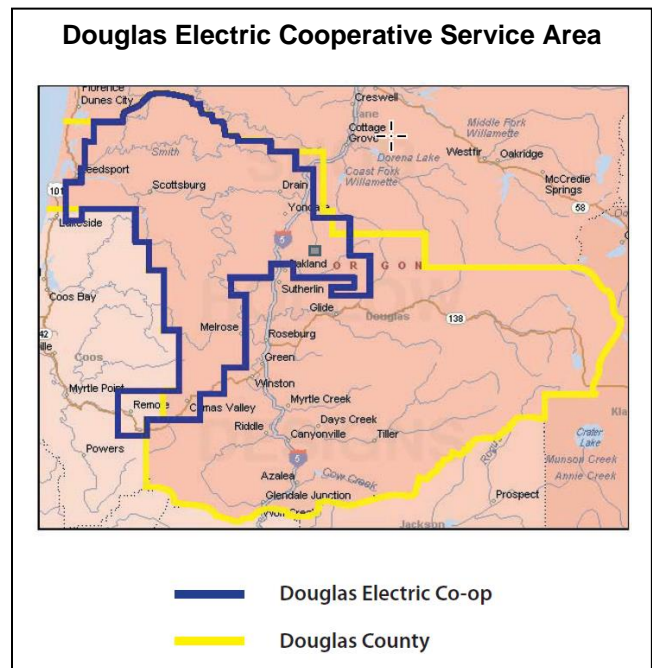


Broadband Case Study: Douglas Fast Net



Cooperative Profile

Douglas Electric Cooperative (DEC) serves about 10,000 electric meters in bucolic Douglas County, Oregon, as well as parts of nearby Coos and Lane Counties, across a service area covering 2,200 square miles in southwest Oregon. Douglas Fast Net (DFN)¹, DEC's for-profit telecommunications subsidiary, built and operates the local fiber communications network. Its story began in 1999. The county's Incumbent Local Exchange Carrier (ILEC) at the time operated an analog telephone switch that had reached capacity. Local businesses often experienced a "fast busy" signal or no dial tone at all when trying to make outbound calls, indicating the switch was unable to process the call. The infrastructure itself was largely comprised of aging, copper utility plant. The situation forced local businesses such as medical imaging facilities to operate a "sneaker net," with couriers running images back and forth between imaging centers, doctors' offices, and hospitals.² According to Dave Sabala, DEC's general manager at the time, the situation became dire when ER physicians at the local hospital were unable to call out for a consult to Oregon Health Sciences University three hours away in Portland during an emergency. This precipitated the Oregon PUC to hold a drama-filled hearing in Roseburg. Sabala was subsequently named to a telecommunications task force formed by the Roseburg Chamber of Commerce and made-up of leaders from hospitals, businesses, and government agencies to address the problem.³



In the two decades that have passed, the situation in the county has been radically transformed. DFN was created in 2001 to bring advanced telecommunications to Roseburg and the surrounding areas of Douglas

¹ Douglas Services Inc., dba Douglas Fast Net (DFN).

² A 2002 article noted that the time to download a lung x-ray using dial-up Internet access was over three days—using a gigabit fiber network it would take one second. https://www.ruralite.org/archive/2002/09/c-10%20pp%204-5%20Sept_2002.pdf

³ Although DEC's headquarters is located in Roseburg the cooperative does not provide electric service in the city, which accounts for 80% of the county's telecommunications traffic.

County. Since then, the company has become a leader in fiber-optic voice and data services, becoming one of the first providers in Oregon to offer Internet speeds up to 1 gigabit per second (Gbps) to the residential market. DFN has invested nearly \$25 million in a fiber-optic communications network that offers broadband Internet access to a population of approximately 56,000 in sixteen cities and towns across southwest Oregon. In addition, a regional high-speed network, co-owned by DEC with four other Oregon electric cooperatives and the Coquille Indian Tribe and operated by LS Networks, serves as the regional backbone for the local communication networks built by entities such as DFN (see sidebar).⁴ In short, DEC recognized early on the risk that economic growth in rural areas would be stymied by lack of high-speed Internet access, digital voice communications and data transfer capacity and took a leadership role in addressing it. This is a story of close collaboration at several levels.



Figure 1. DFN crews restore service in Camas Valley Oregon following snow storm.



