC
10663 Raystown Road, Suite A
Huntingdon, PA 16652
(814) 627-0266
RUCA CODE = 4.0

Surgical Associates
790 Bryan Street
Huntingdon, PA 16652
(814) 643-4876
RUCA CODE = 4.0

Dr. James Savory
805 Mifflin Street
Huntingdon, PA 16652
(814) 643-6150
RUCA CODE = 4.0

Pediatrics & Beyond, LLC
10663 Raystown Road, Suite B
Huntingdon, PA 16652
(814) 627-0071
RUCA CODE = 4.0

Dr. Robert Lamey
412 Pennsylvania Avenue
Huntingdon, PA 16652
Phone: (814) 643-1641
RUCA CODE = 4.0

Drs. Waddle and Gaugler
820 Bryan St., Suite 1
Huntingdon, PA 16652
(814) 643-1141
RUCA CODE = 4.0

Drs. Bressler, Buza, Miller, Minor and Thomas
3228 Cold Springs Road
Huntingdon, PA 16652
(814) 643-6241
RUCA CODE = 4.0

Huntingdon HealthCare, Inc.
814 Washington Street
Huntingdon, PA 16652
(814) 643-4415
RUCA CODE = 4.0

Juniata Valley Medical Center
Main Street
Alexandria, PA 16611
(814) 669-4444
RUCA CODE = 4.0

Raystown Podiatry
908 Washington St.
Huntingdon, PA 16652
(814) 643-1720
RUCA CODE = 4.0

Huntingdon Pediatrics
1227 Warm Springs Avenue, Suite 301
Huntingdon, PA 16652
(814) 643-0531
RUCA CODE = 4.0

Appendix A: Letters of Commitment and Support

JOHN E. PETERSON
5th District, Pennsylvania
(202) 225-6121
(202) 225-6795-FAX
<http://www.house.gov/johnpeterson>

COMMITTEES:
APPROPRIATIONS
RESOURCES
Co-CHAIRMAN:
CONGRESSIONAL RURAL CAUCUS

Congress of the United States
House of Representatives
Washington, DC 20515-3805

May 1, 2007

Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

Dear Mr. Cowan,

I would like to lend my strong support to Lewistown Hospital's application for funding as part of the Juniata Valley Network (JVN). Once functioning, the JVN will allow Lewistown Hospital along with other area rural health care facilities to be allied under one regional communication umbrella serving both patients and health care professionals.

With your help, I have learned that the JVN represents several struggling health care facilities that are unable to afford the large upfront installation costs to build the robust high bandwidth telecommunications network that is required to support many telemedicine applications. To this end, and even above and beyond a successful grant application from the Federal Communications Commission, the JVN will join forces with other regional non-profits to guarantee sustained financial stability in coming years.

From our conversations I know you realize Pennsylvania's 5th Congressional District is one of our nation's most rural. Added to this is a substantial senior population. Technologies that increase the speed and accuracy of diagnosing a patient's problem are not only beneficial but absolutely an essential medical tool in our rural and medically underserved region.

Lewistown Hospital has a solid history of technical innovation. With this next step, and as a member of the JVN, the hospital can take advantage of technology allowing it to participate in telemedicine applications such as teleradiology and remote access of patients' records. In rural Pennsylvania, an area of limited roads, scarce public transportation and severe winter weather these technologies are more than necessary, they are lifesaving.

TITUSVILLE
127 West Spruce Street, Suite C
Titusville, PA 16354
(814) 827-3885
(814) 827-7307 (FAX)

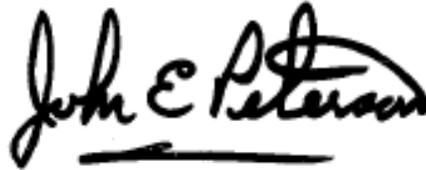
STATE COLLEGE
1524 West College Avenue
State College, PA 16801
(814) 238-1776
(814) 238-1918 (FAX)

Ron Cowan
Vice President of Information Management/CIO

Page 2

If you require any additional help, please do not hesitate to contact my State College office.

Sincerely,

A handwritten signature in black ink that reads "John E. Peterson". The signature is written in a cursive style with a prominent flourish at the end of the name.

John E. Peterson,
Member of Congress

JEP/mg



**United States Department of Agriculture
Rural Development**
Pennsylvania State Office
www.rurdev.usda.gov/pa

May 2, 2007

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

Dear Mr. Cowan:

USDA Rural Development, Pennsylvania, is in full support of your application for funding assistance from the Federal Communication Commission's Rural Health Care Pilot Program to utilize modern telecommunications technology to connect hospitals, rural health clinics and school-based health clinics. This project effectively builds upon the successful Distance Learning and Telemedicine Grants that Rural Development has awarded Lewistown Hospital in the last 3 years.

After examining your proposal, we feel that this project will have a very positive impact on the health and well being of citizens of Juniata, Mifflin, Huntingdon, Fulton, Snyder, and Blair Counties. Mountains and distance are significant barriers to improving health care in these very rural counties, and we feel that your proposal will be of great assistance to the communities, citizens and students in this region.

We are particularly impressed with the critical community need-based focus of several of the practical applications that your proposal targets to link the health care and education systems in your area of rural Pennsylvania, including:

1. Using telecommunications to improve the operations and effectiveness of school-based clinics – a primary health care resource for youth in our poor rural communities
2. Sharing of electronic health and immunization records
3. Providing real-time medical video consultations
4. Using the telecommunication network to let school nurses efficiently receive the health education they are required to attend every year in a mode that dramatically cuts travel time and costs to our school districts
5. Providing expert clinicians to deliver quality health education to students on critical health care issues

We believe that your application will effectively use broadband telecommunications technology to provide positive outcomes that help meet critical community health care

and educational needs in this area of rural Pennsylvania. We are in full support of your efforts to seek Federal Communications Commission funds in this regard.

Please let us know if we can be of further assistance to you in meeting critical community needs in your area.

Sincerely,

/s/ Gary H. Groves

GARY H. GROVES
State Director



May 4, 2007

Mr. Ron Cowan
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan,

The Appalachian Development Center (ADC) is pleased to support your application to the FCC Rural Health Care Pilot Program on behalf of the Juniata Valley Network consortium of rural health care providers.

The ADC is responsible for specialized services designed to improve conditions for citizens in our 52 Appalachian counties. The ADC is charged with helping the people of Appalachia Pennsylvania build a better future by creating jobs, building infrastructure such as telecommunications to foster business and community growth and increasing the civic capacity and leadership skills of our citizens. This office is the conduit for resources provided by the federal government's Appalachian Regional Commission (ARC).

We are pleased that you are collaborating with one of our Local Development Districts, SEDA-COG, on your project and will be working with the SEDA-COG Broadband Advisory workgroup on your proposed broadband study for the Juniata Valley. As you may already know, the ARC has a number of broadband initiatives. Part of this effort is the support health care applications. According to the ARC there are three primary areas where broadband is applicable to health care in Appalachian region.

Broadband uses for patients. Broadband networking can enhance the medical care of residents in rural communities. Through telemedicine residents can have access to remote specialists that would otherwise be unavailable. Mobility-impaired patients can thus avoid the expense and hassle of traveling long distances for expert consultations. Telemedicine also brings instant access to distant specialists to support diagnostic and treatment services. And patients' with access can save money on prescription drugs ordered online and can take part in medical support groups.



Community
Affairs and
Development

Commonwealth
Keystone Building
400 North Street
4th Floor

Harrisburg
Pennsylvania
17120-0225

tel: 717-214-5395
fax: 717-783-4663
866-GO-NEWPA | newPA.com

Broadband uses for the industry. Local health clinics can be linked to regional hospitals to better serve patients. Federal regulations will soon require hospitals and caregivers to submit Medicare and Medicaid claims electronically; those who fail to do so risk losing substantial reimbursements. Cost savings in records management and other administrative duties can be substantial.

Broadband uses for professionals. Distance learning applications enable health care workers to participate in continuing education programs. Participation in professional organizations and online communities allows rural clinicians to keep up with advances in the field.

ARC funds may be available to support the implementation of the recommended network that will result as part of your FCC funded broadband network study. I encourage you to start exploring the use of ARC and other resource to take the JVN to the net level.

My office has also taken note of your three successful USDA Distance Learning and Telemedicine projects. These developed applications are the cornerstone applications that require an advanced telecommunications network. I look forward to hearing more about the success of this program in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "Neil Fowler", written in a cursive style.

Neil Fowler, Director
Appalachian Development Center

May 2, 2007



Mr. Ron Cowan, CIO
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan;

SEDA-Council of Governments is pleased to provide a letter of support for Lewistown Hospital's application on behalf of the Juniata Valley Network (JVN) consortium to the FCC Rural Health Pilot Program.

SEDA-COG hosts a committee of parties interested in increasing the availability of broadband across our 11-county region. The members range from representatives of ISPs and tech service companies to ordinary citizens struggling to attract a provider to their area. This project fits very nicely into the Broadband Advisory Committee's goals of encouraging the expansion of broadband capabilities into areas of the region which are currently without such services.

The project's approach also agrees with our belief that in this rural environment no single market sector is large enough to build and sustain a robust network. In our view, multiple sectors, and preferably ALL sectors, must cooperate to aggregate the minimum user base necessary to be self-sustaining. SEDA-COG has maps and data from a recent (2005) survey of broadband capabilities covering several of the four counties in your project. Included in those studies are defined geographic areas where the need for broadband is either current or expected due to growth. SEDA-COG would be happy to share that data with you as you prepare your assessment. I hope that the data you will collect would be made available to us as well.

Several of our current projects touch or are focused on broadband telecommunications and almost all of them include those JVN project counties that lie within our region. If tasks within those projects can provide information or support to your efforts, we would be very willing to share results with your efforts.

Sincerely,

A handwritten signature in black ink, appearing to read "James L. Baker".

James L. Baker, Chief
Information Technologies Group

A
LOCAL
DEVELOPMENT
DISTRICT

serving the counties of

Centre

Clinton

Columbia

Juniata

Lycoming

Mifflin

Montour

Northumberland

Perry

Snyder

Union

SEDA
Council of
Governments

201 Furnace Rd
Lewisburg
PA 17837
USA

(570) 524-4491
fax 524-9190



216 South First Street • McConnellsburg, PA 17233 • (717) 485-3155
Equal Opportunity Healthcare Facility

April 30, 2007

Mr. Ron Cowan, CIO
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan,

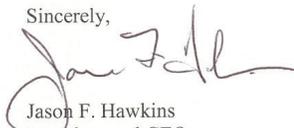
The Fulton County Medical Center (FCMC) has agreed to join the Juniata Valley Network consortium and is in full support of Lewistown Hospital's application on behalf of the JVN consortium to the FCC Rural Health Care Pilot program. As you know, FCMC is a small Critical Access Hospital that serves the rural residents of Fulton County. Despite being a small hospital we have gained a lot of experience in telemedicine applications with the installation of a PACS system and an EMR for our patients and clinical staff to utilize. Our network access to the Internet is not as fast as we would like, however, and we look forward to becoming a member of the JVN.

With the proposed 100 Mbps connection to the other members of the JVN, and a 10 Mbps connection to the Internet, we can begin to explore new telemedicine applications and educational possibilities that were just not even thinkable with a slower T-1 connection. Many of the objectives of the JVN will be of great benefit to the FCMC. By increasing our bandwidth participating physicians will have a faster connection to our EMR and PACS. We see that we will be able to have effective video conferencing capabilities and be able to explore and pilot real time telemedicine consults with outside organizations that have services we can simply not afford here at FCMC.

