Executive Summary

The Humboldt Community Access Network (HumboldtCAN) microwave middle-mile network will connect 31 community anchors (and more than 200 in the future) throughout the remote, mountainous and largely underserved Humboldt County, California, with particular emphasis on improving public safety functions, promoting educational opportunities, and serving the County's significant population of economically disadvantaged Native American residents. The network truly embodies the spirit and the purpose of the Recovery Act in general, and BTOP comprehensive community infrastructure projects in particular: It will create jobs, promote economic development and educational achievement, and bring broadband access to vulnerable populations and underserved tribal lands. It will encompass creative public-private partnerships and enable private last-mile providers to deliver service to currently unserved residents. Ultimately, given Humboldt County's remote location, general lack of infrastructure, and high level of poverty (almost 20%, per recent Census statistics), this project will provide broadband access to community anchors that almost certainly would remain unserved by the private sector.

Microwave Conquers Geography

The HumboldtCAN microwave middle-mile infrastructure was designed in a cost-effective way that recognizes not only the prohibitive expense of building fiber in these mountainous rural areas (and over such long distances), but also the very real drawbacks of constructing fiber over this terrain. With one fiber line running north to south through the County and terminating in the town of Eureka, local governments and residents know the pitfalls of single-route fiber; when the fiber is inadvertently cut south of the area, communications shut down. Fiber cuts are potentially avoidable, however; while the County's weather and terrain are not. Many of the County's mountainous roads are closed for the winter, and mudslides in warmer weather often bring down terrestrial communications infrastructure. The project's wireless architecture and overall technology strategy address these geography-specific limitations and establish a resilient, survivable infrastructure for the service area and in the process, create a critical public safety tool for a region that is at significant risk of natural disasters. Public Safety Focus

HumboldtCAN is partially a public safety network that will rectify the County's perilous lack of survivable communications infrastructure. The County's Sheriff, which houses the County's Office of Emergency Services, is a strong advocate of the project, because its leadership recognizes the day-to-day benefits of having a robust wireless network that would enable fixed and mobile communications to even the remote corners of its service area. Beyond those day-to-day needs, the County faces a critical public safety need for broadband. The County is located in one of the most hazardous earthquake zones in the country. Its disaster plan has determined that more than a dozen areas of the County could be cut off by a large-magnitude natural event. In such a scenario, those communities would become islands and communication assets would take on a critical role. Humboldt
County's annual fire season, while not on the magnitude of a major earthquake, is a regular event that starkly illustrates the need for more robust and resilient broadband communications for public safety. The County has 32 fire districts, including remote volunteer fire stations. Each year, fire patrol camps' mini towns, really 'spring up in staging areas near fire hot spots. Broadband connectivity for the command centers is essential, but sorely lacking. In the town of Orleans, when the last major fire event doubled the population with firefighters, the fire service paid a carrier to bring in a portable cellular tower for emergency communications. Once the fire was out and the firefighters decamped, so did the carrier and its portable tower. The fire season highlights another truth: Every community anchor and public facility across the County—from schools and libraries to community centers and government buildings—could conceivably become a disaster response and recovery facility during an emergency. Each of these facilities, then, needs communications infrastructure that meets not just its day-to-day needs, but is capable of reliably supporting emergency communications functions. In a similar vein, HumboldtCAN's middle-mile broadband connection to the district's community college, College of the Redwoods, serves not just an educational goal, but a public safety mission. For volunteer firefighters in remote fire patrol camps, regular training is essential but the firefighters cannot generally leave their posts for the days it would take to drive to a distant training center. With videoconferencing, however, College of the Redwoods could deliver its training curriculum to distant facilities allowing firefighters to receive the training they need while protecting their communities. Another public safety aspect of HumboldtCAN's middle-mile network is the provision of high-bandwidth transport service for local media (radio, broadcast TV, public-access cable TV). With the digital television transition last year, many Humboldt County residents lost access to local media; without it, they have no way of receiving emergency alert messages. HumboldtCAN will ensure that all residents can receive instructions and information during an emergency. Serving Native American and Other Vulnerable Residents HumboldtCAN will provide the myriad benefits of high-speed middle-mile capacity to key community anchors that have expressed significant commitment to the project, including a range of tribal entities such as the Wiyot, Hoopa, Karuk, and Yurok Tribes. Beyond its public safety focus, the HumboldtCAN project was conceived to connect community anchors that provide services to Native American residents, including tribal government buildings, social service agencies, libraries, public computer centers, community colleges, and other entities. With unemployment and poverty rates significantly higher than the national average, Native Americans are a truly vulnerable population. Humboldt County is home to more Native American groups than virtually any other County in the country. Significantly, HumboldtCAN will provide middle-mile connectivity to United Indian Health Services' rural clinics, replacing their current low-bandwidth lines with a dedicated point-to-point connection that will lower their costs while providing more reliable communications. Project Management HumboldtCAN will be constructed and managed by Access Humboldt, a local non-profit with a significant history of championing technology for educational and civic purposes. Access Humboldt represents all of the County's local communities. Its core mission is to support the public interest, and it has long pursued initiatives to expand broadband access for underserved communities (including the 60% of Humboldt County that is unserved), and of partnering with public and private entities in innovative and creative ways to meet those goals. A current Access Humboldt project, for example, is Digital Rio Dell, which brought together public and private partners to offer free public Wi-Fi in the small, rural city of Rio Dell. Access Humboldt was able to secure cost-effective bandwidth and backbone Internet access; donated
equipment; and low-cost maintenance services. As a result, operating costs for this robust, locally owned and operated community broadband network are sustainable through local donations. HumboldtCAN will extend this model. It will include a creative public-private partnership based on joint activities Access Humboldt has cultivated over many years with a very successful locally owned wireless ISP. The private company, 101Netlink, is committed to leveraging the grant-funded middle-mile infrastructure to cost-effectively invest in its own, private last-mile infrastructure to serve many of the County's unserved residents and businesses. Other private sector partners have contributed to the process, as well. Carlson Wireless Technologies, a local communications equipment manufacturer that has been a longtime donor of hardware to support connectivity for unserved and underserved communities, donated significant design and planning services and preparation for this project. The public-private partnership aspects of the HumboldtCAN project will not only expand the network reach and its impact on the lives of unserved and underserved residents and of community anchors, but also will contribute to the network's sustainability and low operating costs by enabling sharing of existing and new infrastructure costs. HumboldtCAN infrastructure will cost $5,293,066. Significantly, it is expected to save or create 37 direct and indirect jobs.