Figure 2. DFN contractor backfills a trench across private timber land as they extend fiber to Glendale, Oregon

Business Drivers of the Broadband Investment

The drivers behind DEC’s decision to create DFN as a way of addressing the area’s critical telecommunication needs were mainly based on economic development goals and not initially aimed at improving electric operations. Stakeholders both on and off the telecommunications task force readily agreed that Roseburg and the rest of Douglas County needed advanced services that could only be enabled by reliable, high-speed Internet access and voice communications to attract people and investment, the main ingredients for economic growth. Consistent with this, initial targets were commercial businesses — hospitals and large employers — and governmental entities, including school districts and higher education

⁴ LS Networks is jointly owned by CEC Resources, Inc. (holding company of Central Electric Cooperative), Rural Services Company (holding company of Umatilla Electric Cooperative), Douglas Electric Cooperative, Hood River Electric Cooperative, Columbia Broadband (wholly owned subsidiary of West Oregon Electric Cooperative), and Coquille Economic Development Corporation (parent company for all Coquille Tribal businesses).

campuses. DFN's market has subsequently expanded to include home schools, health clinics, and small businesses, as well as residential customers. Major customers include Douglas County Fire District #2, the State of Oregon, Mercy Medical Center, Umpqua Community College, nine city governments, thirteen school districts, and countless medical facilities. One interesting twist was that DFN's initial, target market lay outside DEC's electric service area.

Project Overview and Deployment Approach

DFN was formed in 2001 and began operating in Douglas County the following year. Residential telecommunications services were first offered in 2003, relying on a fixed wireless network. DEC's approach to fully meeting the telecommunications needs of its community can best be described as collaborative. In addition to Sabala's participation in the task force, DEC engaged with ten other cooperatives, several municipal electric departments, the Coquille Tribe, an ILEC, and local telephone co-ops to discuss forming a regional communications network to meet the area's long-haul telecommunications requirements. This regional network was intended to connect local fiber networks to be created by DFN and its counterparts in other rural locales (see sidebar).

Another Innovation from Oregon's Electric Cooperatives – LS Networks

LS Networks is DFN's major transport access provider and strategic partner. The company is the for-profit descendent of Northwest Open Access Network (NoaNet) Oregon (2001), which utilized capacity on the Bonneville Power Administration's transmission fiber network under a federal Public Purpose Program. LS Networks, which launched in 2005, closely collaborates with the electric cooperatives that participate in its ownership.

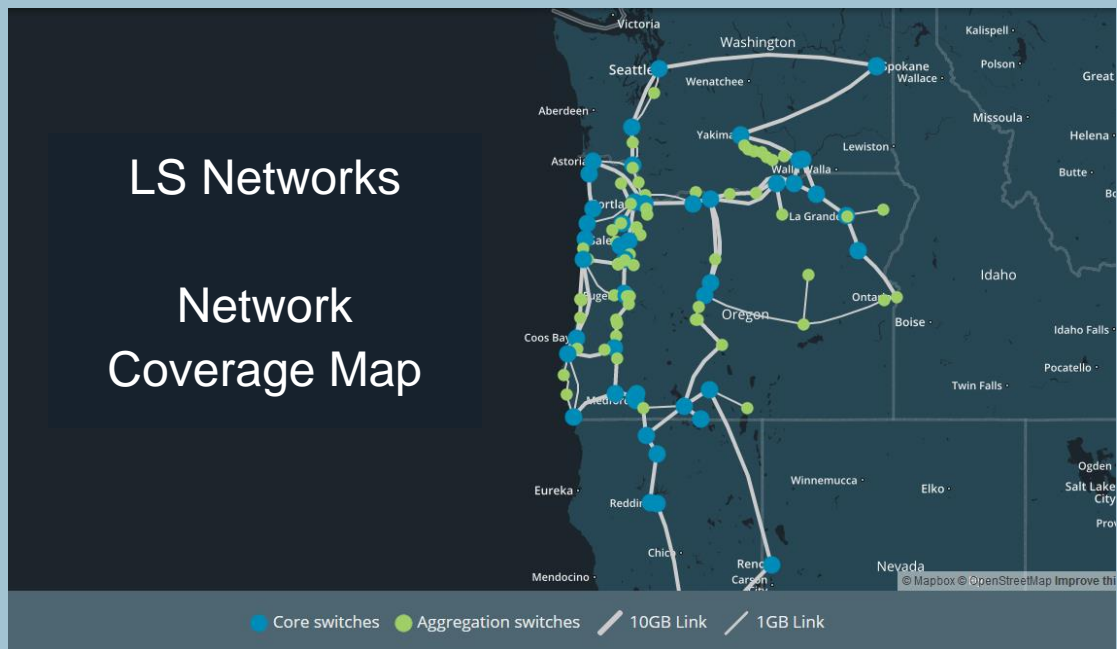
As LS Networks' President and CEO Michael Weidman points out though, the company does not exist to serve cooperative membership directly. In fact, only about 5 percent of its customer base is located in co-op service territories. Instead, about 70 percent of the company's revenues derive from wholesale, long-haul carrier relationships (similar to wholesale transmission companies on the electric side) and 25 percent from high-speed connections to education, government, and health care facilities. DFN provides the last-mile, fiber connections within its coverage area.