The ability to use the JVN to access educational workshops for our physicians and nursing staff will save the FCMC significant training costs as now our staff will not need to travel as much to continue their medical education as required by law to retain their licensure in the Commonwealth of Pennsylvania.

Of greatest importance to FCMC is the sustainability model that is proposed by the JVN. With the help of the FCC we can build a health care telecommunications network that will be affordable for us to maintain after grant funds run out. Other outside organizations would like to offer us access to telemedicine services but they do not realize the financial impossibility for our small organization to pay for the costs of the high speed broadband connection that is required. The JVN will provide us with an affordable network backbone and permit us to explore possibilities that were simply unachievable in the past.

Sincerely,



Jason F. Hawkins
President and CEO

For healthcare close to home.



Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

Dear Mr. Cowan,

J. C. Blair Memorial Hospital supports the grant application by the Juniata Valley Network for funding from the FCC Rural Health Care Pilot Program. This project will position rural Huntingdon County, Pennsylvania for the future.

This network will provide the infrastructure for the applications that we are developing for use in providing care to patients in rural Pennsylvania. Currently, we are providing clinical data to physicians in their offices and homes. Electronic Medical Record (EMR) use will continue to grow over the next 5 to 10 years. The proper bandwidth must be in place prior to delivering applications to the providers, otherwise, the utilization of the technology by physicians will be frustrating. These frustrations would lead to physicians not using the systems, and the success of the automation of healthcare would be jeopardized.

The proposed pilot will also enable us to test the viability of real time video consults with physicians and other medical experts on diabetes, obesity, autism, and nutritional issues. With the limited telecommunications access we have now these advanced telemedicine applications are only a dream. The proposed network will give us an opportunity to see if we can make these dreams a reality.

Once again, I want to express my strong support and commitment to work with other health care facilities in our region to explore the health care possibilities that the proposed network will give our school district a chance to explore.

Sincerely,

Stephen C. Gildea
Director of Management Information Systems



Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

Dear Mr. Cowan,

Tyrone Hospital supports the grant application by the Juniata Valley Network for funding from the FCC Rural Health Care Pilot Program. We are very excited about this opportunity to partner with the many health care facilities in our region so that we may be more able to improve the health care outcomes of our patients.

This network will provide the infrastructure for the applications that we are developing for use in providing care to patients in rural Pennsylvania. Currently, we are providing clinical data to physicians in their offices and homes. Electronic Medical Record (EMR) use will continue to grow over the next 5 to 10 years. The proper bandwidth must be in place prior to delivering applications to the providers, otherwise, the utilization of the technology by physicians will be frustrating. These frustrations would lead to physicians not using the systems, and the success of the automation of healthcare would be jeopardized.

Tyrone Hospital is also leading the efforts to form a Regional Health Information Organization (RHIO) in south central Pennsylvania. This infrastructure project will provide the required platform for interoperability between hospitals, physicians and other care givers as we begin to move toward sharing patient data.

The proposed pilot will also enable us to test the viability of real time video consults with physicians and other medical experts on diabetes, obesity, autism, and nutritional issues. With the limited telecommunications access we have now these advanced telemedicine applications are only a dream. The proposed network will give us an opportunity to see if we can make these dreams a reality.

Once again, I want to express my strong support and commitment to work with other health care facilities in our region to explore the health care possibilities that the proposed network will give our school district a chance to explore.

Sincerely,

Stephen C. Gildea
Chief Information Officer

One Hospital Drive • Tyrone, PA 16686 • 814-684-1255
www.TyroneHospital.org

**Tri-State Community Health Center
130 West High Street
Hancock, MD 21750
Phone (301) 678-7256 Fax (301) 678-8007**

May 4, 2007

To Whom It May Concern:

This letter is to express support for the Juniata Valley Network FCC Rural Health Care Pilot Program grant application. The objectives of this program will provide essential resources, information and telemedicine applications that will be of great benefit to the citizens of our rural community. Due to the unique challenges the rural area of Fulton county presents to providing health care services, creating a network of providers and services will better equip Tri-State Community Health Center's ability to improve the services and health outcomes of the community of McConnellsburg and the surrounding area.

As a Federally Qualified Health Center, Tri-State Community Health Center believes this project will assist in all facets of the organization's mission. It is our goal to provide quality care to all patients regardless of their ability to pay and provide holistic care to improve the overall health of the patients we serve. In order to obtain this goal, Tri-State must consistently obtain varying degrees of information, education and support to better meet the individual needs of our patients. Tri-State sincerely encourages you to understand the essential need of this project for the Fulton County area.

Sincerely,



EXECUTIVE DIRECTOR

Leslie Colbrese
Executive Director



Tuscarora Intermediate Unit 11

2527 US Hwy 522 South
McVeytown PA 17051-9717
(814) 542-2501 • (717) 899-7143

April 24th, 2007

Mr. Ron Cowan
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan:

I am writing you today to express the firm commitment that the Tuscarora Intermediate Unit (TIU) has in supporting the proposed Juniata Valley Network proposal to the FCC Rural Health Care Pilot program. As you are aware the TIU is just starting a major network expansion of the Tuscarora Regional Educational Network Delivery System (TRENDS). The chance to collaborate with the JVN and in effect merge our network with your proposed network is very exciting.

Of specific concern to our member school districts is the support that the JVN will provide the 51 school based health clinics in our service area. These rural health clinics serve as a primary health care resource to many students and our financially strapped school districts do not have the funds to truly support these clinics. By connecting to the JVN we will open up telemedicine opportunities for the clinicians to reach out beyond the school and access health care resources that will improve the health outcomes of our students. We are already working towards a new collaborative application with the Lewistown Hospital School of Nursing to apply for a new USDA Distance Learning and Telemedicine grant to place the video conferencing equipment we need for telemedicine applications directly into these school based health clinics.

The TIU has been an important location for video bridging equipment in our region and beyond. The JVN will assist us with upgrading this important and vital network component so we can handle the increased video traffic and provide a higher resolution service to the JVN. In exchange we are letting the JVN use our schools and towers as jump off points to reach many far flung rural health clinics. One of our school districts, the Mifflin County School District (MCSD), is actually not connected to us right now. With the help of the JVN we can tag off the JVN connection and then just jump a few blocks to connect to the MCSD. So our networks are indeed truly merged.

We are also very interested in participating in the proposed initial network design study for broadband in our rural region. Once again, we believe that only by working together with other organizations can we ever hope to be able to afford to build and maintain these kinds of telecommunication services in the Juniata Valley. We look forward to working with the JVN to accomplish the many objectives set forth on the project narrative.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Richard Daubert'.

Richard Daubert
Executive Director

An Equal Rights and Opportunity Educational Service Agency
FAX (814) 542-2569 • TDD (814) 542-2905

Commissioners of Mifflin County



COMMISSIONERS
SUSAN M. MCCARTNEY
RAYMOND M. SNYDER
OTIS E. RIDEN, JR.



20 NORTH WAYNE STREET
LEWISTOWN, PENNSYLVANIA 17044-1797
Telephone: 717-248-6733
PA Only: 800-248-CNTY
Fax: 717-248-3695



CHIEF CLERK
PEGGY G. FINKENBINER
SOLICITOR
PATRICIA A. GARDNER

April 30, 2007

Mr. Ron Cowan, CIO
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan,

The Mifflin County Board of Commissioners is pleased to provide a letter of support for Lewistown Hospital's application on behalf of the Juniata Valley Network (JVN) consortium to the FCC Rural Health Pilot Program. The County is also approving the use of county communications tower space to this Rural Health Program for our normal rental fee during the grant period. These communication towers will link two rural health clinics to the broadband network proposed in the grant. The two rural health clinics serve the citizens of Mifflin County in the McClure and McAllister areas and Lewistown Hospital serves the residents of both Mifflin and Juniata County.

Mifflin County is investing approximately \$120,000 of funds being paid to the county by the Commonwealth of Pennsylvania in the communications tower that will provide links to two rural health clinics. These improvements will end up as a component piece of the JVN in that they will be used to connect the two previously mentioned rural health clinics to the JVN. These funds can be considered as match money to the FCC project and will be spent in the Fall of 2007 when the county improves the tower.

This project has a great benefit to the citizens of our rural region. Our recent Human Services Needs Assessment identified adequate health care as a priority in our rural region. We believe that by having a broadband network linking Emergency Services, schools, hospitals, clinics and doctors' offices, that medical care will be vastly improved and the County is helping to meet an identified need within our area. The proposed JVN will help address this identified need in our community.

As you are aware, Mifflin County is already investigating the possible implementation of broadband in our county but we are just in the initial stages of investigation. We would very much like to be involved in the proposed network study for broadband. We also understand that the FCC may not consider a formal evaluation of the project as an eligible expense. We feel strongly that this evaluation is a very important element in the overall project. Therefore, the Board of Commissioners is willing to directly cover up to \$78,000 of the cost of the evaluation if the FCC funds the JVN. We understand that Penn State University will conduct this independent evaluation of the project and we approve this idea.

Sincerely,


Susan M. McCartney


Raymond M. Snyder


Otis E. Riden, Jr.

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COUNTY COMMISSIONERS
JUNIATA COUNTY



Commissioners
TERESA J. O'NEAL
MARK R. PARTNER
DALE S. SHELLEY

Administrator/Chief Clerk
G. SHERLYN MOSEBEY
Solicitor
CLYDE R. BOMGARDNER

26 NORTH MAIN STREET - P.O. BOX 68
MIFFLINTOWN, PENNSYLVANIA 17059
PHONE 717-436-7704 - FAX NO. 717-436-7766

April 30, 2007

Mr. Ron Cowan, CIO
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan,

The Juniata County Board of Commissioners is pleased to provide a letter of support for Lewistown Hospital's application on behalf of the Juniata Valley Network (JVN) consortium to the FCC Rural Health Pilot Program. The Commissioners understand that this project will connect three of our rural health clinics in Mifflintown and in McAllisterville to a high speed broadband network that will provide the ability for these clinics to connect to telemedicine and health educational resources previously not available to them. We are also pleased to learn that the JVN will connect to the school health clinics that are in each of our schools. These schools often serve as a primary source of health care resources for our poorer families and do not have the resources they truly need. We see that the JVN will be a great benefit to them.

It is our understanding that Mifflin County is donating communication tower space to the project. We also understand that part of the project includes an initial network design study to place broadband in our county to be used by various health care personnel. Juniata County is happy to cooperate with the proposed study and if our communication towers can be included in that project we will be happy to sit down at the table and work something out with the JVN similar to what Mifflin County is agreeing to.

Our rural region is often left behind when it comes to technology. We have partnered with Mifflin County on a Human Services Needs Assessment that identified adequate health care as a priority in our county. This project will enable our rural physicians to pilot test telemedicine applications that were previously not even in the realm of possibility. These efforts can only boost the level and quality of health care for our citizens and as such we are in strong support of this project.

Sincerely,

Teresa J. O'Neal

Mark R. Partner

Dale S. Shelley

R. DEAN FLUKE
ROY E. THOMAS
Larry O. Sather } County
Commissioners

EYDIE S. MILLER
Chief Clerk



Huntingdon County, Pennsylvania

OFFICE OF

COUNTY COMMISSIONERS

HUNTINGDON, PENNSYLVANIA 16652-1486

May 1, 2007

SCOT GILL
Solicitor

MEETING DAY
TUESDAY-9:30 A.M.

