OPPORTUNITY Kentucky suffers from severe economic problems with the 7th highest poverty rate of 17\%, the 46th worst per capita income at $31,826 and the 37th worst unemployment rate of 10.7\%. Kentucky also has the nation's highest smoking rate at 28\%, the most overweight with 69\% of the population overweight or obese. We are 46th in educational attainment with only 20\% of the population holding a bachelor's degree or higher. Kentucky universities receive only a small fraction of research awards from the National Science Foundation (NSF), and reliable and affordable broadband access is particularly rare and difficult to achieve in Kentucky's mountainous rural regions. In light of these disparities Kentucky has adopted a comprehensive communities approach that emphasizes middle mile broadband capabilities of new or substantially upgraded connections to community anchor institutions to maximize the benefits of broadband access throughout the state. This is consistent with a December 2009 report by the NSF Experimental Program to Stimulate Competitive Research Program, which calls for expanding the KyRON network to extend its services to educational and other community anchor institutions to spur economic growth. Thus, this project is expected to benefit approximately 1,500,000 households and 93,500 businesses indirectly and will spur job growth by potentially creating 783 jobs.

PROJECT DESCRIPTION The Kentucky Regional Optical Network (KyRON) is poised to expand its middle mile capacities and deploy additional broadband connections to a partnership of over 300 community anchor institutions including community colleges, universities, public libraries, public safety and healthcare organizations statewide. KyRON will act as an anchor tenant to encourage last mile expansions in every county in the state. Several municipal utilities have committed to use the infrastructure to offer last mile Internet in rural areas. In 2003 KyRON designed a customized network with postalized rates to serve community anchor institutions. A competitive contract was awarded to Windstream Communications to construct and manage the network. Currently, there are 119 community anchor institutions connected. This grant will expand the multi-gigabit connections that are currently servicing the Universities of Kentucky and Louisville. This is a fiber-based high speed network made up of a DWDM infrastructure based on lambda technology. KyRON provides a 10Gbps fiber hand-off that supports DWDM protocols, including LAN PHY, WAN PHY and OTU2. Each lambda channel can support up to 40Gbps per channel, and the DWDM platform can accommodate up to 40 channels to handle future growth and bandwidth requirements. We are asking for funds to similarly link the remaining six regional universities: Murray State University, Kentucky State University, Northern Kentucky University, Morehead State University, Eastern Kentucky University and Western Kentucky University to create an integrated and unified network for education, research, collaboration and data exchange. This fiber build-out will pass through 42 towns, 242,460 households, 42,482 businesses and a
population of 654,316. In addition we plan to upgrade the connections serving 70 community and technical college locations, extending the connections from 4 to 64 public libraries, and from 5 to 153, NG911 locations. The network MPLS architecture for these locations consists of the following: ' 23 MPLS nodes throughout the Commonwealth of Kentucky. ' (2) Tier 1 one Internet provider drains into the network at 10Gbps each. ' A 10Gig Core Network with diversity in the cities of Lexington, Louisville, Elizabethtown and London. ' All 23 MPLS nodes linked together via 1800 miles of fiber. This network has a diversified range of available speeds for end-users from 1.5Mbp to 1000Mbp and is based on two platforms which include DWDM and SONET. Each of these platforms can be upgraded by adding the appropriate hardware. The network currently has a 10Gbps core interconnecting four NAP sites located in Lexington, Louisville, Elizabethtown and London. KEY PARTNERSHIPS The Kentucky Community and Technical College System (KCTCS) is comprised of 16 colleges at 70 locations on the network. KCTCS operates centralized academic and administrative systems for students and is therefore heavily dependent on the network. In addition, all of its libraries offer public Internet access. Rapid growth to over 100,000 students and even more rapid growth in its online enrollments dictate the need for expanded reliable bandwidth. KCTCS delivers a greater percentage of its academic credits (20.4%) through online classes than any of the 16 southeastern states. The 119 public libraries located in nearly every county in Kentucky provide free Internet access and serve a wide variety of educational and self-help resource needs in their communities. Public libraries are also major support sites for adult students taking online classes. Patrons are increasingly coming to public libraries, which has placed a phenomenal strain on library resources and staff resulting in long wait lines and time limits for public access computers. In light of this growing need, the State Department for Libraries and Archives in partnership with the Bill and Melinda Gates Foundation has upgraded the technology infrastructure of all the public libraries across the state since 1999 and they are currently collaborating with the Gates Foundation in the submission of a complementary BTOP Public Computing Center application for 60 of the 64 public libraries served by this CCI application. If successful, this PCC grant in combination with our CCI grant will provide the high speed bandwidth needed to successfully transform Kentucky's public libraries into public resource centers of the future. In terms of enhancing public safety, this grant application will also expand the network to include 153 NG911 call centers. With a broadband network, these centers will be able to receive, process, route and deliver (voice, video and data) all types of 911 calls (text message, cell phone) through what is referred to as next generation 911. This state-of-the-art network will significantly improve 911 service to underserved populations (e.g. hearing impaired), expand service into underserved parts of rural Kentucky, and will benefit all stakeholders including citizens, visitors and first responders. Kentucky's public safety network will ultimately connect to similar networks in adjoining states to initiate a badly needed national safety infrastructure. NON DISCRIMINATION AND INTERCONNECTION OBLIGATIONS KyRON will adhere to the principles contained in the FCC's Internet Policy Statement (FCC 05'151, adopted August 5, 2005) or any subsequent rulings or statements. It will not favor any lawful Internet applications and content over others. Any network management policies will be displayed in a prominent location on our web page and any changes to these policies will be broadly disseminated. KyRON will offer interconnection, where technically feasible without exceeding current or reasonably anticipated capacity limitations, at reasonable rates and terms to be negotiated with requesting parties. This includes both the ability to connect to the public Internet and physical interconnection for the exchange of traffic. COST The Kentucky Regional Optical Network Community
Anchor Institution Expansion project budget is $101,585,076. This is comprised of $72,484,712 in federal support, $18,181,126 in a cash match and $10,919,238 as an in-kind match. PROJECTED SUBSCRIBERS Based on historical growth and the large number of community anchor institutions as potential subscribers, we anticipate growing from 300 connections to approximately 600 connections in eight years. We predict this growth to come primarily from additional colleges and universities, public libraries, public safety organizations and healthcare facilities. We are currently in discussions (see letter of support) with the Department of Children and Family Services (DCFS) to potentially connect 7 key public health anchor institutions. Under a $4.9m grant from the U.S. Department of Health and Human Services State Health Information Exchange Cooperative Agreement Program, DCFS will turn on a seven site Health Information Exchange (HIE) pilot in April 2010. They also have been awarded a $9.7m grant to plan and operationalize the HIE system. The statewide plan is scheduled for approval by August 2010. QUALIFICATIONS The KyRON partnership is a product of ten years of collaboration and careful development. The project's sustainability is evidenced by a track record of continual expansion since 1999, but we need the capital funding from BTOP to take our working model to scale, bringing broadband to every community in the state.