Executive Summary of Project for BIP and BTOP

In an effort to address the needs of residents of Imperial County, California, the Imperial County Office of Education working with other entities formed a Public Joint Powers Authority – the Imperial Valley Telecommunications Authority (IVTA). This Border Net application is submitted by Imperial County Office of Education as the fiscal agent and Network Administrator of the IVTA.

Imperial County and its 13 communities are located in southeastern California. A vast desert region, it borders Arizona to the east, San Diego County to the west, Riverside County to the north and Mexico to the south. Our rural county spans 4,597 square miles of arid desert with a largely agricultural-based economy. Recent articles in the Los Angeles Times (April 27, 2009) and New York Times (March 4th, 2009) have highlighted the overwhelming evidence that Imperial County is one of the most underserved, isolated, and economically impoverished areas in the United States. To quote the LA Times, —Name the statistic, and Imperial County is usually near the top or the bottom, whichever is worse: per capita income, welfare recipients, families below the poverty line and so on.

The economic, geographic, and social factors that limit the ability of Imperial County residents to achieve greater levels of employment and fiscal security are described further under the BTOP Statutory Purpose section.

In 2001, broadband access for public agencies and education in Imperial County surfaced as a key priority to support our community in addressing the dire challenges we face. In response, the Imperial County Office of Education convened community leaders, decision-makers at the local public utility, the Imperial Irrigation District, and others to strategize an innovative approach to our connectivity needs. This collaborative effort has evolved into the 28-member strong Imperial Valley Telecommunications Authority (IVTA). The IVTA builds, manages, and maintains a robust fiber-based telecommunications network throughout the county. IVTA has received several awards and recognitions for its intersegmental and innovative approach to meeting educational and governmental connectivity needs. IVTA also connects directly to the larger California Research and Education Network (CalREN) operated by the Corporation for Education Network Initiatives in California (CENIC). This interconnectivity bridges the digital divide that once plagued our community.

Today eighty-five sites are connected to the network. These include K-12 schools; County of Imperial facilities, including the Office of Emergency Services, the Sheriff's Office, and others; municipal facilities including law enforcement and fire safety; hospitals and other medical facilities; the local community college; and the local California State University campus.

Now, the opportunity exists to complete the vision of providing all vulnerable areas of the county with access to essential services.

The infusion of Federal Stimulus Funding will accomplish two critical goals for our desert community: 1) complete the remaining public agency, education, and emergency services network, and 2) build infrastructure capacity for commercial entities to deliver services that were not economically feasible in many areas of our underserved region.

This Middle Mile proposal will accommodate the remaining un-served and underserved anchor community institutions in Imperial County. Fire stations, non-profit health clinics, Family Resource

Centers, senior centers, and other community centers, as well as border checkpoints, branch libraries, and emergency services facilities will all be afforded access to the IVTA network. In all, 44 new anchor sites – some of them very far removed from the centers of business – will be incorporated into the existing network. The plan will install 281 miles of fiber optic cable in six new spans to provide connectivity to the most rural parts of the county. These spans are called 1) North – South, 2) Ocotillo – Winterhaven, 3) Calexico – Holtville, 4) El Centro – Imperial, 5) Desert Shores – Seeley, and 6) Brawley – Westmorland.

As a seventh element of the project, a wireless mesh Wi-Fi system will be deployed to support numerous municipal and public safety purposes. The deployment of this system will allow agencies to modernize and capture efficiencies and improve service to the residents, with the greatest improvements affecting those in our most isolated areas. The potential for efficiencies in municipal services include automated utility meter reading, management of traffic control systems, municipal surveillance systems, patrol cars with mobile access to critical information, and fire crews having access to HAZMAT information. Public safety agencies will have an invaluable tool for making more informed decisions with access to real-time information.

Additionally, IVTA will identify appropriate commercial partners to distribute broadband access to consumer and business end-users at affordable prices using excess capacity on the fiber and mesh infrastructure. The process will be open, will not favor or discriminate against any potential service providers and will offer consumers and business end-users with a choice of providers. This public/private partnership approach will ensure our community has affordable access to appropriate services, and will simultaneously create an on-going revenue source for maintenance and operation of the system.

The funds requested in the application will serve to strengthen existing network infrastructure by adding key middle mile network segments and increasing the number of connected entities by 50%. More pointedly, the new sites are those that serve the most vulnerable populations and have been unable to carry the expense of connecting themselves. Currently the IVTA network system delivers high speed network access via Ethernet technology and adheres to IEEE 802.3 standard. The connection speeds vary from segment to segment and are usually 1000 Mbps for long haul or aggregation connections and 100 Mbps hand-off to connected sites. The proposed network capacity would be expanded to support Multi-Protocol Layer Switching (MPLS) and backbone speeds of 10 Gbps.

The protocol used to transport data packets across the network is TCP/IP using IPv4 addressing scheme. The network utilizes standards-based routing protocol to maintain routes and ensure packets arrive at their final destinations. IP routing protocols such as Open Short Path First (OSPF) and Border Gateway Protocol (BGP) are used through the network where appropriate.

The wireless communication system to be deployed if this application is funded will serve cities, public safety, education and government agencies in Imperial County and adhere to IEEE 802.11 standards for client access and inter-device communications.

The installation of 281 miles of fiber in 6 middle mile spans to serve the clients described above is budgeted at $17,438,000. The installation of the wireless communication system serving 38 square miles of territory is budgeted at $18,320,000 and equipment to upgrade the existing backbone infrastructure is budgeted at $2,590,000 for total project funding of$38,348,000.

Direct service to county and city service agencies via the new infrastructure is anticipated to reach 120 entities. Over time approximately 10,892 subscribing households are expected to commission service from partner vendors. These individuals and families will benefit from the infrastructure investment when they can access affordable broadband.

Knowing that education and workforce preparation are key to community improvement, education leaders established a P-16 Council in 2002 to address the low college-going rates. Their work, including organizing Algebra Academies for incoming high school freshmen to improve their eligibility for, and success in, college are improving our college-going rates. The county's 1,740 teachers and 36,251 students have begun to access online resources delivered in a reliable and effective manner. These resources include virtual field trips, online advanced coursework, and online remedial coursework – meeting students' and teachers' needs and providing enrichment opportunities. They will be more accessible as the infrastructure is expanded to the most remote locations and – eventually – to homes in those communities.

Workforce development, social services, and other focus areas are implementing similar reforms to change our culture and redefine our community. Broadband access is a key element to securing our future, and this proposal is the catalyst to a new definition of what Imperial County has to offer its citizenry.

An estimate from one construction company reports that building the six spans of middle mile fiber optic cabling will employ 10 to 15 people for two years. The selected equipment manufacturer will dedicate significant man-hours to fulfilling the contract. Other engineering and project management staff or contracts will also be required to implement the proposal. One the system is installed and supporting the community, three new positions are expected to be needed to maintain the network. Workforce development and other training activities will be provided using the infrastructure and small business development is expected to benefit from city services that were not previously available.