PHONE: 814-643-3091
FAX: 814-643-8152

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

Dear Mr. Cowan,

We are writing you to express the strong support that the Huntingdon County Commissioners have for your grant application for funding from the FCC Rural Health Care Pilot Program. We are very excited about this opportunity to partner with the many health care facilities in our region so that we may be more able to improve the health care outcomes of our citizens. We understand that this network will serve medical facilities throughout northern Blair, Fulton, Huntingdon, Juniata, Mifflin and western Snyder Counties.

As you know, many areas of Huntingdon County lack access to a broadband network. We support all efforts to get this technology to the broadest number of institutions and citizens. This new telecommunications network will enable us to connect school clinics to other health care facilities such as J.C. Blair Memorial Hospital and allow us to explore innovative telemedicine opportunities. One example of this is that the new network could allow school clinics to share clinical records with local physicians provided the parents sign an authorization to permit this. This could also allow the clinics to access a student's Electronic Medical Record which would include immunization records and would also provide the clinics with important medical background information about a student.

----- Once again, we want to express our strong support and commitment to work with schools and health care facilities in our region to explore the health care possibilities that the proposed network will give.

Sincerely,
Huntingdon County Commissioners

R Dean Fluke
R. Dean Fluke, Chairman

Roy E Thomas
Roy E. Thomas

Larry O. Sather
Larry O. Sather

File: GC, S

**MIFFLIN COUNTY
INDUSTRIAL
DEVELOPMENT
CORPORATION**

MCIDC PLAZA - BLDG. 50
6395 SR 103 NORTH
LEWISTOWN, PENNSYLVANIA 17044
TELEPHONE 717-242-0393
FAX 717-242-1842
TTY/TDD ONLY 717-247-3695
E-MAIL mcidc@mcidc.org

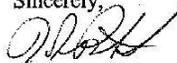
May 2, 2007

Mr. Ron Cowan, CIO
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan:

The Mifflin County Industrial Development Corporation (MCIDC) supports the Hospital's application on behalf of the Juniata Valley Network (JVN) consortium to the FCC Rural Health Pilot Program. We see this project as an important component that would eventually provide a regional network of broadband communication. Linking education, health, public safety, and industrial clusters in an efficient and modern system of communication is essential for our growth. We believe the collaboration among all constituents, particularly in a rural area such as Central PA, is laudable and you should be commended.

We have been told that Mifflin County is donating communication tower space to the project. Also, the MCIDC, with others, is leading a redevelopment effort in core communities and will incorporate this FCC Program into our workplan. These efforts will boost the quality of life for our citizens and we are in strong support of this project.

Sincerely,

Robert P. Postal
President

RPP/rer

MCIDC prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status.

MIFFLIN COUNTY SCHOOL DISTRICT

201 Eighth Street - Highland Park
Lewistown, Pennsylvania 17044

TELEPHONE (717) 248-0148

FAX (717) 248-5345

David S. Runk, Superintendent

Dr. John J. Czerniakowski, Assistant Superintendent
Edward R. Curry, Director of Secondary Education
Mark K. Hidlay, Director of Student Support Services

Dr. Shirley A. Woika, Director of Special Education
Mary Lou M. Sigler, Director of Federal Programs
James S. Weaver, Jr., Business Manager

April 27, 2007

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

Dear Mr. Cowan,

The Mifflin County School District is very supportive of your application for funding assistance from the FCC Rural Health Care Pilot Program to build an extensive telecomm network that will connect hospitals, rural health clinics and our school based health clinics. We see many benefits to our school district and want to be an active partner in this project.

Our school district provides education to approximately 5,850 students. We also provide health care services to our students thorough our school based health clinics. For many of our poorer students these clinics serve as a primary health care resource. The support that could be offered to us through this network will greatly increase our ability to serve the needs of our students and impact their health care outcomes.

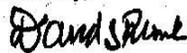
We are enthusiastic about participating in the myriad of pilot ideas that have been discussed to see if we can make these viable in our schools. From sharing of electronic health records to accessing immunization records to exploring real time video consults the possibilities for the new network are endless. And all of these applications are unimaginable without this new broadband network.

Other down to earth practical applications include using the network to permit our nurses to access health education they are required by law to attend every year. This new Commonwealth requirement is placing a severe burden on our rural school district and will impact our ability to provide staff needed to run our clinics.

Our teachers are also very excited about being able to connect to the network and have top notch clinicians that are experts in their fields deliver quality health education to our students on diabetes, nutrition, and other health related topics. Being able to bring these medical experts right into the classroom is going to be a huge benefit to our students, and to their families.

We hope the FCC sees the benefit of your proposed project. We certainly do and can really see the impact that this is going to have on our students and our staff. We would be happy to speak to anyone at the FCC about our interest in this program.

Sincerely,



David S. Runk
Superintendent

AN EQUAL OPPORTUNITY EMPLOYER TITLE IX 1972 EDUCATIONAL AMENDMENT

Central Fulton School District

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

May 1, 2007

Dear Mr. Cowan,

I am writing you today to express the strong support that the Central Fulton School District has for your grant application for funding from the FCC Rural Health Care Pilot Program. We are very excited about this opportunity to partner with the many health care facilities in our region so that we may be more able to improve the health care outcomes of our students and their families.

Our rural schools all have School Based Health Clinics that have as their purpose to assist our students with health related issues. While staffing shortages and budget constraints require that some of our clinical staff manage more than one health clinic, we do provide coverage for every school building in our district.

This new telecommunications network will enable us to connect these clinics to other health care facilities such as Fulton County Medical Center and allow us to explore innovative telemedicine opportunities. One example of this is that the new network could allow our clinics to share clinical records with local physicians provided the parents sign an authorization to permit this. This could also allow the clinics to access a student's Electronic Medical Record which would include immunization records and would also provide the clinics with important medical background information about a student. All of our clinics are now required to measure Body Mass Index (BMI) and we could share this information with the physicians over the new proposed network.

We are also very excited about the use of the network to provide ready access to Continuing Education for our clinical staff. With our limited staff, any time we can save by not having the staff travel out of the region to attend training will increase the time they can spend with the students.

The proposed pilot will also enable us to test the viability of real time video consults with physicians and other medical experts on diabetes, obesity, autism, and nutritional issues. With the limited telecommunications access we have now these advanced telemedicine applications are only a dream. The proposed network will give us an opportunity to see if we can make these dreams a reality.

Once again, I want to express my strong support and commitment to work with other health care facilities in our region to explore the health care possibilities that the proposed network will give our school district a chance to explore.

Sincerely,



Julia M. Cigola
Superintendent

Forbes Road School District

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

May 1, 2007

Dear Mr. Cowan,

The Forbes Road School District is very supportive of your application for funding assistance from the FCC Rural Health Care Pilot Program to build an extensive telecomm network that will connect hospitals, rural health clinics and our school based health clinics. We see many benefits to our school district and want to be an active partner in this project.

Our school district provides education to approximately 452 students. We also provide health care services to our students through our school based health clinics. For many of our poorer students these clinics serve as a primary health care resource. The support that could be offered to us through this network will greatly increase our ability to serve the needs of our students and impact their health care outcomes.

We are enthusiastic about participating in the myriad of pilot ideas that have been discussed to see if we can make these viable in our schools. From sharing of electronic health records to accessing immunization records to exploring real time video consults the possibilities for the new network are endless. And all of these applications are unimaginable without this new broadband network.

Other down to earth practical applications include using the network to permit our nurses to access health education they are required by law to attend every year. This new Commonwealth requirement is placing a severe burden on our rural school district and will impact our ability to provide staff needed to run our clinics.

Our teachers are also very excited about being able to connect to the network and have top notch clinicians that are experts in their fields deliver quality health education to our students on diabetes, nutrition, and other health related topics. Being able to bring these medical experts right into the classroom is going to be a huge benefit to our students, and to their families.

We hope the FCC sees the benefit of your proposed project. We certainly do and can really see the impact that this is going to have on our students and our staff. We would be happy to speak to anyone at the FCC about our interest in this program.

Sincerely,



Merrill S. Arnold
Superintendent

Huntingdon Area School District

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

May 1, 2007

Dear Mr. Cowan,

The Huntingdon Area School District is very supportive of your application for funding assistance from the FCC Rural Health Care Pilot Program to build an extensive telecomm network that will connect hospitals, rural health clinics and our school based health clinics. We see many benefits to our school district and want to be an active partner in this project.

Our school district provides education to approximately 2275 students. We also provide health care services to our students through our school based health clinics. For many of our poorer students these clinics serve as a primary health care resource. The support that could be offered to us through this network will greatly increase our ability to serve the needs of our students and impact their health care outcomes.

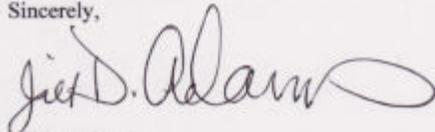
We are enthusiastic about participating in the myriad of pilot ideas that have been discussed to see if we can make these viable in our schools. From sharing of electronic health records to accessing immunization records to exploring real time video consults the possibilities for the new network are endless. And all of these applications are unimaginable without this new broadband network.

Other down to earth practical applications include using the network to permit our nurses to access health education they are required by law to attend every year. This new Commonwealth requirement is placing a severe burden on our rural school district and will impact our ability to provide staff needed to run our clinics.

Our teachers are also very excited about being able to connect to the network and have top notch clinicians that are experts in their fields deliver quality health education to our students on diabetes, nutrition, and other health related topics. Being able to bring these medical experts right into the classroom is going to be a huge benefit to our students, and to their families.

We hope the FCC sees the benefit of your proposed project. We certainly do and can really see the impact that this is going to have on our students and our staff. We would be happy to speak to anyone at the FCC about our interest in this program.

Sincerely,



Jill D. Adams
Superintendent

Juniata County School District

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

May 1, 2007

Dear Mr. Cowan,

I am writing you today to express the strong support that the Juniata County School District has for your grant application for funding from the FCC Rural Health Care Pilot Program. We are very excited about this opportunity to partner with the many health care facilities in our region so that we may be more able to improve the health care outcomes of our students and their families.

Our school district provides education to approximately 3098 students. We also provide health care services to our students through our school based health clinics. For many of our poorer students these clinics serve as a primary health care resource. The support that could be offered to us through this network will greatly increase our ability to serve the needs of our students and impact their health care outcomes.

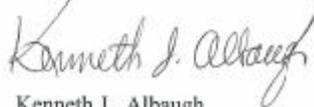
We are enthusiastic about participating in the myriad of pilot ideas that have been discussed to see if we can make these viable in our schools. From sharing of electronic health records to accessing immunization records to exploring real time video consults the possibilities for the new network are endless. And all of these applications are unimaginable without this new broadband network.

Other down to earth practical applications include using the network to permit our nurses to access health education they are required by law to attend every year. This new Commonwealth requirement is placing a severe burden on our rural school district and will impact our ability to provide staff needed to run our clinics.

Our teachers are also very excited about being able to connect to the network and have top notch clinicians that are experts in their fields deliver quality health education to our students on diabetes, nutrition, and other health related topics. Being able to bring these medical experts right into the classroom is going to be a huge benefit to our students, and to their families.

We hope the FCC sees the benefit of your proposed project. We certainly do and can really see the impact that this is going to have on our students and our staff. We would be happy to speak to anyone at the FCC about our interest in this program.

Sincerely,



Kenneth J. Albaugh
Superintendent

Mount Union Area School District

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

May 1, 2007

Dear Mr. Cowan,

The Mount Union Area School District is very supportive of your application for funding assistance from the FCC Rural Health Care Pilot Program to build an extensive telecomm network that will connect hospitals, rural health clinics and our school based health clinics. We see many benefits to our school district and want to be an active partner in this project.

