

## Broadband USA Applications Database

**Applicant Name:** SK Works, LLC.

**Project Title:** Cuyama Rural Broadband Project

**Project Type:** Last Mile Remote

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### Executive Summary

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Cuyama Rural Broadband Project Executive Summary This grant is an application for BIP and BTOP Infrastructure – Last Mile Broadband program and for BTOP Sustainable Broadband Adoption funding. The Project will serve New Cuyama, California, (Pop. 793). The School District, Community Health Clinic, Fire Department, and Recreation Department are active participants in the project. 390 households, 14 small businesses, and 28 small farms will be served. The health clinic, public library, high school, elementary school, community center, Fire Department, and New Cuyama Recreation District office will each receive free connectivity during the first year of the project and very reduced cost Internet connectivity in the following years. 300 students will be brought online through the schools. Over 50 patients will receive telemedicine supported health care through the health clinic each month and over 200 individuals per month will receive Internet access and technology skills training classes through the Recreation Department’s Community Center, (working with the Technology Skills and Job Training classes developed during 5 previous USDA distance learning and telemedicine grant projects we have completed). 26.8% of the residents live below poverty level and need assistance with cost and computer / technology skills training to successfully make use of the Internet as an economic and personal growth tool. 28 small farms which surround New Cuyama will also receive their first access to broadband Internet. Each of the farms has participated in previous USDA funded distance learning and telemedicine grant projects and are ready to begin use of new bandwidth to start new online marketing of their value-added farm products and to begin online marketing of Ag-Tourism in ways which will benefit the farms economy. The grant will establish a community-wide broadband wireless mesh Network providing 3 Mbps. Internet access. Email, web, e-commerce, school, health clinic, fire department and local government broadband will be made available as part of the Internet service. Installation and operation of the wireless mesh Network will be completed within 1 year. Education and community classes will begin within 2 months of grant start up. New Cuyama is a flat, agricultural areas which makes the application of a wireless mesh network practical without the use of towers. The project will demonstrate wireless mesh networking for rural areas as a very cost effective, sustainable, locally manageable Network model which other rural communities can use as an example during project planning. An important goal of this grant proposal is the delivery of useful education, health, economic development and job training resources. To accomplish this goal the project will provide a series of free classes which will be offered at the Recreation Center. Classes will be offered for small business owners providing an introduction to the use of the Internet for online marketing and e-commerce. For small farm owners classes will be offered which will provide technology skills training and create the skills base for new Ag-Tourism and Value-Added product marketing programs. For community residents classes will be offered

in basic Technology Skills related to the Internet. Telemedicine technology skills training will be offered for physicians, and nurses at the Health Clinic to ensure the effective introduction of telemedicine as part of the regular health care services for the region. Classes will be offered in English and Spanish. Workbooks and online content for the classes will be developed using program methodologies we established during previous USDA RUS distance learning and telemedicine grants which were successfully completed in 150 rural communities between 1997 and 2003. As a result of the increased bandwidth Telemedicine services will be made available using our Network's HIPAA compliant secure telemedicine server, secure email, diagnostic image transfer and clinic to hospital video conferencing resources. Wireless services to the Fire Department will provide bandwidth for an innovative web based community fire safety GIS with community emergency update services (this GIS project is currently not possible through the County Network because of firewall restrictions).

f) Approach to addressing the non-discrimination and interconnection obligations: The Network adheres to the principles contained in the FCC's Internet Policy Statement (FCC 05-151, adopted August 5, 2005). The applicant Network does not favor any lawful Internet applications and content over others, displays network management policies in a prominent location on our web page and provides notice to customers of changes to these policies. The project is not an entirely private closed network; and offers interconnection, where technically feasible. We have always encouraged cooperative activities between regional ISP's, local Government Networks, County Health and School District Networks.

. g) Type of broadband system that will be deployed (network type and technology standard): This project will establish a wireless broadband Network using our Networks 45Mbps DS3 backbone, Cisco 1520 series outdoor Access Points and 2 1.5 megabit T1 circuits. As subscription levels increase the number of T1 circuits and outdoor Access Points can be easily increased. The wireless Mesh Network will provide a reliable, flexible, scalable and economical Network. The Network offers 802.11 b/g client compatibility. Dual radio wireless technology is used for backhaul. Bandwidth will be purchased from Time-Warner Telecommunications. Time-Warner has provided the DS3 Tier 3 backbone / bandwidth for our Internet services since 1997. The network will provide 3 Mbps throughput for community end-users and organizations. The wireless Mesh Network provides a scalable and cost effective solution for this rural wireless broadband Network. The Mesh Switching Technology minimizes network overhead, delivers fast route convergence with greater reach for residents, businesses and government. Use of wireless Mesh technology will allow the Project to easily deploy community wide mixed use wireless Internet and will help cultivate economic development and provide a secure mobile network for public works and safety applications. The Mesh Network is built of peer radio devices that don't have to be cabled to a wired port like traditional WLAN access points (AP). Each Access Point simply plugs into an AC power supply, (we will use small solar panels for power to a limited number of Access Points to test viability). Access Points automatically self-configure and communicate with other Access Points over the air to determine the most efficient multi-hop transmission path. As a new Access Point connection is added, each Mesh Access Point dynamically adjusts the routing path to maximize the performance and efficiency of the data traffic. The Mesh access points have auto-healing capability. If interruption occurs with one access point, the other access points in the Network automatically heal the wireless mesh network, by routing the data traffic to other available Mesh access points in the area, reducing maintenance and management needs. Qualifications of the applicant that demonstrate the ability to implement and operate a broadband infrastructure, and/or be a sustainable broadband services

provider. SKWorks is a Rural Technology Development Network created by Visible Light, (our non-profit parent agency), following a National Science Foundation rural development grant in 1991. Working with NSF and the University of California we were one of the first public Internet programs in the United States. Between 1997 and 2003, SKWorks Rural Technology Network established Internet access and distance learning and telemedicine programs in 150 rural communities in California, Arizona, New Mexico and Colorado through funding from 5 USDA distance learning and telemedicine grants. SKWorks has also successfully completed grant projects funded by the National Science Foundation, California Department of Education, USGS and other Federal and State agencies. Our distance learning program has received a Smithsonian Institution Technology Innovation Award for work accomplished in rural communities. SKWorks represents a very well designed Network with servers in Santa Barbara, California. The Network's primary bandwidth is a DS3 circuit with additional T1 lines used for health clinics and special projects. The Network is designed around 2 Sun x64 Sun Microsystems servers which handle bandwidth management, GIS mapping, video, distance learning web sites and secure telemedicine image and data transfer. The Network's System Manager and technical support staff have worked with SKWorks since 1995 and have proven experience in successfully setting up and managing rural area connectivity. i) Overall infrastructure cost of the broadband system. \$228,815 Total grant request. \$112,054 infrastructure cost. \$586 per household. \$289 per individual. j) Overall expected subscriber projections for the project. Year 1 – 200, Year 2 – 300, Year 3 – 2400, Year 4 – 450, Year 5 – 500 Year 1 through Year 5 – New Cuyama School District, (District Office, High School, Elementary School, 300 students plus 520 parents), New Cuyama Fire Department, New Cuyama Recreation District, (average 200 per month), New Cuyama Health Clinic, (average 50 patients per month). k) Number of jobs estimated to be created or saved as result of this project. 3 new jobs working with Network Management, Technical Support