Executive Summary

As Michigan seeks to address its significant economic challenges, broadband becomes an even more important foundation for the future. Alternative energy, next generation manufacturing and other initiatives depend not only on access to information, but on an educated populace well-versed in new technology. In most remote areas of Michigan, the high cost and lack of competition for backhaul service limits last mile service performance, availability and affordability for homes, businesses and community anchor institutions (CAIs). Last mile providers in Michigan’s remote areas have reported that up to 80% of their costs go to backhaul. For over 40 years Merit Network has operated a statewide CAI network. The service Merit can provide to CAIs in remote areas has been limited by high backhaul costs or limited technology options. Only CAIs in served areas of Michigan are able to take advantage of a CAI network by collaborating and sharing resources. Because there is no state subsidy for Michigan’s CAIs, and the cost of backhaul in remote areas is so high, CAIs in the REACH-3MC II service area have either elected not to join or to take service levels below their need. The project described in this proposal, "Rural, Education, Anchor, Community, Health Care: Michigan Middle Mile Collaborative II" (REACH-3MC II), directly addresses these problems by creating a 1270-mile fiber network in Michigan’s Upper Peninsula (UP) and Lower Northern Peninsula with diverse paths to Wisconsin (WI) and Minnesota (MN). Merit Network, an established non-profit provider to CAIs, together with 7 commercial service providers, will use the new infrastructure to serve all sectors of society. REACH-3MC II leverages sub-recipients' current networks and REACH-3MC, the BTOP funded network in West, South and Central Michigan, to deliver maximum benefit for cost. Merit's mission of serving CAIs, combined with the partners' business plans, ensures that households, businesses, and CAIs will all see major benefits from REACH-3MC II. By addressing the backhaul issue for Michigan's remote areas, service providers will be able to offer higher speeds at lower costs, expand services, and better serve homes and businesses. Lowering the cost and increasing the speed and options for backhaul also provides the opportunity for all CAIs to take part in peer networks. The benefits of the statewide CAI network will be distributed throughout the state, not just the funded service area. Not only will institutions that are newly able to connect benefit, but also current Merit members will benefit from the synergistic effect of the new CAIs on the network. REACH-3MC II and the statewide CAI network it will bring about are backed by letters of endorsement from 31 Michigan CAI leadership organizations. By bringing backhaul into the UP through diverse paths, REACH-3MC II will deliver a level of reliability to the UP taken for granted in served areas of the nation, while also significantly improving the reliability of infrastructure throughout the state. The diverse paths will terminate in Green Bay, WI and Duluth, MN. The Green Bay spur will connect Merit’s CAI network to its counterpart WiscNet and access available transport that will allow the network to
connect to a National Point of Presence in Chicago. The Duluth spur will connect Merit’s CAI network to counterpart networks, BOREAS-Net and the Northern Tier Network, which will begin the vision of the FCC National Broadband Plan to create a Unified Community Anchor Network (UCAN). Leveraging current peering of the Northern Tier Network and Merit, REACH-3MC II will provide direct fiber-optic connections between CAI networks from Alaska to Ohio. REACH-3MC II is a complement to BTOP-funded REACH-3MC and will lay the groundwork for continued progress long after project completion. Merit, as cited in 187 letters of support from CAIs, has succeeded in helping communities work together, share assets, and make real progress toward improving regional network infrastructures. Merit has a history of bringing together diverse organizations to work together for the benefit of their remote communities; thus REACH-3MC II leverages a winning approach to extending the benefits of broadband. REACH-3MC II is a partnership between Merit, the Michigan 911 Administrator’s Office, ACD.Net, Boardman River, CCI, GLC, Lynx, PFN and Zayo Bandwidth. Merit is the lead applicant, the 911 Office is a partner and the others are sub-recipients. All parties have jointly designed the network and have MOUs in place. Boardman River is applying to BIP for a last mile network and REACH-3MC II will provide it middle mile service. Funded service area The network will bring high-performance low-cost backhaul service to 29 counties in Michigan, 8 in Wisconsin and 1 in Minnesota. Of the 38 counties, 29 are underserved and 8 have underserved areas. REACH-3MC II is also a critical first step for the Next Generation 911 effort in Michigan and will leverage Merit’s existing CAI network and REACH-3MC to provide statewide infrastructure capable of connecting all Michigan’s Public Safety Answering Points (PSAPs). Twenty-nine counties in the service area are economically distressed and seven meet one of two economically distressed criteria. REACH-3MC II serves communities that stand to benefit the most from broadband in a state that has fallen on difficult economic times and is working hard to better engage in the knowledge economy. Households and businesses passed REACH-3MC II will pass 731,237 households and 49,661 businesses. Anchor institutions passed The network will immediately connect 61 CAIs. REACH-3MC II will pass 759 CAIs in the service area. Proposed services As a middle mile proposal, sub-recipients will collectively offer Dark Fiber, Wavelength, TDM, SONET, Ethernet, p2p, and IP service. Speeds will be up to 10 Gbps, with standard lower speeds available. Some REACH-3MC II sub-recipients have existing last mile service operations. The network will allow them and customers of middle mile providers to offer a range services in the service area from Fiber-to-the-home, wireless, Ethernet, T1, DSL, cable. This system is a fiber network that uses advanced technologies to bring high-performance, low-cost and easily scalable backhaul services to underserved areas. The design allows for easy support of legacy technology (TDM) common in smaller last mile providers, while providing a smooth path to newer high-performance (Ethernet) technology. Non-discrimination and interconnection Each REACH-3MC II sub-recipient has policies supporting open access and non-discrimination. Because each access point will have at least 4 providers, competition will be the true guarantor of open access and non-discrimination. Type of broadband system REACH-3MC II will extend advanced service previously unavailable in most of the service area. REACH-3MC II comprises 1270 miles of fiber. Segments will have between 12 and 168 strands. The optical system is based on dispersion shifted long-haul fiber with DWDM optical transport equipment capability of delivering up to 40 DWDM waves within the ITU standard wavelength grid. The basic access rates will be 10 Gbps and 2.5 Gbps between add/drop sites at strategic locations on the network. These rates can be either Ethernet or SONET standards. Secondary regional access loop fibers will deliver 100 Mbps to 1 Gbps to the add/drop points for aggregation into the backbone network.
Routers and switches on the regional access loops will operate with standard TCP/IP protocols and services. Qualifications Merit has built and operated networks for over 40 years. Merit was one of three partners that built the NSFNET, the forerunner of the commercial Internet. Merit currently operates 1600 fiber miles in its network, delivering the most advanced technology with rock-solid reliability. Merit is fully staffed with senior engineers, operators and management. As a 501(c)(3), Merit exists to serve the public good. Merit's Board governs Merit to maximize its positive statewide impact and to ensure Merit's long-term existence. Sub-recipients are all current network operators delivering quality service to customers throughout the Midwest. Overall infrastructure cost The total cost of this project is estimated to be $87,049,114. Overall expected subscriber projections We expect up to 119 organizations to buy wholesale service from REACH-3MC II. Though all sub-recipients are participating as middle mile providers we still expect 53,994 households to take service from one of the partners on REACH-3MC II. We estimate that 5,393 businesses will get their service from a sub-recipient. Number of jobs estimated to be created Using the council of economic advisors formula this project will create/save 946 job years.