Our rural schools all have School Based Health Clinics that have as their purpose to assist our students with health related issues. While staffing shortages and budget constraints require that some of our clinical staff manage more than one health clinic, we do provide coverage for every school building in our district.

Our school district provides education to approximately 1534 students. We also provide health care services to our students through our school based health clinics. For many of our poorer students these clinics serve as a primary health care resource. The support that could be offered to us through this network will greatly increase our ability to serve the needs of our students and impact their health care outcomes. This new telecommunications network will enable us to connect these clinics to other health care facilities such as JC Blair Hospital and allow us to explore innovative telemedicine opportunities.

We are also very excited about the use of the network to provide ready access to Continuing Education for our clinical staff. With our limited staff, any time we can save by not having the staff travel out of the region to attend training will increase the time they can spend with the students.

The proposed pilot will also enable us to test the viability of real time video consults with physicians and other medical experts on diabetes, obesity, autism, and nutritional issues. With the limited telecommunications access we have now these advanced telemedicine applications are only a dream. The proposed network will give us an opportunity to see if we can make these dreams a reality.

Once again, I want to express my strong support and commitment to work with other health care facilities in our region to explore the health care possibilities that the proposed network will give our school district a chance to explore.

Sincerely,



James Estep
Superintendent

Southern Fulton School District

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

May 1, 2007

Dear Mr. Cowan,

I am writing you today to express the strong support that the Southern Fulton School District has for your grant application for funding from the FCC Rural Health Care Pilot Program. We are very excited about this opportunity to partner with the many health care facilities in our region so that we may be more able to improve the health care outcomes of our students and their families.

Our school district provides education to approximately 913 students. We also provide health care services to our students through our school based health clinics. For many of our poorer students these clinics serve as a primary health care resource. The support that could be offered to us through this network will greatly increase our ability to serve the needs of our students and impact their health care outcomes.

We are enthusiastic about participating in the myriad of pilot ideas that have been discussed to see if we can make these viable in our schools. From sharing of electronic health records to accessing immunization records to exploring real time video consults the possibilities for the new network are endless. And all of these applications are unimaginable without this new broadband network.

We are also very excited about the use of the network to provide ready access to Continuing Education for our clinical staff. With our limited staff, any time we can save by not having the staff travel out of the region to attend training will increase the time they can spend with the students.

The proposed pilot will also enable us to test the viability of real time video consults with physicians and other medical experts on diabetes, obesity, autism, and nutritional issues. With the limited telecommunications access we have now these advanced telemedicine applications are only a dream. The proposed network will give us an opportunity to see if we can make these dreams a reality.

Once again, I want to express my strong support and commitment to work with other health care facilities in our region to explore the health care possibilities that the proposed network will give our school district a chance to explore.

Sincerely,



Ralph Scott
Superintendent

Southern Huntingdon County School District

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

May 1, 2007

Dear Mr. Cowan,

I am writing you today to express the strong support that the Southern Huntingdon County School District has for your grant application for funding from the FCC Rural Health Care Pilot Program. We are very excited about this opportunity to partner with the many health care facilities in our region so that we may be more able to improve the health care outcomes of our students and their families.

Our rural schools all have School Based Health Clinics that have as their purpose to assist our students with health related issues. While staffing shortages and budget constraints require that some of our clinical staff manage more than one health clinic, we do provide coverage for every school building in our district.

This new telecommunications network will enable us to connect these clinics to other health care facilities such as JC Blair Hospital and allow us to explore innovative telemedicine opportunities. We are enthusiastic about participating in the myriad of pilot ideas that have been discussed to see if we can make these viable in our schools. From sharing of electronic health records to accessing immunization records to exploring real time video consults the possibilities for the new network are endless. And all of these applications are unimaginable without this new broadband network.

We are also very excited about the use of the network to provide ready access to Continuing Education for our clinical staff. With our limited staff, any time we can save by not having the staff travel out of the region to attend training will increase the time they can spend with the students.

The proposed pilot will also enable us to test the viability of real time video consults with physicians and other medical experts on diabetes, obesity, autism, and nutritional issues. With the limited telecommunications access we have now these advanced telemedicine applications are only a dream. The proposed network will give us an opportunity to see if we can make these dreams a reality.

Once again, I want to express my strong support and commitment to work with other health care facilities in our region to explore the health care possibilities that the proposed network will give our school district a chance to explore.

Sincerely,


Grant E. Stiffler
Superintendent

400 Highland Avenue
Lewistown, PA 17044



Phone: (717) 242-7930
Fax: (717) 242-7933
Toll-Free: (800) 248-0505

April 24, 2007

Mr Ron Cowan
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan:

The Lewistown Hospital School of Nursing is in strong support of the Juniata Valley Network (JVN) application for funding assistance from the FCC Rural Health Care Pilot program.

Of special interest to the School of Nursing (SON) is the opportunity to work with the school based health clinics. Our student nurses need to have clinical experiences and having them work in the school clinics will provide them some additional opportunities to do this.

We are especially interested in working with the Tuscarora Intermediate Unit (TIU) on a new USDA DLT grant application to place video conferencing equipment in the school clinics and here at the SON. This upgrade in video conferencing equipment coupled with a high-speed telecommunications network will permit us to pilot test video consults between the schools and the SON. For example, if we have a student nurse in a clinic the student nurses could then video conference back to the SON and one of our nursing faculty could supervise the student in the remote clinic. This benefits the student and also allows the nursing faculty a chance for required nursing practice.

If there is anything else I can do to assist with this project I will be happy to do so.

Sincerely,

A handwritten signature in cursive script that reads "Mary Alyce Nelson RN MSN".

Mary Alyce Nelson, RN, MSN
Associate Director
Lewistown Hospital School of Nursing



April 24, 2007

Ron Cowan
 Chief Information Officer
 Lewistown Hospital
 400 Highland Avenue
 Lewistown, PA 17044

Dear Mr. Cowan,

I am pleased to provide this letter of support for your proposed project to the FCC to support the development and implementation of the Juniata Valley Regional Health Information Organization (JVRHIO). These types of partnerships have the ability to improve clinical outcomes, enhance patient safety, and reduce overall health care costs.

As you are aware, Pennsylvania is considered to be one of the most "rural" states in the nation, with almost 2.8 million residents living in areas that are designated as rural. Approximately 60 small rural hospitals, with 100 or less in bed capacity, serve this population. The economic, cultural, social, geographic, and demographic characteristics of rural communities are sufficiently different from those of urban and suburban communities to require special consideration. Rural areas must contend with sparse populations and geographic barriers and must also contend with populations that are generally older, sicker, and poorer. These circumstances result in a heavier reliance on the government payment programs of Medicare and Medicaid and a greater vulnerability to payment policy decisions in these programs. Due to lower reimbursement rates from these government programs and large Medicare and Medicaid populations, rural providers struggle to remain financially viable.

Mifflin County and the surrounding counties are some of the most rural counties in the state and, as a result, experience many of the challenges associated with location. These include higher rates of chronic health conditions, higher ratios of patients to providers, professional isolation, and harsh winters that make travel to and within the counties difficult. The project you propose will address many of these issues, facilitate information exchange between health care providers and patients, and remove many of the challenges due to the geographic barriers in the area. As you move forward with your project, the Office of Rural Health will support your efforts by providing any data you may need, serving on any advisory committees you might establish, and offering opportunities to disseminate information about your project. Please continue to keep us apprised of the progress of your application for funding.

If you need to contact me for further information, I can be reached at (814) 863-8214 or via e-mail to lad3@psu.edu.

Sincerely yours,

Lisa Davis, MHA
 Director



May 2, 2007

Mr. Ronald M. Cowan
Vice President – Information Management
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan:

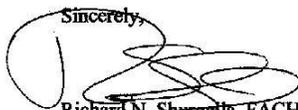
I am writing this letter in strong support of the proposed Juniata Valley Network (JVN). The various rural health care practices of the Family Health Associates (FHA) all provide health care services to the residents of Mifflin, Juniata, and Snyder counties. All of our non-profit clinics are eager to become participants in the JVN and help the JVN meet and exceed the objectives set forth in your program narrative.

The FHA has partnered with Lewistown Hospital on past telemedicine projects funded by the USDA DLT and have been very glad that these projects were great successes. Our physicians and nurses can now access the hospital's electronic medical records for our patients and soon will be able to access radiology imagery in all of our offices. This project, with its increased speed, should eliminate some of the comments our staff have been talking about the slowness of the current connections.

This speed of the connection is of special concern as we work with the hospital on a new USDA DLT grant to provide for EMR at each of our clinics. We really need faster connections.

With the new state requirements for Continuing Medical Education for physicians and Continuing Education for nurses, our staff is also very impressed that the JVN will be able to provide these educational programs directly to our clinics.

We have signed a Memorandum of Agreement for each of our clinics and can't wait to get connected. If I can be of any further assistance, please let me know.

Sincerely,

Richard N. Shurgalla, FACHE
Vice President – FHA Operations

RNS:chf



Tuscarora Intermediate Unit 11

2527 US Hwy 522 South
McVeytown PA 17051-9717
(814) 542-2501 • (717) 899-7143

May 3, 2007

Mr. Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan:

I am very pleased to write this letter of support for the Juniata Valley Network's application for an FCC Rural Health Care Program grant. This is a very laudable project and will have a greatly positive impact on the health and well being of the residents of Mifflin, Juniata, Huntingdon, and Fulton counties and other areas of rural south central Pennsylvania.

The approval of an FCC grant will allow for the use of the network to educate health care professionals in order for them to maintain their professional licenses. Additionally, these same health care professionals will be enabled to offer health and wellness programs to all schools in the service area greatly improving the health care system for the youth of the area.

An impressive network of collaborative partnerships has been established among numerous health care facilities, local school districts, county governments, and the Tuscarora Intermediate Unit. This partnership arrangement is essential to the long term sustainability of the proposed network. Rural communities cannot afford to build separate telecommunication networks unilaterally.

The Juniata Valley Network project depends greatly on a positive response in terms of FCC funding. The service area for this project is economically depressed and has suffered from several major industry closures. Acquisition of necessary funding will enable several telemedicine applications that are not currently available. These include home health care, mobile communication to ambulances and paramedic vehicles, and access to physicians at their homes when they are on emergency call status.

High speed wireless broadband connections throughout the service area will have an immensely positive impact upon the economic growth of the region as new industries decide to locate or relocate in the area. It will also assist greatly in the struggle to recruit quality physicians and other medical staff into rural Pennsylvania.

Thank you for spearheading this project. I strongly support your efforts to strengthen the technological infrastructure of the region.

Sincerely yours,

Marsha A. Soult, Ed.D
Community College Project Director
Tuscarora Intermediate Unit No. 11



April 17, 2007

Mr. Ron Cowan
V.P. Health Information Systems/Chief Information Officer
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan:

Please accept this letter as a strong endorsement on behalf of the Mifflin-Juniata Partner's Advancing Tomorrow's Health (MJ PATH) in support of the FCC Rural Health Care Pilot Program. This program fits with our organization's mission "to promote the health and wellness of individuals and the communities of Juniata and Mifflin counties." Improving access to health care resources through enhanced telecommunication capabilities is a critical need in our rural area and requires a strong collaborative effort.

This new telecommunications network will enable a connection between schools, clinics and regional health care facilities and allow for new and innovative telemedicine opportunities. From clinical care enhancements and communication to health care education opportunities, the proposed network will improve access to health care resources.

MJ PATH is committed to working with the healthcare partners involved in the program to assure successful implementation and maintenance of the FCC Rural Health Care Pilot Program.

Sincerely,

A handwritten signature in cursive script that reads "Rebecca Taylor RN".

