

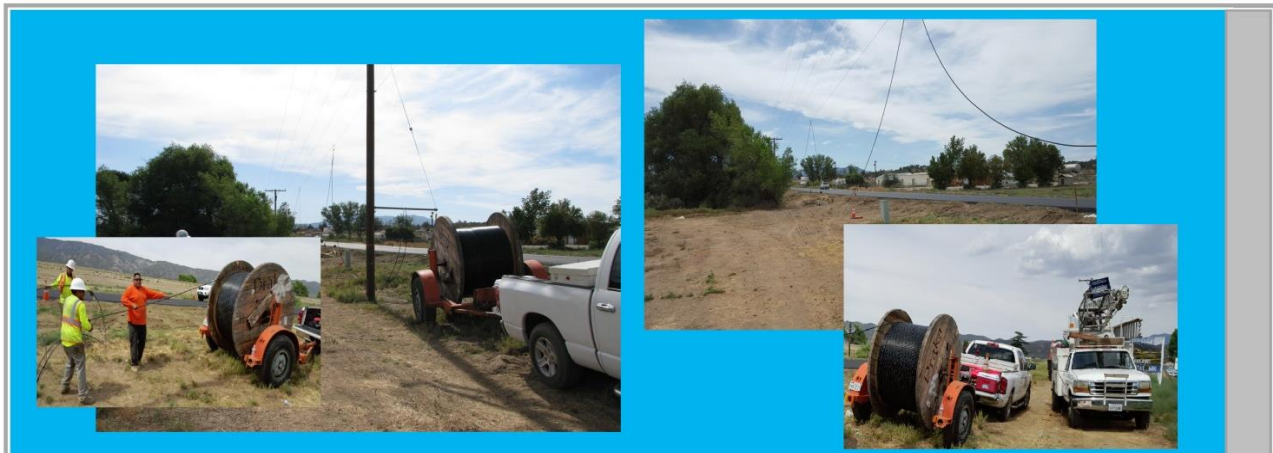
## Broadband Case Study: Anza Electric Cooperative

### Cooperative Profile

Anza Electric Cooperative, Inc. (AEC) serves some 3,900 electric members across 550 square miles in California's Anza Valley. It lies 35 miles southwest of Palm Springs and 120 miles southeast of Los Angeles. AEC owns and operates more than 700 miles of electric distribution lines in southwest Riverside County, including Anza, Garner Valley, Pinyon, Alpine Village, Royal Carrizo and parts of Aguanga, as well as the Cahuilla, Santa Rosa, and Ramona Indian Reservations.



According to AEC, the level of local economic activity is low and a large percentage of the working population commutes out of the area. Median household income lags behind the statewide average. The area has traditionally been underserved by telecommunications service providers, as reflected by internet service quality and residents' lack of broadband choices.<sup>1</sup> Significantly bolstered by its successful pursuit of a \$2.7 million grant from the California Advanced Services Fund (CASF) in late 2015, AEC has undertaken a strategic, multi-year initiative to extend fiber-optic cable to homes and businesses throughout its service territory. Its new operating division is called *ConnectAnza*.



<sup>1</sup> The California Interactive Broadband Availability Map indicated that 55% of the area in which AEC proposed to introduce broadband may be served by Verizon and/or AT&T Mobility wireless; however, AEC conducted field speed tests that showed all of the locations were unserved or underserved.

## Business Drivers of Broadband Investment

According to AEC General Manager Kevin Short, one main driver behind his co-op's decision to expand its fiber network and run last-mile fiber to the home (FTTH) was to address the lack of broadband telecommunications available to his members and its direct consequences — limited access to job opportunities and telecommuting, inability of residents to pursue online education or research, and risks to public health and safety, among others. Short points out, “Our community has been underserved by Internet service providers since the creation of the Internet. We are rural, sparsely populated, and for-profit telecom providers aren't interested in serving our needs.”

With broadband expansion, he expects to see significant improvements in AEC's system operating efficiency and reduced annual operating cost. Both are key business benefits of his infrastructure investment. “AEC was still leasing expensive, and sometimes unreliable, T-1 lines, and our internal telephone system was extremely expensive to operate. With our broadband expansion, it's almost free,” adds Short, suggesting a win-win situation. Grid modernization is also a key goal of AEC's broadband investment. Short sees broadband connections to every IP-addressable, intelligent device on the system as essential for the next evolution of the electric grid.