As Weidman says, "Many of our Internet customers are local Internet service providers [ISPs], local municipal ISPs, and regional providers. This allows us to work with existing companies that are already part of the local community and extend our purchasing power and technical knowledge as part of our product offerings. It really becomes a win-win for all involved."*

See map on the following page.

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* Source of quote: <https://portal.ncsc.coop/content/ncsc/news/in-the-news/oregon-cooperatives-team-up-to-tackle-broadband-challenges.html>

Broadband Business Case

DFN is the primary focus of this case study. According to company CEO and manager Todd Way, roughly \$25 million has been invested in plant to date. In addition to DEC's own investment in DFN, significant capital also became available from grants DFN received to extend fiber to the area, e.g., educational facilities, federal stimulus money, etc.⁵ The investment is well on its way to being recovered. Way expects 2018 revenues of about \$11 million, up more than 20 percent over 2017, against approximately \$9.5 million in expenses.

How does DFN market its services to achieve such attractive year-over-year growth and profitability? The answer is: minimally. It does not even advertise. Former DEC general manager Sabala observes, "DFN is a mature operation now. It's been operating successfully since 2001 and about half of the electric co-op's members now receive their Internet and voice services from DFN. With an average of 200 new customers per month, mainly by word of mouth, do you really need to actively promote growth, especially when the current backlog is already 300-400 service requests?" He adds, "In fact, DFN now has more active circuits than DEC has electric meters."

⁵ When DFN's equity reaches a certain percentage level its lender, National Cooperative Services Corporation (NCSC), likely will allow DFN to resume paying DEC dividends. DFN paid DEC dividends in the past but stopped at the request of NCSC due to its equity level being below 30%.

What is the financial benefit of the broadband business to DEC? Business benefits on the electric side have not been fully quantified. However, DFN has provided a significant financial benefit to DEC operationally — DEC has fiber optic to all of its substations. With DFN’s expansion into DEC’s service area, DEC capital costs to extend fiber to its substations was only \$470,000 for 158 miles of fiber-optic line. The total cost to connect fiber to all the substations was just under \$2.4 million, hence DEC’s capital cost contribution was just under 20 cents on the dollar.⁶ Data from the co-op’s smart meters are backhauled from the substations over this fiber. Current DEC general manager Keith Brooks notes that his SCADA (Supervisory Control and Data Acquisition) system runs off the fiber network too — so does his corporate data storage and IT backups between offices. DFN also installed fiber to 71 cell towers across Douglas County, which enables DEC’s line trucks and crews working in the field to communicate via cell towers and back to the co-op’s operational hub. In fact, DEC management is continuing to evaluate the degree to which public communications should recognize DFN as a subsidiary of the electric cooperative.

Broadband Business Model

Several distinct business models are operating here — Douglas Electric Cooperative providing electric service to its members; DFN providing last-mile, high-speed Internet access with its fiber broadband network; and LS Networks connecting high-value commercial and governmental businesses and providing regional transport services with its backbone network. Figure 3 illustrates at a high-level how this works.

