

Broadband USA Applications Database

Applicant Name: Etheric Networks Incorporated

Project Title: California Central Valley Advanced Wireless Services Backbone Ring

Project Type: Last Mile Non-Remote

Executive Summary

California's Central Valley is 100 miles wide and 500 miles long. It is an ideal amphitheater from which to deploy long range fixed wireless. This region continues to demonstrate significant gaps in broadband availability between the areas along Interstate 5 and the more remote areas outside the I-5 corridor. Almost 19% of all households in the state that are unserved or underserved by broadband lie in the mostly rural areas from Kern County in the south to Shasta and Trinity counties in the north, where population densities have not been sufficient to attract major service providers. The Great Valley Broadband Ring is an ambitious, efficient and cost-effective solution to this problem. The Great Valley Broadband Ring, a initiative sponsored by Etheric Networks, Inc in collaboration with parties such as the Corporation for Education Network Initiatives in California (CENIC), and Rural Broadband Now, as well as the Central Coast Broadband Coalition. This Networks will provide complete high-speed symmetric broadband coverage to over 260,000 unserved and 180,000 underserved households for an approximate cost of \$40 per household. The cost per population served is about \$8. In comparison, a recent application to serve a rural area of northern California projected a cost of over \$600 per household, and large telcom providers have cost as much as \$20,000 per household to provide service that is slower, less reliable, and less scalable for future growth. The Great Valley Broadband Ring will provide the fastest internet service available in the United States through a 5 gigahertz last mile fixed wireless network; mobile laptop next generation WiMAX service; a cellular system; and voice service. The benefits of the project span all sectors of society. We will provide residential and commercial services, as well as serving local government agencies, public safety, health care, educational agencies, and nonprofits providing critical services in underserved areas. Etheric Networks, has already proven the efficacy of its model in the highly competitive market of Silicon Valley, building a robust hybrid network that has 500 on net buildings in San Mateo, Santa Clara, and Santa Cruz counties. Our service is consistently rated among the top ISPs in the country for speed and reliability, and our customer service feedback compares favorably with both traditional telecom ISPs and small independent wireless providers. The Need for Strategic Public Investment The availability of state and federal matching dollars to spur broadband development opens the door to deliver speeds and services that can revolutionize our society – but only if these funds reach the actors capable of unleashing these energies. These actors are the not traditional telecom providers, but instead Wireless ISPs and Metropolitan Fiber Ethernet Providers. The very scale of the legacy telecom providers and their vast capital investment in existing infrastructure has the effect of discouraging innovation, especially as these providers have lagged behind other tech sectors in investment in research and development. Etheric Networks is collaborating with fiber providers to develop advanced hybrid wireless and fiber networks. We predict that hybrid

