Applicant Name: Brazos Valley Council of Governments

Project Title: Brazos Valley Council of Governments' Network - COGNet

Project Type: Middle Mile

Executive Summary

The Brazos Valley Council of Governments (BVCOG) proposes a middle mile backbone project called COGNet. BVCOG has partnered with Texas A&M University and other state agencies and the private sector to ensure timely construction and management of the broadband network. The rural “unserved” and “underserved” citizens in the Brazos Valley need internet connectivity. They need access to new and expanded services at rural health clinics, in mobile ambulances, at public computer centers, to emergency facilities, libraries, rural workforce development offices, community centers and senior centers. The region needs economic growth in the form of new businesses, new jobs, and new markets that open up to our citizens for the exchange of goods and information. The COGNet project covers the seven-county BVCOG region in Central Texas. The service area for this project includes 4,976 square miles, with 26 incorporated communities, 20 unincorporated communities, and a population of 130,242 people, according to the 2000 census. The fiber backbone and associated radio link backbones pass 47,346 households and 3,143 businesses. The infrastructure cost for COGNet is approximately $22,450,000 over the estimated two-year construction timeframe. The demographics contained in this Executive Summary are correct according to the 2000 census. The statistics provided automatically by the mapping tool are incorrect. Repeated attempts to get the correct results were fruitless. COGNet will initially support 146 anchor institutions, including five small hospitals, nine clinics, two other health care sites, two Public Health Offices, and twelve emergency medical services sites on the private 1 Gbps medical backbone. This medical backbone will connect to the Texas Health Information Network Consortium (THINC) backbone and thence to most of the major hospitals and healthcare facilities in Texas, as well as connecting to Internet2 medical backbone to reach many national healthcare facilities. THINC is the FCC Rural Healthcare Pilot Project awardee for Texas. The 1 Gbps private K-12 educational backbone will include 21 Texas Independent School Districts with peering relationships to the Lonestar Education and Research Network (LEARN) of Texas. LEARN is the higher education backbone Regional Optical Network (RON) of Texas which connects to the Internet2 national education backbone. One community college campus and one Texas A&M University branch research campus will also be served. Six workforce centers, seven economic development centers, ten libraries and four community centers are served throughout the region. Six county judges, six county courthouses, sheriffs and county jails are direct customers, and the seventh courthouse is connected by a partner backbone, BVCNet. Twenty mayors and city halls, 27 fire departments, seven 9-1-1 PSAP and call centers, and 13 city police departments are participating. The 9-1-1 centers are currently participating in the U.S. Department of Transportation’s NG9-1-1 national security testbed project at Texas A&M University. Initially, three emergency service radio towers in the southern portion of the COGNet Service Area will be connected...
to a private regional emergency services backbone fiber pair on COGNet. These three towers service the
doevacy evacuation corridor for Houston, Texas, along U.S. Highway 290. Over the next three years,
eergency service towers in all seven counties will be brought onto the backbone under another project
at BVCOG. COGNet will provide various services to anchor tenants and potential last mile providers.
These include commodity internet connectivity on to a Tier 1 provider in increments of 1 Mbps, VPN and
VLAN support, 100 Mbps and 1 Gbps port speeds, transport capacity in increments of 1 Mbps, private 1
Gbps fiber backbones, and 1 Gbps and 10 Gbps lambda service in certain locations. 10 Gbps private fiber
backbone is available as an upgrade. COGNet will provide quasi-managed services such as the medical
backbone, the ISD backbone, and several public safety backbones which use private fibers and virtual
private networks. COGNet will provide network management policies prominently on the COGNet web
page, and provide notice automatically to customers of changes to these policies via “opt-in” push mail
technology. COGNet will be implemented as an open network. Regional commercial entities will be
encouraged to build corporate backbones using COGNet transport. Telecommunications suppliers such
as ISPs, cell services and POTS providers will be welcome to extend their services into the region. On all
Internet applications and content that traverse the public Internet, COGNet will use generally-accepted
technical measures, such as BGP advanced routing techniques, caching, and application-neutral
bandwidth allocation, to provide acceptable service levels to all customers,. Industry accepted

techniques will be employed to address spam, denial of service attacks, illegal content and other
harmful activities. The COGNet backbone consists of 48 strands of single mode fiber utilizing the IEEE
Ethernet standards for 1 Gbps and 10 Gbps Ethernet delivery and the ITU lambda standards for 10 Gbps
DWDM delivery. The initial backbone will be 1 Gbps Ethernet and 10 Gbps DWDM. Any 1 Gbps backbone
pair can be upgradet to10 Gbps Ethernet by changing only the SFP modules on the switches. The main
ring consists of nine core sites, 11 backhauled sites, and 17 sites connected by 100 Mbps radio links. The
backhauled sites are backhauled in two directions around the ring to the next nearest core site. The
physical layer topology is such that a number of Ethernet or DWDM physical rings can be defined to
facilitate resilience. The primary hardware is the Juniper 240 family of switch routers. Each core
switch/router is completely redundant internally. Switching and routing loads will be distributed among
the core cities. Originally established in 1966 as the Brazos Valley Economic Development Council, the
BVCOG has a history of successful implementation of regional initiatives. As documented elsewhere in
this proposal, BVCOG has administered many state, federal and regional multi-million dollar projects
and ongoing activities. The Academy for Advanced Telecommunications and Learning Technologies at
Texas A&M University has operated since 1996 under charter from the Texas A&M Board of Regents to
provide leadership and exceptional expertise in communications technology projects. A review of the
attached resumes demonstrates that those selected to comprise the technical team are nationally and
internationally known for building, managing, and engineering networks of this caliber. The Academy
staff co-founded the Texas Gigapop, now doing business as LEARN – the Texas Regional Optical
Network. Guy Almes was Chief Engineer of Internet2 for ten years. The Academy built and ran the first
higher education ATM backbone in Texas using its successful NSF vBNS grant award. Academy staff have
presented state-of-the-art demonstrations every year at National I2 meetings and serve on multiple I2
advisory boards. Academy staff co-wrote the successful FCC Rural Healthcare Pilot Program for Texas. It
is expected that the initial 146 anchor tenants will be phased onto this backbone over a two-year period
beginning in mid 2010. Multiple “Last Mile” providers are showing interest, but are waiting on project
funding before making any commitments. One last mile retailer is interested in 4 fibers over the entire footprint. Many potential customers are reluctant to express interest in a document that can be accessed through the Open Records act for fear of market retribution. The work force development officer of the Brazos Valley Council of Governments utilized a number of published studies which developed methodology to estimate job creation as a direct and indirect result of the COGNet capital spend in the region. It is estimated that 1096 total jobs will be created. Of these 577 will be in small businesses.