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Final Copy of Case Study

Status:
Laureate

Year:
2013

Organization Name:
MCNC

Organization URL:
www.mcnc.org/btop

Project Name:
Fiber build to serve community anchor institutions

Please select the category in which you are submitting your entry:
Philanthropy

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)

By the spring of 2013, MCNC, a 501(C)3 non-profit located in Research Triangle Park, will have completed a $144 million expansion of the North Carolina Research and Education Network (NCREN). This initiative has been labeled the Golden LEAF Rural Broadband Initiative. To fund this expansion, MCNC applied for and received two U.S. Department of Commerce Broadband Technology Opportunities Program (BTOP) awards totaling $102 million. In addition, MCNC raised $40 million in private matching funds as required by the BTOP program. MCNC's sources of matching funds included $24 million from the Golden LEAF Foundation, $10 million from the MCNC Endowment, $4 million from private-

sector wholesale telecommunications company FRC, and an estimated $4 million through donations of land and existing conduit from individual community colleges, universities, and others including the Albemarle Pamlico Economic Development Corporation. No direct funding from the State of North Carolina was required. The expansion of NCREN created or saved 2,500 engineering, construction, and manufacturing jobs in the state. This new investment in NCREN results in a 2,600-mile fiber optic network that touches 82 of North Carolina's 100 counties and places North Carolina at a competitive advantage with other states and countries. NCREN is now a scalable, owned fiber optic infrastructure that allows North Carolina's community anchor institutions to keep up with exploding bandwidth demand (40% growth per annum) at operating costs fixed at current levels. Users of NCREN include: - All 17 University of North Carolina System Institutions - All 58 North Carolina Community Colleges - All 115 North Carolina Public K-12 School Districts - 26 of 36 private four-year colleges and universities - 25 non-profit hospitals - 61 public health agencies - 36 charter schools - Several research institutions. Over 3 million students use the network for research and education.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

Project began in August 2009, and it will be completed in March 2013. NCREN will deploy 100G optical gear in the network in January 2013 as part of this project. The Community Anchor Institutions (CAIs) that connect to NCREN will utilize the highest production speed network available in the country to further their missions. For universities, like R1s in North Carolina (UNC Chapel Hill, Duke University and N.C. State University), the new network will support leading edge research across several disciplines -- health care, bio-tech, technology, etc. It supports the universities' efforts to conduct multi-institutional research and government research. Also, the network will support innovative models of access to education like the evolving Massive Open On-line Course (MOOC) movement where great universities make their courses open to much larger segments of the population. It is impossible without powerful networks to distribute this often synchronous, high-bandwidth content. NCREN will be a foundation that will provide a competitive advantage to NC-based institutions in the MOOC world. For community colleges, the new NCREN will help virtually scale education programs that are in high demand. Programs like nursing in rural areas do not have enough bricks and mortar seats to meet the demand of students and the employee needs of local health care. The new NCREN also includes leading edge video equipment like the Cisco/Tandberg interoperable switch. For K-12 education, the new NCREN will support the implementation of an aggressive on-line testing program that is associated with the implementation of the Common Core standards. For health care, the new NCREN will be the foundation for the

implementation of telehealth, healthcare information exchange, and electronic medical records technology. NCREN provides an unmatched foundation for North Carolina's CAIs to lead the nation.

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)

The project is in its final phase and will be completed by the time of the award. The National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce has recognized the project as exemplary. The project has created or saved more than 1,000 jobs and represented a $1 billion economic boost to North Carolina's economy during this time of fiscal and economic challenge. This is based on the Baller Herbst law group's estimate that a $1 investment in broadband infrastructure has a $10 multiplier effect.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)

Vidant Medical Center in Greenville is the first not-for-profit hospital to be connected to the North Carolina Research and Education Network (NCREN). The connection was made possible by broadband fiber constructed during the first phase of the Golden LEAF Rural Broadband Initiative. Vidant Medical Center (formerly Pitt County Memorial Hospital) is now part of Vidant Health, a 10-hospital not-for-profit organization that collectively serves Eastern N.C. Vidant Health previously operated as University Health Systems of Eastern Carolina. With this enhanced connection, Vidant Medical Center is using a combination of its fiber and MCNC-provided fiber for a fully dedicated 1 gigabit per second connection to the N.C. Telehealth Network (NCTN). The NCTN, operated by MCNC for the Cabarrus Health Alliance, is an infrastructure dedicated to health care providers and public health facilities that uses a portion of the bandwidth and facilities available on NCREN. Vidant Medical Center is the first of 24 non-profit hospitals that will be connected to the NCTN over the next three months. Several others are discussing NCTN connections. Vidant Health has plans to supplement the initial connection in Greenville with a second 1,000 Mbps, completely diverse connection, to increase resiliency and to serve their backup data center expected to be operational this spring. Andy Anderson, administrator of IT operations for Vidant Health, said this connection is estimated to save $44,000 annually in addition to supplying the hospital system with a significant increase in Internet bandwidth capacity. "Vidant Health has been a long-standing customer of MCNC for Internet services, and this connection increases our

bandwidth by tenfold with lower costs, more capabilities, and better overall patient services," he said. "This high-speed connectivity provides instantaneous care and support for patients in areas where they live and work."

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less.)

This project can be implemented by other states. The technological requirements and opportunities for CAIs are changing rapidly. These changes require powerful networks to: - Support multi-institution research and development - Support the growing use of cloud-based technologies in education and health care for efficiency and greater access to learning. Powerful networks are the key to the cloud. - Support the timely access to educational content required for job creation and job growth. - Support the assessment requirements of the K-12 Common Core. - Support the bandwidth and infrastructure requirements of telehealth, healthcare information exchange and electronic medical records. Diverse, plentiful and sustainable broadband infrastructure is as necessary a foundation for equity of access to education, better health care, economic acceleration and job growth as the interstate highway system was in the 1950s. NCREN, through this project, has provided North Carolina an infrastructure that will scale to needs of the digital world for the next decade and beyond. The NCREN project also provides an example to other states of what a relatively small investment is required (in North Carolina's case less than 1/100th of 1% of the state's GDP), to secure the future.

If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

Some NCREN usage statistics that display the necessity of a scalable broadband infrastructure to serve CAIs. - North Carolina's 115 K-12 school districts have increased their Internet bandwidth use by more than 10 times from 2007 to 2012. North Carolina's 1.5 million K-12 students use more than 10G of Internet on a daily basis. The 2012 aggregate cost for Internet bandwidth has actually decreased despite the 10 times growth due to the operation of the backbone network. - Total traffic on NCREN is more than seven times what it was in 2007, and institutions continue to grow their use. - Some interesting press releases that display NCREN's service to Community Anchor Institutions: Vidant Healthcare: https://www.mcnc.org/news/nc-telehealth-network-connects-first-non-profit-hospital; Innovation in Video: https://www.mcnc.org/news/ncren-users-evaluate-movi-desktop-videoconferencing-software; Start of the second phase of NCREN investment: https://www.mcnc.org/news/boosting-economies-on-nc-digital-

highway; Community Colleges: https://www.mcnc.org/news/mcnc-expands-broadband-to-all-nc-community-colleges