fiber and wireless networks will lead the way in last mile access technology. Modest investments of CASF and Federal stimulus funds will yield novel services and explosive innovation to underserved and unserved communities that cannot ever be matched by traditional providers. Why Etheric Networks? Etheric Networks is uniquely qualified to lead the Great Valley Broadband Ring Project. Etheric Networks has been providing reliable, high-speed wireless internet service in San Mateo and Santa Clara counties for over five years, reaching profitability in three years. Etheric is rated as one of the top ten wireless ISPs in the United States for performance and reliability according to www.dslreports.com, and we are attaching extensive documentation of service quality and systems development. We feature the industry's most advanced wireless network management software; extremely high energy efficiency; a proven concept with 500 buildings on network, and experience deploying in harsh, mountainous environments. These include a 750' above ground deployment on the Bay Area's tallest tower with fully self contained military grade wired broadband switches and wireless transceivers. Etheric's management and engineers have experience in networking equipment start-ups and telecom research and development departments, uniquely enabling us to systematically integrate a service which consistently delivers new speeds and technologies to users before the larger operators can, and to develop network management software that predicts faults and has self healing capabilities. This software is vital for wireless service, particularly on bands which are open access. In developing our San Mateo/Santa Clara network, we employed the same infrastructure and technologies that we propose for the Great Valley Broadband Ring: a system of towers sited along ridgelines above the Peninsula and Santa Clara Valley. We currently lease or own 7 towers and 10 base stations, including owning and operating the largest communication tower in the Bay Area at Mount Madonna (the 1508' KSBW tower). CENIC Partnership California's education and research communities leverage their networking resources under CENIC, which designs, implements, and operates CalREN, the California Research and Education Network, a high-bandwidth, high-capacity Internet network specially designed to meet the unique requirements of these communities, and to which the majority of the state's K-20 educational institutions are connected. CalREN consists of a CENIC-operated backbone to which schools and other institutions in all 58 of California's counties connect via leased circuits. However, in the Central Valley, there are rural and remote schools and research sites where the cost of connecting to that backbone has been prohibitive up to now. California State Emergency Services: The locations of these towers place them squarely in some of the most dangerous environments in California We have been discussing these issues with the Governors task force on broadband and believe we will have their cooperation in using these LIFE-SAVING facilities. This is why 6% of the budget is dedicated to basic cellular service. So that no-one need perish again, when faced with danger and a non working cell phone. A Middle Mile framework to stimulate commerce. By placing this ring near the peaks of the first major range surrounding the valley, we essentially "stub out" a series of paths, Due north we anchor the path to Yreka and Oregon, at 1'00 we can provide connectivity to the Far North East of Modoc County, at 2:00 we can provide the Lassen Area, at 3'00 the Sierras, at 6'00 the pass leading directly to Los Angeles, at 7'00 San Luis Obispo, at 8'00 Monterey, at 9'00 the Bay Area, it takes on the aspect of a hub and spoke system. Ready To Construct NOW. We have completed radio simulations and we have negotiate agreements on the majority of the 85 sites. All have given their go ahead to this deployment. We have developed relationships local WISPs in the Central Valley, and hope to offer them equity in this network and the opportunity to build businesses that will not die when DSL and Cable arrive, as is now their fate,

In short we are absolutely committed to working with local ISPs to that our service is compelling professional and relevant. We are attaching detailed specifications on the Great Valley Broadband Ring project, but the following points summarize the highlights of our service offering: Total Population: 7,465,235 Total Businesses: 270,629 Households 2,700,394 Households without broadband: 1,512,000 Cost per household without broadband: \$ 10. • Eighty 27.5 mile radius full duplex 35 - 70 mbps 5 GHz Base Stations with the capacity to scale to support without substantial change over 1 million users • Voice Over IP (VOIP) Phone Service • Video Over IP (TV Over Internet) Service • InterOperator WiMax Network to permit other ISPs to install clients and point at this infrastructure – a wholesale framework. • 20 mbps 4.9 Gigahertz Public Services Data Network – useful to run critical educational police and emergency services data traffic on secure-able channels from an interference perspective. • Lower Frequency short range non line of sight service provision • A set of towers to attract Cellular Providers to deliver service in difficult areas. • Embedded WiFi into every local loop connection in areas with a density of five or more households in 200 meter range. • LifeLine Series of products for disadvantaged communities, including basic access at a nominal price. • High speed backbone service for other carriers and service providers. • Permanent Off-Grid Emergency Service using renewable energy (solar and wind). Project Beneficiaries include schools, libraries, medical and healthcare providers, community colleges and other institutions of higher education, and other community support organizations, and the project will include broadband education, awareness, training, access, equipment, and support to these organizations and their constituents. The project will provide outreach, access, equipment, and support services to facilitate greater use of broadband service by low income, unemployed aged, and vulnerable populations. The Time is Now Federal investment in broadband infrastructure is timely, given its purposes of stimulating economic development and job growth; increasing efficiencies in health care and other social services; educational system. Etheric Networks and our partners can begin service in 120 days. Alexander Hagen CEO