Rebecca Taylor, RN
MJ PATH Secretary
717.242.7438

HUNTINGDON COUNTY HEALTHY COMMUNITIES PARTNERSHIP

May 4, 2007

Ron Cowan
Vice President of Information Management/CIO
Lewistown Hospital
400 Highland Ave.
Lewistown, PA 17044

Re: Letter of Support for the Juniata Valley Network (JVN)

Dear Mr. Cowan:

On behalf of the Huntingdon County Healthy Communities Partnership, I am pleased to write this Letter of Support of the Juniata Valley Network's application for a FCC Rural Health Care Pilot Program grant. This project will have a great and positive impact on the health and well being of our citizens. Recruitment of healthcare providers to meet the needs of our communities in Huntingdon County is a huge issue. This grant will allow our limited healthcare resources to work together more efficiently.

The FCC grant will connect dozens of rural health care facilities through a high speed broadband telecommunications network and will allow these facilities to pilot various telemedicine applications that will be of great benefit to the citizens of our rural community.

In addition the grant will allow for use of the network to educate health care professionals so they can maintain their professional licenses and will also enable these same health care professionals to offer health and wellness programs to all the schools in the service area greatly improving the health outcomes of our youth.

The service area includes all of Huntingdon County, Juniata County, Mifflin County, Fulton County, and the rural portions of Snyder County and Blair County. Collaborative partnerships between the health care facilities, the Tuscarora Intermediate Unit, local school districts, and county governments will insure the long term sustainability of the network. Our rural community can not afford to build three separate telecommunication networks without this partnership.

The FCC grant is also asking for funds for an initial network planning study for high speed wireless broadband that will be available throughout the service area. This application will enable several telemedicine applications not currently possible. These applications include home health care, mobile communications to ambulances and paramedic vehicles, and connecting to physicians in their homes who are on emergency call.

This project would not be possible without FCC funding. Our region is economically depressed and has suffered from several major industry shut downs. The impact on the economic growth of our community will be great as we will be able to show that, even though we are an isolated rural community, we will be able to offer similar health care services that are available in more urban areas. Not only will this impact industries' looking to relocate to our area but it will aid in the struggle to recruit quality physicians and other medical staff to relocate to our region.

Sincerely,

(s)Christine Gildea

Christine R. Gildea
Facilitator, Huntingdon County
Healthy Communities Partnership

**United Way
Mifflin-Juniata**

13 East Third Street
Lewistown, PA 17044
Phone: (717) 248-9636
Fax: (717) 248-8848
www.mjunitedway.org

what matters.™



May 1, 2007

JAMES A. SPENDIFF
PRESIDENT

JOAN L. FULKROAD
FIRST VICE PRESIDENT

A. GORDON MACALEER
SECOND VICE PRESIDENT

RUTH E. FISHER
TREASURER

JOHN F. SHIRK
ASSISTANT TREASURER

JERARD L. RANCK
SECRETARY

DENA WAGNER
ASSISTANT SECRETARY

MARIE C. MULVIHILL
EXECUTIVE DIRECTOR

CRISTY YODERS
SUCCESS BY SIX COORDINATOR

SUCCESS BY SIX

Mr. Ron Cowan
V.P. Information Systems and Chief Information Officer
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

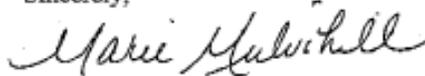
Dear Mr. Cowan:

The United Way of Mifflin-Juniata is in full support of Lewistown Hospital's application for the FCC Rural Health Care Pilot Program. This program fits with our organization's mission "Improving people's lives by mobilizing the caring power of the community." Improving access to health care resources through enhanced telecommunication capabilities is a critical need in our rural area and requires a strong collaborative effort.

Giving physicians, health care providers and schools in our area the ability to access medical information quickly and concisely will enhance health care for the entire community. Today's technology has saved many lives but getting the technology into rural settings, where it is needed most, is the challenge.

As always the United Way of Mifflin-Juniata stands ready to support your efforts as partners in building a caring community.

Sincerely,



Marie Mulvihill
Executive Director

United Way of Mifflin-Juniata is registered with the PA Bureau of Charitable Organizations. A copy of the official registration and financial information may be obtained from the PA State Department by calling toll-free 1-800-732-0999. Registration does not imply endorsement. Funds raised in 2006 will be allocated in the 2007-2008 fiscal year.



May 4, 2007

Mr. Ron Cowan, CIO
Lewistown Hospital
400 Highland Avenue
Lewistown, PA 17044

Dear Mr. Cowan,

I am pleased to write this letter in support of Lewistown Hospital's application on behalf of the Juniata Valley Network consortium to the FCC Rural Health Pilot Program.

The high bandwidth telecommunication network will be extremely important for area health care facilities' in providing continuing education to better support the needs of our communities. The ability to use telemedicine and, with the TIU 11 partnership, video bridging equipment will enable the health care facilities to provide exceptional services to patients.

Establishing a high bandwidth telecommunication network will not only be a significant step forward for the health care community but for other businesses in the area as well. This service will be a great addition to the recruitment of businesses to Mifflin County and will improve the general quality of life as well.

Sincerely,

William P. Hayes
President and CEO

William P. Hayes • 25 Gateway Drive, Reedsville, PA 17084 • 717-667-9200
whayes@kishbank.com

Appendix B: Memorandums of Agreement

Memorandum of Agreement

THIS AGREEMENT, made and entered into on May 1, 2007
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and Fulton County
Medical Center hereinafter known as "FCMC"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a
FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create
the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband
telecommunications network to interconnect health care facilities in the Juniata Valley with the
primary goal to improve health care outcomes in the community as well as to improve the quality
of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to FCMC a connection to the JVN where all
JVN connection and Internet access costs to connect FCMC to the JVN during the grant period
will be provided using grant funds.

THEREFORE, FCMC agrees to participate in the Juniata Valley Network as a non-profit health
care provider. FCMC agrees to be responsible for all costs that occur at FCMC's end of the
network with the exception that the JVN will supply the demarcation switch or optical node from
the JVN to the FCMC's internal Ethernet network.

FURTHERMORE, FCMC agrees to appoint a designated site coordinator to be the responsible
contact at the health care provider's location and FCMC agrees to be an active participant in any
evaluation process that may be involved as part of the JVN's receipt of Federal funding from the
FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be
terminated with a sixty (60) day written notice by either party.

HOSPITAL

Ronald M. Owen
Print Name

VP of Information Management
Title

Ronald M. Owen
Signature

FCMC

Jason F. Hauskins
Print Name

CFO
Title

[Signature]
Signature

Facility Name Fulton County Medical Center
Address 1 216 S. 8th St.
Address 2 _____
City, State, Zip McLennansburg PA 17238
Phone Number 717-483-6009

Memorandum of Agreement

THIS AGREEMENT, made and entered into on MAY 1, 2007
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and Tyrone Hospital
hereinafter known as "TYRONE"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a
FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create
the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband
telecommunications network to interconnect health care facilities in the Juniata Valley with the
primary goal to improve health care outcomes in the community as well as to improve the quality
of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available TYRONE a connection to the JVN where
all JVN connection and Internet access costs to connect TYRONE to the JVN during the grant
period will be provided using grant funds.

THEREFORE, TYRONE agrees to participate in the Juniata Valley Network as a non-profit
health care provider. TYRONE agrees to be responsible for all costs that occur at TYRONE's
end of the network with the exception that the JVN will supply the demarcation switch or optical
node from the JVN to the TYRONE's internal Ethernet network.

FURTHERMORE, TYRONE agrees to appoint a designated site coordinator to be the
responsible contact at the health care provider's location and TYRONE agrees to be an active
participant in any evaluation process that may be involved as part of the JVN's receipt of Federal
funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be
terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ronald M. Cowan VP of Information Management
Print Name Title
Ronald M. Cowan
Signature

TYRONE

Walter S. Sandryke CEO
Print Name Title
Walter S. Sandryke
Signature
Facility Name TYRONE HOSPITAL
Address 1 1 HOSPITAL DR
Address 2 _____
City, State, Zip Tyrone, PA 16686
Phone Number 814-684-1255

Memorandum of Agreement

THIS AGREEMENT, made and entered into on May 2, 2007
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and J.C. Blair
Memorial Hospital hereinafter known as "JC BLAIR"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a
FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create
the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband
telecommunications network to interconnect health care facilities in the Juniata Valley with the
primary goal to improve health care outcomes in the community as well as to improve the quality
of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available JC BLAIR a connection to the JVN where
all JVN connection and Internet access costs to connect JC BLAIR to the JVN during the grant
period will be provided using grant funds.

THEREFORE, JC BLAIR agrees to participate in the Juniata Valley Network as a non-profit
health care provider. JC BLAIR agrees to be responsible for all costs that occur at JC BLAIR's
end of the network with the exception that the JVN will supply the demarcation switch or optical
node from the JVN to the JC BLAIR's internal Ethernet network.

FURTHERMORE, JC BLAIR agrees to appoint a designated site coordinator to be the
responsible contact at the health care provider's location and JC BLAIR agrees to be an active
participant in any evaluation process that may be involved as part of the JVN's receipt of Federal
funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be
terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ron Cowan
Print Name
Ronald M. Cowan
Signature

VP of Information Management
Title

JC BLAIR

Kevin P. Calloway
Print Name
Kevin P. Calloway
Signature

CEO
Title

Facility Name J.C. Blair Memorial Hospital
Address 1 1225 Wana Springs Ave
Address 2 _____
City, State, Zip Huntingdon, PA 16852
Phone Number 814-643-8827

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on May 3, 2007
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and Tri-State
Community Health Center hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

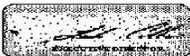
FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ronald M. Coon Title VP of Information Management
Print Name Title
Ronald M. Coon
Signature

PRACTITIONER

Leslie L. Colbrese Title Executive Director
Print Name Title

Signature
Facility Name Tri-State Community Health Center
Address 1 525 Fulton Drive
City, State, Zip McConnellsburg, PA 17233
Phone Number (717) 485-3850

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on May 2nd, 2007
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
Southern Huntingdon Co. med. Ctr. hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60) day written notice by either party.

HOSPITAL	<u>Ronald M. Casan</u>	<u>VP of Information Management</u>
	<u>Sandra McClain</u>	<u>Office Manager</u>
Print Name		Title
	<u>Ronald M. Casan</u>	
	<u>Sandra McClain</u>	
Signature		

PRACTITIONER		
	<u>Gary V. Wentman, D.O.</u>	<u>Medical Director</u>
Print Name		Title
	<u>[Signature]</u>	
Signature		
	<u>Southern Huntingdon Co. med. Ctr.</u>	Facility Name
	<u>626 Water Street, Ste #1</u>	Address 1
	<u>P.O. Box 40</u>	Address 2
	<u>Oriskany, PA 17243</u>	City, State, Zip
	<u>(814) 447-5556</u>	Phone Number

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on 4/23/07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
FHA - MOB 3 hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60) day written notice by either party.

HOSPITAL

Ronald M. Conner _____
Print Name Title VP of Information Management
Ronald M. Conner _____
Signature

PRACTITIONER

Richard Shurgall _____
Print Name Title V.P.
[Signature] _____
Signature
Facility Name FHA - MOB 3
Address 1 400 Highland Ave
Address 2 _____
City, State, Zip Lewistown PA 17044
Phone Number 717-242-7332

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on 4/23/07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
FHA - McClure Office hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ronald M. Casan VP of Information Management
Print Name Title
Ronald M. Casan
Signature

~~PRACTITIONER~~ U.P. - Operations

Richard Shurgalla U.P. - Operations
Print Name Title
[Signature]
Signature
Facility Name FHA - McClure
Address 1 16 North Brown St
Address 2 PO Box 7
City, State, Zip McClure, PA 17841
Phone Number 570-658-2131

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on 4/23/07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
FHA - Belleville Office hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60) day written notice by either party.

