Applicant Name: COPPER COUNTRY INTRMDT SCHL DIST

Project Title: Western UP Public Agency Collaboration Network

Project Type: Comprehensive Community Infrastructure

Executive Summary

The Western Upper Peninsula Public Agency Collaboration Network is a consortium designed to connect public entities in the Upper Peninsula of Michigan for the purpose of sharing Internet, fostering collaboration and enabling high speed network services. Delivering any type of high speed network in this area is particularly difficult given the vast geographic locations of the end-points that we wish to connect. Most businesses are using residential speed connections or have no outside network services at all. This puts all the public and private entities within our area at a distinct disadvantage when completing in the national and global marketplace. Without a consortium and/or grant funding this network will be impossible at this point in time to implement. Individual circuit costs are way to high for anyone to afford the buildout and there just isn"t the business case for a private telecom provider to layout the capital to run fiber or utilize wireless towers to connect our area. We are comprised of a service area of 5,000 square miles with only 10,000 k12 students. This is a very rural area, with small communities. Even the anchor institutions are small, most without any IT staff, and limited technical resources. While the community anchor institutions are small, they still have needs and still can provide value to the public, with the proper connectivity and support. Once receiving the grant funding we are planning to connect local K12s, municipalities, townships, county offices, libraries, head start agencies, health departments, fire police, and other public entities across five counties in a Wide Area Network for high speed internet and for inter-agency collaboration. The agencies we are serving are in extremely rural counties, have a high native-american population, and are under-served for broadband network access. This network will be accompanied by a system that is being developed that will encourage collaboration amongst the agencies once connected and allow them to leverage each other to provide a more efficient way of conducting business. This network will be the catalyst for partnerships and bulk purchasing of network services as well as most technology resources including infrastructure, hardware, software and support. Our organization will act as the consortium lead making sure that we facilitate this process and drive home the value of such a powerful entity. REMC#1 has a history of creating and nurturing relationships between community anchor institutions like K12s, public libraries, Finlandia University, Western UP Health Department and the BHK Head Start Agency. We want to leverage our expertise and continue to build and expand these relationships further out into the public sector. We have been facilitating WAN connections and collaborative efforts in this area for more than fifteen years, focusing on the educational institutions. With this grant, we could expand and use those best practices and institutional knowledge to leverage additional savings and efficiencies for our small public agencies who were unable to take advantage of our connections in the past due to budgetary constraints. Our experience includes managing fiber as well as wireless and hybrid networks. We have
implemented innovative ways to share a data center to our current constituents, providing advanced services in cost effective ways through economies of scale. Everything we have built has been designed to be scalable, centralized, but with local institutional control. For example, we have a single edge firewall, but it supports virtual domains so that each district can maintain individual control without purchasing and maintaining additional hardware or software. Our Unified Threat Management also provides individualized district level control of content filtering, network anti-virus protection, intrusion prevention service (IPS), and more. We also provide disaster recovery data services, doing disk to disk backups of crucial information across the fiber network, to shared secure remote locations. All of these services can then be supported by an integrated team of IT staff, centrally employed, but geographically dispersed. We will leverage the local Universities expertise, as well, for additional expansion into the wireless arena. Michigan Technological University is only five miles from the REMC1 offices, and we have a long standing working relationship that benefits all education K-20, as well as the local communities we live in. We of course are also anticipating that the grant will help grow the private sector adding local jobs to a very economically depressed area. One of our local counties (Baraga) has the second highest unemployment in the United States, and our median income is almost $20,000 less than the rest of the state. If we can connect the small municipalities together, we can assist them with our technical expertise that they cannot afford and support individually. REMC1 has been doing this successfully with K12 for years, and we will do it for the public sector as well. Once the agencies begin to offer the online services the public desires, the public demand for bandwidth to access to those services will increase, driving additional private demand, and supporting the private and incumbent ISPs in the region. Our network will be deployed utilizing a mixed network model. We will install, purchase, and/or lease via long term IRU contracts fiber to connect our biggest anchor institutions including other geographically significant locations. Because the region is so rural, many of the institutions we want to connect and serve are small, and cannot fully utilize and afford to maintain a full fiber connection. Most of the public agency offices are also somewhat clustered in the cities and towns. We will leverage the fiber connections as our backhaul, and install a wireless base at each fiber connected anchor, and reach out to other smaller anchors from there with dedicated point to point wireless transmissions. The fiber circuits will be at least 1 Gbps full duplex (using DWDM for additional dedicated paths back to the REMC offices), and the wireless will be at least 100 Mbps full duplex (upgradeable to 400 Mbps). All wireless will be a mix of higher frequencies dependent on geography and agency type. In order to accomplish this hybrid buildout we have partnered with Merit to provide the existing fiber and fiber build, and Maplenet to provide the wireless towers, radios and construction. Partnering with Merit allows us to use their owned fiber that they have built from their own BTOP grant funding or their own capital. Maplenet is a trusted wireless vendor in our local area, and knows the terrain better than any company that we have worked with. Their solution provides connectivity in the more difficult regions and will allow hotspots and additional lease space on their towers. The use of dedicated wireless over fiber allows a one-time purchase (tower and hardware) to be more cost effective than a leased telecommunications connection and is cheaper than maintaining fiber hardware over time, while still providing more bandwidth than forecasted to be needed through the life of the connection.