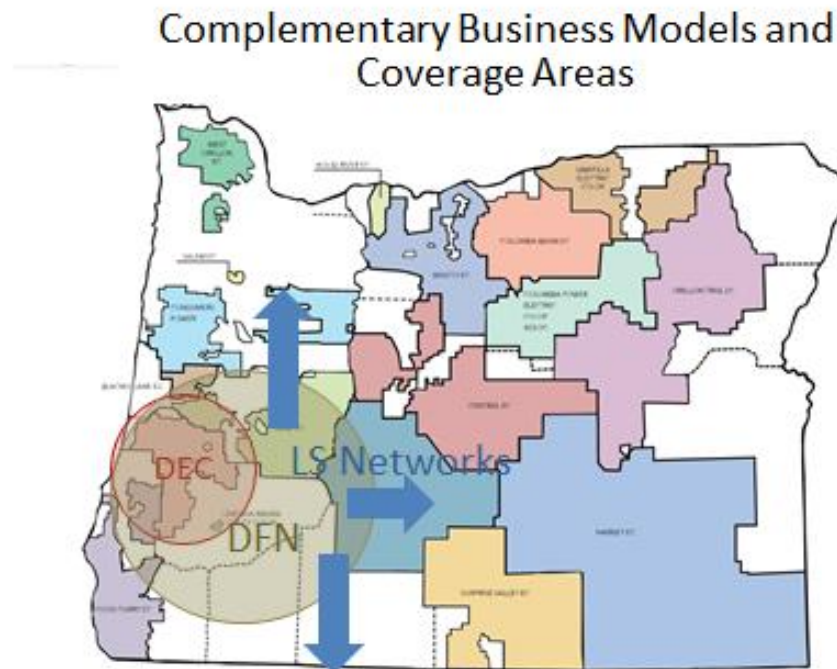


Figure 3. Complementary Business Models and Overlapping Service Areas.
Source of underlying map: Oregon Rural Electric Cooperative Association.

⁶ DEC purchases broadband telecommunication services from DFN at reduced rates.

Currently, about one-third of DFN's fiber network is within DEC's electric service area while two-thirds of the network is in the rest of Douglas County and surrounding areas. There is no resource-sharing or joint service delivery between DEC and DFN. The high degree of operational and financial independence between the electric cooperative and DFN makes their collaborative business model distinctly different from that of other electric co-ops profiled thus far by NRECA in this series of broadband case studies.

LS Networks' Weidman has a unique perspective on what electric cooperatives in the Northwest have been doing with respect to broadband. "Douglas Electric Cooperative has been successful with both Douglas Fast Net and LS Networks," says Weidman. "Their approach shows you can't just think about how to serve your membership better. You also need to think about how to overcome capital barriers. DEC has done that."

Network Architecture

DFN's First Generation infrastructure included a fiber middle mile and fiber to anchor institutions, according to CEO Way. Fixed wireless products were used for small business and residential applications. The technology subsequently evolved toward high-speed lines leased from the Incumbent Local Exchange Carrier (ILEC) and Digital Subscriber Lines (DSL), and eventually to the fiber-to-the-home (FTTH) GPON⁷ network being built out today. The network today serves approximately 8,000 Internet customers with about 400 Ethernet connections to city halls, police departments, and schools. Nearly 1,300 miles of the fiber network is carried overhead with 130 miles placed underground, passing approximately 35,000 homes and business premises. Way notes that the move to all fiber will take time. His network still includes some fixed wireless and DSL components. The extensive presence of federally owned lands is a key determining factor — it can take two years to gain permission to cross these properties.

Regulatory Issues

Executives of DEC, DFN, and LS Networks interviewed for this case study report that no significant regulatory issues have been encountered. DFN as a for-profit entity is subject to taxation; however, its near-total independence from DEC virtually eliminates regulatory risk-by-association for DEC. DFN is a certified Competitive Local Exchange Carrier (CLEC) and, thus, falls under the jurisdiction of the Public Utility Commission of Oregon as well as the Federal Communications Commission (FCC). The company's designation as a federal Eligible Telecommunications Carrier (ETC) enables it to receive support from the FCC's Rural Broadband Experiment and Lifeline federal universal service funds.

Market Setting

Competition exists in high-speed Internet and voice communications in Douglas County. The primary alternative to DFN is Charter Spectrum, a cable provider. Two other CLECs also operate with limited facilities, sometimes even purchasing services from DFN. Current pricing for DFN's residential fiber Internet and voice services offerings can be found at www.dfn.net.

⁷ GPON stands for Gigabit Passive Optical Network. Its main characteristic is the use of passive splitters in the fiber distribution network, enabling one single feeding fiber from the provider to serve multiple homes and small businesses. Source: www.multicominc.com

Why is this Case Important?

Many electric cooperatives have been initially compelled to enter the broadband communications market by their internal business requirements, e.g., constructing a fiber-optic network to enable backhaul of advanced metering data or SCADA. They have then leveraged this backbone infrastructure investment for the benefit of members by adding a FTTH or last-mile strategy. The case of Douglas Electric Cooperative and its for-profit subsidiary, DFN, shows there is another way. In this case, it is the electric cooperative that benefits from the infrastructure investment that has been made by the broadband telecom business. DEC essentially “spun off” its telecommunications business, and while it is still a wholly owned subsidiary, DFN has “paid its own way,” financing its own growth and thereby eliminating the risk of cross-subsidization of telecommunications services by electric consumers. What makes this case most interesting, however, is its network-within-a-network aspect. DEC not only launched its own entity to invest in a high-speed, local communications infrastructure. It also helped create the regional broadband solution.

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