

## Broadband USA Applications Database

**Applicant Name:** California Broadband Cooperative, Inc

**Project Title:** Digital 395 Middle Mile Project

**Project Type:** Middle Mile

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### Executive Summary

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The Digital 395 network is a 448 mile, optical fiber middle mile project between Carson City, Nevada, and Barstow, California designed to provide broadband services to Mono, Inyo and eastern Kern Counties, which comprise 15% of the California landmass known as the “Eastern Sierra”. The route mainly follows the US 395 highway, which is a major transportation corridor between southern California and Reno, Nevada. The area contains 16 Census Designated Places (CDP), 21 communities located in “other” census areas, as well as five Indian reservations. In addition to these civilian areas, the region is host to two military bases: Naval Air Weapons Station China Lake, and the USMC Mountain Warfare Training Center. State and local leaders throughout the Eastern Sierra recognize that a robust broadband infrastructure that affordably serves all residents and businesses is a key requirement for the area’s future economic and social development. When much of the region’s water resources were diverted to Los Angeles in the last century, a once-vigorous agricultural area was transformed to desert, leaving not only a desiccated landscape, but an atrophied economy now solely dominated by seasonal tourism. With only 3% of the land privately held, an absence of a scalable, efficient transportation system (no rail, airport, or Interstate) and a protected, sensitive ecology, economic development has been further restricted, leaving the information services sector as the region’s last hope. Unfortunately, market economics have prevented anything resembling a modern broadband infrastructure to materialize over the past several decades. The area is served with a piece-meal, 1980’s telephone backhaul network that is exhausted, compromised, and incomplete. Having deployed a patchwork of radio, fiber and copper, the out-of-region companies that collectively control the telecommunications infrastructure admit to “being unable to make the business case” for further broadband investment. To make conditions worse, there is no diverse routing in the region and over the past four years the region has experienced six complete isolating events, the result of wildfires, dig ups, and other mayhem. In such instances, wireless has been no help – cellular coverage is only operable in about 60% of the US395 corridor and is dependent on the same wireline backhaul network. While telephone services are available throughout most (but not all) the region, from a broadband perspective, it is underserved, with many communities having no broadband whatsoever. The relatively lower income level of the region, coupled with the relatively higher cost of high-speed Internet access, has kept broadband adoption rates low – about 14% overall. Cable providers and local ISPs have been unable to address this due to the high cost of transport into the region and the telephone company has been highly selective in choosing which towns to offer DSL. This project addresses all these issues. The proposed funded service area consists of 36,076 households and 2,571 businesses. There are approximately 168 community anchor institutions, including 74 educational, 12 health care, 11 libraries, and 26 public safety entities. In addition to the two

military bases cited, courthouses, municipal utilities, regional federal offices for BLM, Forest Service, and miscellaneous other agencies make up some 41 more anchors. Besides serving all community anchor institutions, the project will significantly contribute to elevating the broadband subscribership in the project serving area to the state average of 60%. This represents approximately 21,600 subscribing households. The services proposed for the Digital 395 are a full range of carrier grade, wholesale, services intended to: (1) enable affordable broadband to existing service providers, (2) create an entrepreneurial platform for new entrants, (3) enhance the dependability of the telecommunications infrastructure with route redundancy, and (4) enable another diverse route out of southern California and Nevada to strengthen the national telecom grid. The proposed service offerings on the network are: 1) Dark Fiber Interoffice facilities; 2) Point to Point Transport Service; 3) SONET Transport Service; 4) IP Ethernet Service and 5) Public Internet Access Service. There are no end user service offerings. By offering a variety of services from dark fiber facilities to IP services we intend to enable a new era of local service alternatives benefiting end user demand and affordability. By removing the area's historic middle mile facility bottleneck, area service providers will be forced to reduce pricing and improve service, particularly public internet access, in order to remain competitive. The Digital 395 network will support all foreseeable medical, educational, commercial, and military applications at affordable rates. Price comparisons indicate that proposed pricing for Public Internet access on the cooperative network will be approximately 40% lower than currently available wholesale alternatives for area service providers. Other services also exhibit similar savings from current alternatives. In addition to lower cost public internet access, an increased variety of IP, SONET and dark fiber middle mile service offerings will enable new networking applications to be implemented locally. The obligations for non-discrimination and interconnection will be addressed both organizationally and in the architecture of the network. The California Broadband Cooperative, Inc. will own and operate the Digital 395 network. In this capacity, it will function as a not-for-profit entity offering wholesale services to telecommunications service providers, ISPs, and utilities, as well as, large governmental, educational, and medical institutions. Its patron members will elect the Board of Directors, who will set policy. The Digital 395 Middle Mile Network will fully comply with the principles in the FCC's Internet Policy Statement. The network management policies will be posted on the Cooperative website. The management of network facilities will not favor or discriminate based on service provider or applications. Interconnection will be supported via collocation or at any other technically feasible point. The intent of the Digital 395 open network design is to seek out interconnection opportunities with as many institutional anchor locations as possible. The cable routing is designed to serve as many potential facilities as possible. Institutional anchor locations include telephone company central offices, cable company headends, wireless telephone and Internet service providers sites, governmental agencies, educational and medical facilities. Interconnection with those facilities will be aggressively pursued by the Cooperative. The Digital 395 fiber optic network is designed as a physical point-to-point network with a card protected, logical ring service architecture. Initially equipped with Nortel 10 Gbps Packet over Network Platform (PONP) terminals, the backbone is capable of supporting up to 100 Gbps data rate with the installation of high speed transmission cards. The fiber optic backbone cable is a 432 fiber hybrid ribbon design that will provide connectivity between the core node sites. Access to the 10 Gbps backbone core network is accomplished through 13 distribution nodes along the route. These distribution nodes function as traffic collection points for lower level traffic providing access and egress to the backbone core system. The

distribution nodes will be equipped with a variety of standard interfaces to accept member traffic from DS1/DS3 and SONET level to Gigabit Ethernet. All points on the network will be capable of providing 100 Mbps service. Network connections to the Public Internet will be a minimum of two diverse locations at the north & south terminus of the network with at least one Public Internet port at each location. The Public Internet peering port at each terminus will be carrier diverse so that the North and South public peering ports are secured from different national networks. As a new entity established for this initiative, California Broadband Cooperative, Inc., has retained Praxis Associates, Inc. and its union-represented sister company, Praxis Optical Networks, Inc. to develop, engineer and construct the project. Once the Digital 395 network is fully commissioned, Inyo Networks Inc. will assume the role of the Cooperative's management company. In this role, Inyo Networks will be taking responsibility for the day-to-day operation and maintenance of the network. It is expected that Inyo Networks will continue in this role for several years until the Cooperative business matures and requires a dedicated staff. The Praxis Companies are major California fiber optic contractors who have designed and constructed private and public networks to some 33,785 homes in over 350 projects during the past several years. Praxis also has experience developing fiber networks on Native American reservations under CPUC and RUS grant programs. The core Praxis project team has over 120 years of telecommunications experience, with a wide range of markets, technologies and clients. The overall cost of the system is \$101,494,217. More than half of this amount is related to the construction of buildings and the underground structure, which are labor-intensive operations. Although portions of the network will complete within 18 months, commissioning of the final, complete network is expected at the end of two years. Without funding available through this grants program, the infrastructure proposed in this project would otherwise never be constructed, let alone during the project period. The total number of job-years created is estimated to be 1103 -- 706 of these are direct and indirect job effects, 397 are induced job effects.