HOSPITAL

Ronald M. Conner
Print Name

VP of Information Management
Title

Ronald M. Conner
Signature

~~PRACTITIONER~~ Administration

Richard Shurgall
Print Name

U.P. - Operations
Title

[Signature]
Signature

Facility Name FHA - Belleville
Address 1 5 Hedgeapple Rd
Address 2 _____
City, State, Zip Belleville, PA 17004
Phone Number 717-667-9030

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on 4/23/07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
LACC - Orthopedics hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ronald M. Cowan
Print Name

VP of Information Management
Title

Ronald M. Cowan
Signature

PRACTITIONER

Richard Shugart
Print Name

U.P.
Title

[Signature]
Signature

Facility Name LACC
Address 1 215 North Birch St
Address 2 _____
City, State, Zip Bertham, PA 17009
Phone Number 717-242-7332

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on 4/23/07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
FHA Lemed 270 hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ronald M. Cowan _____ VP of Information Management
Print Name Title
Ronald M. Cowan
Signature

~~PRACTITIONER~~

Richard Shugart _____ VP
Print Name Title
[Signature]
Signature
Facility Name FHA Lemed
Address 1 27 Sandy Lane, Suite 270
Address 2 _____
City, State, Zip Lewistown, PA 17044
Phone Number 717 242-7332

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on 4/23/07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
FHA - Urology hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60) day written notice by either party.

HOSPITAL

Ronald M. Conner VP of Information Management
Print Name Title
Ronald M. Conner
Signature

~~**PRACTITIONER**~~

Richard Shugart V. P.
Print Name Title
[Signature]
Signature
Facility Name FHA - Urology
Address 1 400 Highland Ave
Address 2 _____
City, State, Zip Lewistown, PA 17044
Phone Number 717-242-7332

**Non-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on 4/23/07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
FHA - OB/GYN hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will be covered by grant funds,

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a non-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ronald M. Cowan
Print Name

VP of Information Management
Title

Ronald M. Cowan
Signature

PRACTITIONER

Reche J. Shurgall
Print Name

VP
Title

[Signature]
Signature

Facility Name FHA-OB/GYN
Address 1 400 Highland Ave
Address 2 _____
City, State, Zip Lewistown, PA 17044
Phone Number 717-242-7332

**For-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on May 2, 2007
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
James Mansberger hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will not exceed a monthly cost of \$105 per month once the actual connection is completed to the Practitioner.

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a for-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60) day written notice by either party.

HOSPITAL

Ronald M. Cowan VP of Information Management
Print Name Title
Ronald M. Cowan
Signature

PRACTITIONER

James Mansberger DO Owner/physician
Print Name Title
James Mansberger DO
Signature
Facility Name Pediatrics & Beyond
Address 1 10063 Reypstown Rd.
Address 2
City, State, Zip Huntingdon PA 16652
Phone Number 814-627-0071

**For-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on May 3, 07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
Juniata Valley Medical Ctr hereinafter known as "PRACTITIONER"

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will not exceed a monthly cost of \$105 per month once the actual connection is completed to the Practitioner.

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a for-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60) day written notice by either party.

HOSPITAL

Ronald M. Cowan
Print Name

Ron Cowan
Signature

VP of Information Management
Title

PRACTITIONER

Carla J. Irvin
Print Name

Carla J. Irvin
Signature

Practice Admin.
Title

Facility Name Juniata Valley Medical Center
Address 1 846 Medical Center Dr.
Address 2 PO Box 355
City, State, Zip Alexandria PA 16611
Phone Number 814 669-4444

**For-Profit Health Care Facility
Memorandum of Agreement**

THIS AGREEMENT, made and entered into on May 3, 07
is between Lewistown Hospital, hereinafter known as the "HOSPITAL"; and
Huntingdon Healthcare hereinafter known as "PRACTITIONER"
Inc.

WHEREAS Hospital is committed to being the fiscally responsible agent for management of a FCC Rural Health Care Pilot Program grant and that funds from this grant will be used to create the Juniata Valley Network (JVN) Consortium that will manage a high speed broadband telecommunications network to interconnect health care facilities in the Juniata Valley with the primary goal to improve health care outcomes in the community as well as to improve the quality of health care services delivered to the community;

AND WHEREAS Hospital agrees to make available to rural Practitioner a connection to the JVN where all JVN connection and Internet access costs during the grant period will not exceed a monthly cost of \$105 per month once the actual connection is completed to the Practitioner.

THEREFORE, Practitioner agrees to participate in the Juniata Valley Network as a for-profit health care provider. Practitioner agrees to be responsible for all costs that occur at Practitioner's end of the network with the exception that the JVN will supply the demarcation switch or optical node from the JVN to the Practitioner's internal Ethernet network.

FURTHERMORE, Practitioner agrees to appoint a designated site coordinator to be the responsible contact at the health care provider's location and Practitioner agrees to be an active participant in any evaluation process that may be involved as part of the JVN's receipt of Federal funding from the FCC Rural Health Care Pilot program.

IT IS AGREED TO BY BOTH PARTIES that this memorandum of agreement may be terminated with a sixty (60)day written notice by either party.

HOSPITAL

Ronald M. Cowan VP of Information Management
Print Name Title
Ronald M. Cowan
Signature

PRACTITIONER

Carla J. Irvin Practice Admin.
Print Name Title
Carla J. Irvin
Signature Facility Name Huntingdon Healthcare
Address 1 814 Washington St. Inc
Address 2
City, State, Zip Huntingdon Pa 16652
Phone Number 814 683 4415

Appendix C: Biographical Sketches of Penn State Evaluation Team

Rama B. Radhakrishna
Associate Professor of Agricultural and Extension Education
Department of Agricultural and Extension Education
The Pennsylvania State University
323 Agricultural Administration Building
University Park, PA 16802
Voice: (814) 863-7069/Fax: (814) 863-4753
E-mail: brr100@psu.edu

EDUCATION

The Pennsylvania State University, Ph.D., Agricultural Education
University of Agricultural Sciences, Bangalore, India, M.Sc. (Ag)
University of Agricultural Sciences, Bangalore, India, B.Sc. (Ag)

PROFESSIONAL EXPERIENCE

September 2000 to present Associate Professor of Agricultural and Extension Education (AEE), The Pennsylvania State University
August 1997 to August 2000 Assistant Professor and Program Evaluation and Accountability Specialist, Clemson University, Clemson, SC.
September 1990 to July, 1997 Research Associate/Research Assistant, AEE, Penn State
August 1987 to August 1990 Graduate Research Assistant, AEE, Penn State
February 1984 to January 1987 Research Associate/Extension Officer, University of Agricultural Sciences (UAS), Bangalore, India

RESEARCH AND SCHOLARSHIP

- Authored or co-authored over 71 journal articles in 12 different journals
- Presented over 160 peer reviewed research/concept papers in international, national, regional and state conferences and/or meetings
- Presented over 50 refereed carousel/posters
- Secured individually and collectively over \$3.2 million in grants and contracts

TEACHING AND ADVISING

Developed and taught graduate level courses in: research methods; Extension program design and delivery; program development and evaluation, qualitative research methods, data analysis, colloquium, and international seminar series
Taught Extension program development and delivery course in Russia
Served as advisor and/or committee member for over 40 graduate students.
Student rating of teaching effectiveness consistently averaged 6.2 on a seven-point scale (1= poor to 7=excellent) for the courses taught
Served as a mentor for over 25 high school students who participated in the Pennsylvania Governor School for Agricultural Sciences (PGSAS) program

EXTENSION/OUTREACH

- Conducted over 50 Extension inservice training/workshop relative to program evaluation and accountability, Extension plans of work, and developing surveys and instruments
- Developed a web-based Extension planning and reporting system for Clemson University Cooperative Extension Service

TECHNICAL EXPERTISE

- Served as Kellogg Foundation Review Member (External) for the Ohio State University Outreach and Engagement project and Mid Atlantic Consortium (MAC), University of Delaware
- Reviewer of manuscripts for Journal of Extension, Journal of Agricultural Education, and Journal of International Agricultural and Extension Education, Journal of Career and Technical Education
- Reviewer of conference paper proposals for American Evaluation Association, National Association of Extension 4-H Agents, National Agricultural Education Research Conference
- Reviewer of grant proposals for South Carolina Department of Education and Kellogg Foundation

MEMBERSHIP AND SERVICE TO THE PROFESSION

- Editor, Journal of Agricultural Education, 2007-09
- Member, Faculty Senate, The Pennsylvania State University
- Chair, Journal of Agricultural Education Editing-Managing Board (2005-06)
- Secretary/Treasurer, American Evaluation Association
- Co-chair, 2005 North Central Agricultural Education Research Conference
- Co-chair, 2004 National Agricultural Education Research Conference (NAERC)
- Life member, Indian Society of Extension Education
- Member: American Evaluation Association, American Association for Agricultural Education, Association for International Agricultural and Extension Education, North American Association for College Teachers in Agriculture (NACTA)

HONORS AND AWARDS

- Elected NACTA Fellow 2006
- Recipient of K.N. Singh Memorial Award for excellence in Extension Research from Indian Society of Extension Education
- Clemson University Board of Trustees Award for Faculty Excellence
- Five-time recipient of Outstanding Research Paper/Publication Award from American Association for Agricultural Education
- Three-time recipient of Outstanding Research Paper/Publication Award from the Association for International Agricultural and Extension Education (AIAEE)
- Outstanding Young Professional Award from AIAEE
- Two-time recipient of National Science Foundation Scholarship to participate in Evaluator's Institute

BIOGRAPHICAL SKETCH

Dr. Carleen Maitland

School of Information Sciences and Technology,
The Pennsylvania State University
321E IST Building, University Park, PA 16802 USA
Phone: (814) 863-0640; Fax: (814) 863-6426; E-mail: cmaitland@ist.psu.edu
Web: faculty.ist.psu.edu/maitland

Education

2001 Ph.D. Economics of Infrastructures, Delft University of Technology, The Netherlands.
1995 M.S. Engineering Economic Systems, Stanford University.
1988 B.S. Electrical Engineering, Worcester Polytechnic Institute (honors).

Academic Appointments

2002-present: Assistant Professor, College of Information Sciences and Technology, **The Pennsylvania State University**, USA

2001-2002: Assistant Professor, Section of Information and Communication Technologies, Faculty of Technology, Policy and Management, **Delft University of Technology**, The Netherlands

Other Employment

- 1997-1998 Dept. of Telecommunication, Michigan State University, East Lansing
Instructor (TC 201/ TC 801 Intro to Telecommunication Technologies)
- 1996-1997 TeleCommunications Inc. (TCI), Lansing, MI
Government Affairs Intern
- 1995-1996 Daimler-Benz, Palo Alto, CA
Research Consultant
- 1994-1995 Pacific Bell, San Diego, CA
Network Cost Analyst
- 1991-1992 U.S. Peace Corps, Malawi, Southern Africa
Volunteer Secondary School Teacher (Math & English)
- 1990-1991 Nynex, Boston, MA
Network Cost Analyst
- 1988-1990 Nynex, Worcester, MA
Outside Plant Engineer

Pertinent Reports and Publications

Evaluation Reports to Sponsors

C.F. Maitland, A.F. van Gorp, A. Tarnacha and J.R. Westerveld UMTS/WLAN integration: end user and organizational perspectives. Report to SurfNET. September 2004. 20 pages.