## Project Overview

ConnectAnza initially proposed to bring symmetrical (equal upload/download speed) broadband service at 50 megabits per second (Mbps) to homes and businesses of its members at a monthly subscription price of \$49; however, AEC's fiber-optic network as installed enables much higher speeds and 100 Mbps speed is now being offered at the original price. The company projected a take-rate of 40 percent among its target member population, an estimate that now appears conservative. Service offerings include broadband access with voice-over-Internet-protocol (VOIP) telephone service for an additional \$20 per month. Programming content is not being considered. AEC is also offering dark fiber (excess broadband capacity) in its network backbone to Riverside County for possible county-wide services. The new broadband system is already active, with 750 members connected and 1,500 more signed up as of the end of Phase 1. Full broadband deployment is expected by mid-2019.

## Network Architecture

AEC's dedicated, broadband network is to be made up entirely of fiber carried on the cooperative's 10,000 or so poles and in its rights-of-way, except in a small number of instances where microwave and wireless are required due to physical limitations or distances. The network architecture is described as “GPON,” short for Gigabit passive optical network which, according to Electronic Design, “is a fiber network that only uses fiber and passive components like splitters and combiners rather than active components like amplifiers, repeaters, or shaping circuits.”<sup>2</sup> Its primary advantage is significantly lower cost, and the technology allows a single fiber to carry both upstream and downstream data flows.

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<sup>2</sup> <http://www.electronicdesign.com/what-s-difference-between/what-s-difference-between-epon-and-gpon-optical-fiber-networks>

## Broadband Business Case

Sixty percent of the Phase 1 capital cost of AEC's broadband investment of \$4.4 million was covered by the \$2.7 million CASF grant awarded in December of 2015. A Phase 2 buildout grant application totaling \$2.3 million has been submitted under CASF and is currently pending. If successful, the second grant would also cover 60 percent of the projected \$3.6 million cost of the buildout phase. Annual revenues are expected to exceed costs by several hundred thousand dollars, once the system is fully deployed. AEC's five-year *pro forma* financials for the project indicated positive cash flow would be achieved by year four, thanks largely to the subsidy effect of the grants.<sup>3</sup> Even considering that many of the benefits of the investment, such as economic well-being, are not easily quantified, AEC's investment easily passes financial muster.

## Broadband Business Structure

ConnectAnza is an operating division of the electric cooperative, not a for-profit entity or subsidiary. The division has five dedicated staff including management and technical positions, and utilizes AEC's member services and accounting functions. Because of the ways in which the broadband network enables the electric grid, telecommunications operations are very closely integrated with electric operations.

## Regulatory Issues

AEC reports its broadband initiative has not encountered significant regulatory issues or limitations. The cooperative was granted authority (a certificate of public convenience and necessity or CPCN) as a competitive local exchange carrier (CLEC) in 2015. General Manager Short notes that although this authority/CPCN gives AEC the authority to provide telecommunications services which fall under the purview of the California Public Utilities Commission, AEC principally provides VOIP service, which is not considered telecommunications service from a regulatory standpoint, although there are some service regulations and fees related to VOIP service. Non-income tax-related issues have also been minimal, as the ban on taxes on Internet access service was made permanent by Congress in 2014.

## Market Setting

Incumbent telecommunications services are offered by, in Short's words, "a smattering of satellite providers and wireless companies with limited coverage, and no one was providing the level of service we planned to offer." Cable TV is virtually nonexistent. Local incumbent telco Frontier Communications has challenged certain parts of AEC's Phase 2 CASF grant application, and it is possible that the ultimate grant award may be reduced somewhat if this challenge is successful.

## Challenges and Surprises

Rollout of AEC's broadband network and service offerings has been fairly smooth, although not without a few, minor surprises and unanticipated challenges:

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<sup>3</sup> Electric cooperatives should consider the tax implications of excess revenue and margins that may be associated with broadband services

- In one instance, a truck hauling a water tank snagged and pulled down a fiber-optic cable in late 2017.
- Limitations on stringing fiber-optic cable along a highway designated as scenic reduced the planned broadband coverage area, at least temporarily.
- In a few situations, such as short poles, the physical space needed to separate electrical and telecom components was inadequate.
- Record rainfall in the area during the winter of 2016-17 slowed construction.
- Initial cost projections turned out to be slightly optimistic.

Technical issues and glitches have been limited and affected mainly non-fiber components of the network, e.g. microwave or wireless connections. In fact, some expected challenges have not materialized. For example, AEC planned an after-hours call service, but so far there has been little need — in some weeks, zero calls have been recorded.

### Why is this Case Important?

AEC's experience with broadband is instructive in several ways. The investment initiative has dual business underpinnings — broadband enables a giant step forward toward grid modernization, as well as improved economic and social well-being in the rural communities being served. AEC's approach keeps it simple, shares resources, navigates possible regulatory requirements, and takes advantage of grant opportunities to underwrite the cost of the broadband infrastructure. It is an approach that seeks to mitigate risk and that seems likely to produce significant investment returns, as well as improved member satisfaction.

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