The Digital 395 network is a 583 mile, optical fiber middle mile project between Carson City, NE, and Barstow, CA designed to provide broadband services to Mono, Inyo and eastern Kern Counties, - 15% of CA known as the 'Eastern Sierra'. The route mainly follows the US 395 highway, a major transportation corridor between southern and northern Nevada. The service area contains 36 communities as well as six 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. For historical reasons, the region has developed a 'narrow' economic base dominated by seasonal tourism and has about 3% of land privately held. Because of this, state and local leaders throughout the Eastern Sierra recognize that a robust broadband infrastructure that affordably serves key institutions and extends service to all is a key requirement for the area's future economic and social development. One County Supervisor was quoted as saying, 'broadband holds our fate.' 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 of 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 several 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 25,949 households and 2,571 businesses. There are approximately 237 community anchor institutions that the network will directly connect, including 49 educational, 15 health care, 13 libraries, and 35 public safety entities. In addition to the two military bases cited, courthouses, municipal utilities, regional federal offices for BLM, USFS, and miscellaneous other agencies make up 125 more anchors. The project plans to also direct connect some 68 Points of Interest. 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, 2) Collocation; 3) Point to Point Transport Service; 4) SONET Transport Service; 5) IP Ethernet Service and 6) 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, the project will not only force service providers to reduce pricing and improve service, but it will open an alternative Internet backbone route attractive to long-haul carriers, freeing up capacity and reducing transport costs in alternative routes. The availability of dark fiber thus enables local broadband affordability while providing benefits to others out of area. 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 30% lower than currently available wholesale alternatives for area service providers and comparable to rates in CA metro areas. 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 polices will be posted on the Cooperative's 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. Interconnection with area service providers will be aggressively pursued by the Cooperative. The Digital 395 fiber optic network is designed as a point-to-point network. Initially equipped with Nortel 10 Gbps optical packet 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 that will provide connectivity between the core node sites. Access to the 10 Gbps backbone core network is accomplished through 15 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 a minimum of 2.5 Gbps 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 network is $101,494,218, and is requesting federal assistance of $81,195,374. The State of California (CPUC) has made $19,294,717 available in matching grants funds to meet state policy objectives. 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 economic analysis indicates it would not otherwise be constructed. The total estimated job-years is 1107.