C.F. Maitland, A. Tarnacha, A.F. van Gorp and J.R. Westerveld *The Delft UMTS Testbed and End-user Security Features* NET Institute Working Paper #03-09, October 2003. 37 pages. (See www.netinst.org)

Publications

Maitland, C.F. and Tapia, A. (2007) *Coordinated ICTs for Effective Use in Humanitarian Assistance*, **The Journal of Information Technology in Social Change**, 1(1), 128-141.

Tapia, A., Maitland C. F. and Stone, M. (2006) *Making IT work for municipalities: Building municipal wireless networks*, **Government Information Quarterly**, 23 (3-4), 359-380.

van Gorp, A., Maitland, C.F. and Hanekop, H. (2006) *The broadband Internet access market: The changing role of ISPs*. **Telecommunications Policy**, 30(2), 96-111.

Maitland, C.F., van Gorp, A., Tarnacha, A. and Westerveld, J.R. *A multi-layer approach to the study of inter-organizational wireless infrastructure* in Spencer et al. (Eds.) Proceedings of the Eighth **International Conference on Electronic Commerce (ICEC'06)**, Fredericton, Canada, August 14-16, 2006, pp. 309-318.

R. Westerveld and C. F. Maitland (2002) *Technical and policy advances in rural telecommunications* **Southern African Journal of Information and Communication** , 3(1), 80-84.

Johannes M. Bauer, Michel Berne & Carleen Maitland (2002) *Internet Access in the European Union and the United States* **Telematics and Informatics**, 19(2), p. 117-137.

Bert M. Sadowski, Carleen Maitland, & Jochem van Dongen (2002) *Strategic Use of the Internet by Small-and-Medium- Sized Firms: An Exploratory Study* **Information Economics and Policy**, (14) 1, p. 75-93.

Carleen F. Maitland (2004) *Mobile commerce technologies and services: A SME user's perspective*. In: B. Preissl, H. Bouwman & C. Steinfield (eds). **Elife after the Dot Com Bust**. Berlin; Springer Verlag, p. 159-176.

Madhu C. Reddy

Curriculum Vitae

College of Information Sciences and Technology
321J IST Building
Penn State University
University Park, PA. 16802-6823
Phone: 814-863-6316
Fax : 814-865-6426
E-mail: mreddy@ist.psu.edu

Academic Appointments

Assistant Professor

8/05- Present
College of Information Sciences and Technology
The Pennsylvania State University

Assistant Professor

8/03- 7/05
Departments of Information Science and Technology and Business Administration
School of Management and Information Systems
University of Missouri, Rolla

Graduate Student Researcher

5/99-6/03
Computing, Organizations, Policy, and Society (CORPS) group
School of Information and Computer Science
University of California, Irvine

Research Associate

5/96-8/97
Information Technology Group
Swiss Federal Institute of Technology, Zurich
Zurich, Switzerland

Academic Affiliations

Faculty Affiliate

7/06-Present
Center for Health Care and Policy Research
The Pennsylvania State University

Research Interests

Medical Informatics, Computer-Supported Cooperative Work (CSCW), Human-Computer Interaction (HCI), collaborative systems design, ethnographic study, social analysis of technology and social theory.

EDUCATION

Ph. D., Information and Computer Science

June, 2003

Program: Computers, Organizations, Policy, and Society

University of California, Irvine

M.S., Information and Computer Science

December 1999

Program: Computers, Organizations, Policy, and Society

University of California, Irvine

M.S., Health Care Administration

June 1995

California State University, Long Beach

B.S., Biological Science

June 1994

University of California, Irvine

B.A., Political Science

June 1992

University of California, Irvine

INDUSTRY EXPERIENCE

System Analyst

4/95-5/96

Quest Diagnostics (formerly Nichols Institute)

Helped design information systems for a pharmaceutical clinical trials support group. Gathered requirements, translated them into design specifications and implemented parts of the design.

HONORS

New Faculty Teaching Scholar

2004

University of Missouri

Outstanding Paper Award

2004

Association for the Advancement of Computing in Education

Outstanding Faculty Award

2004

School of Management and Information Systems

Diana E. Forsythe Award Nominee

2003

American Medical Informatics Association

GAANN Fellowship, Information and Computer Science

2003

University of California, Irvine

GAANN Fellowship, Information and Computer Science

2002

University of California, Irvine

Diana E. Forsythe Award Winner

2002

American Medical Informatics Association

(Awarded for the best paper of the year at the intersection of medical informatics and social science)

Phi Kappa Phi Honors Society

1995

California State University, Long Beach

Pi Sigma Alpha Honors Society (Political Science)

1992

University of California, Irvine

PUBLICATIONS

Peer Reviewed Journal

1. **Reddy, M.** and J. Jansen. (in press) A Model for Understanding Collaborative Information Behavior in Context: A Study of Two Healthcare Teams. *Information Processing and Management*.
2. **Reddy, M.** and P.R. Spence. (in press) Collaborative Information Seeking: A field study of a multidisciplinary patient care team. *Information Processing and Management*.

3. Chaisson, M., **Reddy, M.**, Kaplan, B., and Davidson, E. (2007). Learning by Crossing Disciplinary Boundaries: What does the field of Information Systems have to offer Medical Informatics? *International Journal of Medical Informatics*. 76. pp. s89-s97.
4. **Reddy, M.**, Dourish, P., and Pratt, W. (2006). Temporality in Medical Work: Time also matters". *Journal of Computer Supported Collaborative Work*. 15(1): 29-53.
5. **Reddy, M.**, McDonald, D., Pratt, W., and Shabot, M. (2005). Technology, Work, and Information Flows: Lessons from the implementation of a wireless alerts pager system. *Journal of Biomedical Informatics*, 38/3. pp. 229-238.
6. Pratt, W., **Reddy, M.**, McDonald, D., Tarczy-Hornoch, P., and Gennari, J. (2004). Incorporating Ideas from Computer-Supported Cooperative Work. *Journal of Biomedical Informatics*, 37/2. pp 128-137.
7. **Reddy, M.**, Pratt, W., Dourish, P., and Shabot, M.M. (2003). Sociotechnical Requirements Analysis for Clinical Systems. *Methods of Information in Medicine*, 42, 437-444.

Peer Reviewed Conferences

1. Zhu, S., J. Abraham, S. Paul, **M. Reddy**, J. Yen, M. Pfaff, and C. DeFlicht. (In Press). R-CAST-MED: Applying Intelligent Agents to Support Emergency Medical Decision Making Teams. In *Proceedings of the 11th Conference on Artificial Intelligence in Medicine (AIME 07)*. Amsterdam, Netherlands. July 7-11, 2007.
2. **Reddy, M.** and P. Spence. (2006). Finding Answers: Information Needs of a Multidisciplinary Patient Care Team in an Emergency Department. In *Proceedings of American Medical Informatics Association Fall Symposium (AMIA'06)*. Washington, DC. Nov. 11 –15, 2006.
3. Spence, P., **Reddy, M.**, and Hall, R. (2005). A Survey of Collaborative Information Seeking Practices of Academic Researchers. In *Proc. of ACM Conf. on Supporting Group Work (Group'05)*. Sanibel Island, Fl. Nov 6-10.
4. **Reddy, M.**, Agarwal, S., Hall, R., Brown, J., Woodard, T., and Trang, A. (2005). Warfighter-in-the-Loop: Mental Models in Minefield Detection. *Defense and Security Symposium 2005 (SPIE-DSS'05)*. Orlando, FL. Mar. 28 – Apr. 1. pp. 1050-1059.
5. Agarwal, S., **Reddy, M.**, Hall, R., Brown, J., Woodard, T., and Trang, A. (2005). Evaluating Operator Performance in Aided Airborne Target Detection. *Defense and Security Symposium 2005 (SPIE-DSS'05)*. Orlando, FL. Mar. 28 – Apr. 1. pp. 102-112.

6. Wilford, L., Hall, R., Hilgers, M, Leu,, M, Hortenstine, J., Walker, C and **Reddy, M.** (2004). Training in Affectively Intense Virtual Environments. *World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education (E-Learn 2004)*. Washington, DC. Nov. 2-5.
7. **Reddy, M.**, Pratt, W., McDonald, D., and Shabot, M.M. (2003). Challenges to Physicians' Use of a Wireless Alert Pager. In *Proceedings of American Medical Informatics Association Fall Symposium (AMIA'03)*. Washington, DC. Nov. 8 –12, 2003. pp. 544-548.
8. **Reddy, M.** and Dourish, P. (2002). A Finger on the Pulse: Temporal Rhythms and Information Seeking in Medical Work. In *Proceedings of ACM Conf. on Computer Supported Cooperative Work (CSCW'02)*. New Orleans, LA. Nov. 16-20, 2002. pp. 344-353.
9. **Reddy, M.**, Pratt, W., Dourish, P., and Shabot, M.M. (2002). Asking Questions: Information Needs in a Surgical Intensive Care Unit. In *Proceedings of American Medical Informatics Association Fall Symposium (AMIA'02)*. San Antonio TX. Nov 9-13, 2002. pp. 647-651.
10. **Reddy, M.**, Dourish, P., and Pratt, W. (2001). Coordinating Heterogeneous Work: Information and Representation in Medical Care. In *Proceedings of European Conference on Computer Supported Cooperative Work (ECSCW'01)*. Bonn, Germany. September 16-20, 2001. pp. 239-258.
11. **Reddy, M.** (2001). Sociotechnical Requirements for Healthcare Systems. Extended Abstract. *Information Technology in Health Care: Sociotechnical Approaches*. Rotterdam, Netherlands. September 6-7, 2001.
12. Gennari, J. & **Reddy, M.** (2000). Participatory design and an eligibility screening tool. In *Proceedings of the American Medical Informatics Association Fall Symposium (AMIA'00)*. pp. 290-294.

Book Chapters

1. **Reddy, M.**, and Dourish, P. (in press). Representation, Coordination, and Information Artifacts in Medical Work. In Ackerman, M., Erickson, T., Halverson, C., and Kellogg, W. (eds), *Resources, Co-Evolution, and Artifacts: Theory in CSCW*. New York: Kluwer.
2. **Reddy, M.**, and Bradner, E. (2005). Multiple Perspectives: Evaluating Healthcare Information Systems in Collaborative Environments. In Anderson, J. and Aydin, C. (eds), *Evaluating Healthcare Information Systems: methods and applications* 2nd ed. New York: Springer.

3. Dourish, P., **Reddy, M.**, and Fisher, D. (2004). Temporality and Structure in Collaborative Work. In Heilesen (ed.), *Digital Presence: Knowledge and Design in New Media*. Roskilde University.

Workshops and Presentations

1. **Reddy, M.** (2007). Collaborative Information Seeking and Decision-Making in Information Intensive Clinical Environments. Invited Presentation. Penn State Bio & Medical Informatics Retreat. University Park, PA. May 11, 2007.
2. **Reddy, M.** (2007). Health Information Technologies: Opportunities and Challenges. Invited Presentation. Pennsylvania Technical Assistance Program. PSU Wilkes-Barre, April 26, 2007.
3. **Reddy, M.** (2006) The Role of the Human in Situational Assessment. Invited Presentation. Defense Treat Reduction Agency's Workshop on Biological Threats. Ft. Belvoir, VA. July 14-15, 2006.
4. **Reddy, M.** (2006). Electronic Medical Records: Opportunities and Challenges. Invited Presentation. Pennsylvania Summit on Technology and Medicine. Hershey, PA. May 12, 2006.
5. **Reddy, M.** (2005). Bridging Cultures: From Academia to the Real World. Presentation. GatewayCHI. St. Louis, MO. March 24, 2005.
6. **Reddy, M.** (2004). Qualitative Assessments of Warfighter-in-the-Loop Experiments. Presentation. Night Visions Electronics Sensor Directorate. Ft. Belvoir, VA. Oct. 18-19, 2004.
7. **Reddy, M.** (2004). Interdisciplinary Windows for Studying Information Systems in Healthcare: Challenges and Opportunities. Plenary Panel. *Information Technology in Healthcare: Socio-technical Approaches (ITHC'04)*. Portland, OR. Sept. 13-14, 2004.
8. **Reddy, M.** (2004). CSCW and Medical Informatics: Opportunities and Challenges. Presentation. School of Management and Information Systems. April 30, 2004.
9. **Reddy, M.** (2003). Collaborative Information Seeking: Supporting Organizational Information Needs. Presentation. Center for Research on Information Technology and Organizations (CRITO) annual Industry Advisory Board Meeting. Costa Mesa, CA. June 12-13, 2003.
10. **Reddy, M.** (2002). Sociotechnical Requirements Analysis for Clinical Systems. Plenary Panel. *American Medical Informatics Association Fall Symposium (AMIA'02)*. San Antonio TX. Nov 9-13, 2002.

11. **Reddy, M.** (2002). Collaborative Information Seeking: Information Work in Hospitals. Student Paper. *Human-Computer Interaction Consortium 2002 Winter Workshop*. Snow Mountain, CO. January 30- February 3, 2002.
12. **Reddy, M.** (2001). Challenges to Physicians' use of a Wireless Alert Pager. Invited Speaker. Department of Information Systems. University of Maryland, Baltimore County. November 2001.
13. **Reddy, M.,** McDonald, D., and Pratt, W. (2000). The Promise and Problems of Wireless Adoption in a Teaching Hospital. Workshop on Technologies that cross boundaries: exploring the gap between wireless networks, bits, interfaces and mobile work practices. ACM Conference on Computer-Supported Cooperative Work, Philadelphia, PA, December 2000.

Posters and Technical Reports

1. **Reddy, M.** (2002). Collaborative Information Seeking: Supporting Organizational Information Needs. Poster. Center for Research on Information Technology and Organizations (CRITO) Consortium Meeting. Newport Beach, June 20, 2002.
2. **Reddy, M.** (2002). Collaborative Information Seeking. Poster, Institute for Software Research Annual Forum. Irvine, Ca. June 18, 2002.
3. Carpenter, N., **Reddy, M.,** Pratt, W. (2001). Transparent View Interface: Supporting MEDLINE Searches. Technical Report 01-48. Information and Computer Science, University of California, Irvine.
4. **Reddy, M.,** Pratt, W., Shabot, M.M. and McDonald, D.. (2001). Challenges to Physicians' use of a Wireless Alert Pager. Technical Report FX-PAL-TR01-014. Fuji-Xerox, Palo Alto, Ca.
5. **Reddy, M.,** Seeraty, C., Lin, T-W. and Pratt, W. (2000). Effects of Computer-Based Patient Records on Physician-Patient Interactions: Physicians' Perspectives. Poster, *Proceedings of the American Medical Informatics Association Fall Symposium*. Los Angeles, CA, November 2000. pp.1114.
6. **Reddy, M.,** Schenkel, M., and Eggimann, F. (1997). Handwriting Recognition of Off-line Scanned Data. Technical Report 9701, Institute for Signal and Information Processing, Swiss Federal Institute of Technology, Zurich.

GRANTS

Penn State Office of Vice Provost for Research, "Supporting Multi-Team Cognition /Collaboration in Broad-Based Crisis Management." Co-PI (50%) along with Mike McNeese and John Yen. Period: 2006-2007. Amount: \$75,000.

Missouri Research Board. "Collaborative Information Seeking." Sole PI (100%). Period: 2004-2005. Amount: \$30,200.

Night Vision Electronics Sensor Directorate. "Evaluation of Human in the Loop Performance for Airborne Mine and Minefield Detection." Co-PI (30%) along with Sanjeev Agrawal and Richard Hall. Period: 2004-2005. Amount: \$70,000.

National Science Foundation/ OIA- Partnerships for Innovation. "The Development of an Innovation Information Infrastructure." Co-PI (30%) along with Arlan DeKock, Michael Nichols et al. Period: 2003-2005. Amount: \$180,000

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Association of Computing Machinery (ACM)

American Medical Informatics Association (AMIA)

PROFESSIONAL ACTIVITIES

Journal Reviewer

IEEE Computers

Journal of Information Processing and Management

Journal of American Medical Informatics Association

International Journal of Medical Informatics

Journal of Information Technology and People

Journal of Computer Supported Cooperative Work

International Journal of Human-Computer Studies

Information Systems Research

Information Society

Conference Reviewer

International Conference on Information Systems 2006 (ICIS 2006)

ACM Conference on Ubiquitous Computing (UbiComp'06)

Graphic Interface 2005 (GI'05)

ACM Conference on Human Factors in Computing System (CHI'05)

Information Technology in Healthcare: Sociotechnical Approaches Second International Conference (ITHC 2004).

ACM Conf on Computer Supported Cooperative Work (CSCW'04, CSCW'06)

Medinfo 2004

American Medical Informatics Association (2002, 2003, 2005, 2006, 2007)

Americas Conference on Information Systems (AMCIS 2002, 2006)

ACM Conference on Supporting Group Work (2001, 2005)

Book Review

Information Systems for Health Care Enterprises. Health Administration Press. March, 2006. (Textbook review for publisher)

Human-Computer Interaction: Designing Effective Organizational Information Systems. Wiley and sons. July, 2003. (Textbook review for publisher)

Handbook of Evaluation Methods for Health Informatics. Academic Press. Book Review for Journal of Information Processing and Management. (With Joanna Abraham)

Community/Professional Association

Publicity Chair (Organizing) ACM Conference on Computer Supported Cooperative Work (CSCW'08)

Program Committee Member, ACM Conference on Supporting Group Work (GROUP'07)

Chair, Diane E. Forsythe Award Committee (American Medical Informatics Association), 2006, 2007

Chair, Doctorial Colloquium on Organizational Issues in Medical Informatics.(American Medical Informatics Association) 2005, 2006

Co-Chair, Diane E. Forsythe Award Committee (American Medical Informatics Association), 2005

Committee Member (Organizing and Program). *Information Technology in Healthcare: Sociotechnical Approaches Second International Conference (ITHC 2004)*. Portland, OR. Sept. 13-14, 2004.

Committee Member. Diane E. Forsythe Award Committee (American Medical Informatics Association) 2003, 2004.

Publicity Chair (Organizing). Responsible for conference publicity. *ACM Conference on Computer Supported Cooperative Work (CSCW '04)*. Chicago, IL. Nov. 6-10, 2004.

Publicity Chair (Organizing). Responsible for conference publicity. *ACM Conference on Computer Supported Cooperative Work (CSCW '02)*. New Orleans, Louisiana. Nov. 16-20, 2002.

Organizer/Moderator. Panel on Organizational Issues for Design of Medical Informatics Systems. *American Medical Informatics Association Fall Symposium*. Washington, D.C. November 3-7, 2001.

University/School

The Pennsylvania State University

Committee Member. College of Information Sciences and Technology. SRA Faculty Recruitment Committee. 2006

Panel Member. IST Future Forum Panel on Intelligent Agents. April 21, 2006.

Committee Member. School of Information Sciences and Technology. Faculty Advisory Council. 2005-2006

Committee Member. School of Information Sciences and Technology. Faculty Recruitment Committee. 2005 (Cancelled)

University of Missouri – Rolla

Poster Judge. Undergraduate Research Symposium. 2005.

Committee Member. School of Management and Information Systems. Business Administration Faculty Recruitment Committee. 2004

Committee Member. School of Management and Information Systems. Business Administration Department Chairperson Recruitment Committee. 2004

Committee Member. Institutional Review Board. 2004.

TEACHING EXPERIENCE

INSTRUCTOR

All classes are in the College of Information Sciences and Technology, The Pennsylvania State University.

Introduction to Medical Informatics IST 597C/497I

Spring'06, Spring'07

Graduate level course designed to introduce students to the field of medical informatics. In the course, students learn about the design, use, and evaluation of healthcare systems.

Information and Organizations IST 301

Fall'05, Fall'06

Undergraduate course taken by junior level students. The course introduces them to the nature and structure of organizations, how information flows in organizations, and various ways to analyze organizations.

All classes are in the School of Management and Information Systems, University of Missouri - Rolla

Social Informatics IST 401A

Fall'04

Graduate level course designed to introduce students to empirical studies examining the uses and consequences of technologies in organizations and society. In the course, students learn about interactions between technical and social components in a socio-technical system.

Capstone Seminar SM&IS 397

Spring'04, Spring'05

Senior level course that all students in SM&IS must take before graduating. The course introduces them to business entrepreneurship by putting them in student run companies. Each company, in the course of a semester, must identify a product/service to sell, create a business plan, get a loan, and execute the plan.

Human-Computer Interaction, IST 385

Fall'03, Fall'04, Spring'05

Upper division and graduate level course designed to introduce students to different ways that people interact with technology with a particular focus on interfaces. In the course, students learn about various techniques for understanding user needs, interface design and prototyping, and interface evaluation.

STUDENTS SUPERVISED

GRADUATE RESEARCH

PhD Committee Chair

1. Joanna Abraham (expected graduation: 2008)
2. Sharoda Paul (expected graduation: 2008)
3. Patricia Spence (expected graduation: 2010)

PhD Committee Member

1. Shuang Sun (graduated: Summer 2006)
2. Shizhuo Zhu (expected graduation: 2007)
3. Jing Chong (expected graduation: 2008)

Master's Thesis Chair

1. Rashmi Krishnappa (June 2005. Title: Multi-User Search Engine (MUSE): Supporting Collaborative Information Seeking and Retrieval)
2. John Brown (July 2005. Title: Mental Models in Airborne Landmine Detection)
3. Patricia Spence (November 2005. Title: Collaborative Information Seeking: A Study of a Patient Care Team in the Emergency Department)

4. Mary Kelly (Expected graduation: Summer 2007)

Master's Thesis Committee Member

1. John Sullivan (December 2004. Title: Iterative Usability Testing in the Development of a Learning Technology System for Teaching Geographic Information Systems within a Civil Engineering Curriculum)
2. Lawrence Wilford (May 2004. Title: Learning in Affectively Intense Virtual Environments)

UNDERGRADUATE RESEARCH

Research Projects

1. Matt Prindible (IST SURF R-CAST-MED SS'06)
2. John Warmbrodt (NSF: Innovation Information Infrastructure WS'05)
3. Charlene Baker (NSF: Innovation Information Infrastructure SS'04, FS'04)
4. Matt Bleckman (NSF: Innovation Information Infrastructure WS'04)
5. Naomi Carpenter (UCI: Transparent View Interface: Improving MEDLINE searches through better interface design. 2001)
6. Chad Seeraty (UCI: Effects of Computer-Based Patient Records on Physician-Patient Interactions: Physicians' Perspectives. 2000)
7. Tai-Wei Lin (UCI: Effects of Computer-Based Patient Records on Physician-Patient Interactions: Physicians' Perspectives. 2000)
8. Rashid Baqai (UCI: Comparative Analysis of Hospital Information Systems. 1999)

Independent Study

1. Corey Ernst (HCI Prototyping FS'04 Undergraduate)