

Eugene Area Telecom Development Activities



PUBLIC AGENCY NETWORK (PAN)

Formed in 2000, the Public Agency Network, known as PAN, is a cooperative network formed and operated for the public agencies in the Eugene-Springfield area. Twelve local agencies (cities of Eugene and Springfield; Eugene Water & Electric Board (EWEB); Springfield Utility Board; Lane County, Lane Council of Governments (LCOG); Lane Transit District; Lane Educational Service District; Lane Community College; and Eugene 4J, Springfield and Bethel school districts) as well as three state agencies (Department of Administrative Services, Oregon Department of Transportation and the University of Oregon) make up the PAN now.

Eugene contributed optical fibers, equipment, and professional know-how in setting up the PAN and to keeping it running. Originally a lit service, the network has developed enough resources and technological advances to allow migration to a primarily dark fiber, user lit network. The network consists of the use of: (1) Several routes of fiber optic cable connecting demarcation points at offices and other locations of the members and/or (2) Equipment attached to the PAN-allocated fiber optic resource. Where constraints require the use of shared fiber optic strands, the network includes passive optical equipment which allows members to share use of the network fiber through coordinated assignments of frequencies.

The PAN retains its functionality through the voluntary contributions of the use of fiber optic cable owned by members. It is a PAN principle that members are credited for their contributions of fiber, equipment and services. It is not necessary or expected that all members make a contribution of fiber optic cable or equipment to be a member or to use the network.

One of the most important aspects of this agreement is the credit model. It provides credit to agencies for the fiber and equipment they contribute, creates a method for recovering operations and maintenance costs, and collects funds for eventual equipment replacement. The other critical element is the full participation by the PAN members via the PAN Advisory Committee organized and staffed by LCOG. The PAN Advisory Committee provides planning and maintenance directions to the system manager, originally EWEB, now LCOG.

The PAN is a successful attempt to leverage the variety of projects in the Eugene-Springfield area. Cost and bandwidth targets have been met, and customer reaction to high-capacity connections exceeds expectations. The PAN effort has borne fruit thanks to some extraordinary efforts. Some keys to the success are innovative design and cost modeling, built upon simple yet powerful technology, to fit the needs and styles of the customer/owners.

For more information contact Heidi.Leyba hleyba@lcog.org 541-682-4452

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REGIONAL FIBER CONSORTIUM

Better Telecommunications Services for Rural Oregon

The Regional Fiber Consortium, and its one-time companion Fiber South Consortium, formed in 2000 to assist member local governments with the development of broadband capacities. The Consortia originally covered five counties: Coos, Douglas, Klamath, Lane and Lincoln, and had city members ranging from Merrill in the southeast to Bandon in the southwest, to Eugene in the center. The Consortia consolidated into a single entity – the Regional Fiber Consortium in 2006. Membership has declined as broadband development occurred slowly. Staffed by Lane Council of Governments (LCOG), the Consortium now enjoys the support of twelve local governments in three counties (Douglas, Klamath and Lane).

The Consortium has dark fiber assets that run from Merrill to Eugene to Portland, and from the Seven Devils cable grounding to Coos Bay to Roseburg to Eugene. Today approximately 80 percent of the Consortium fiber is leased, to 10 different entities. The Consortium has leased fiber to government agencies and to private service providers making broadband connections in over 15 communities in Coos, Douglas, Klamath and Lane Counties. These uses range from support for the ILECs to private and public operated CLECs offering competitive services, to public networks connecting schools. Speeds range from 10 mgs to one gigabit. The Consortium provided the major match for the LCOG Broadband Technology Opportunities Program (BTOP) project.

Eugene played a pivotal role in the establishment of the Consortium. The Consortium traded local expertise, provided local assistance in construction, and waived franchise fees to fiber construction companies during the dot.com bubble for dark fiber and connection points in rural and urban areas all along the construction routes in Oregon. Eugene has provided financial, legal and moral support to the Consortium throughout its life.

The Consortium has recently embarked on its own small grant program, seeking to expand broadband opportunities within its service area.

For more information contact Jacob Callister jcallister@lcog.org
541-682-4114

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DOWNTOWN FIBER PROJECT

The City of Eugene's Telecommunications Program has launched a three year demonstration project to develop fiber optic connections to key areas of the Eugene Downtown. Eugene has provided funding and permit assistance to connect two buildings in Downtown Eugene to the Willamette Internet Exchange, with a third and fourth building planned for next year. This demonstration project is an implementation of one of the strategies of Eugene's Community Broadband Plan.

The fiber is being installed in electrical conduit owned by EWEB. EWEB is providing the conduit, its experienced work crews and some financial support. Other construction and project management is provided by the Lane Council of Governments (LCOG). The building interior work is being carried out in October and November 2014.

When completed, any service provider who is interested will be able to lease fiber and provide service to customers in the buildings. The pilot focused on two buildings to demonstrate the viability of the concept, and to establish prices for future construction. More buildings are planned and other building owners are inquiring about the project.

The goal of the Downtown Fiber Project is to have a self-supporting network constructed to connect every building in the downtown area to a high bandwidth fiber optic network. Home to several software and data management firms, the demand for more bandwidth in downtown has been one of the limiting factors that have determined where these companies locate, and how much they are able to grow.

Even though it is not yet operational, there have been a number of inquiries from service providers, building owners, and prospective customers all seeking to use the fiber and seeking ways to expand the project footprint.

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541-682-4114

Eugene Area Telecom Development Activities



BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM (BTOP)

Eugene, as a member of the Regional Fiber Consortium, and as a separate match contributor, facilitated the successful completion of a Broadband Technology Opportunities Program (BTOP) project that brought broadband services to 26 communities in three counties, providing fiber optic connectivity to 131 anchor institutions in Douglas, Klamath and Lane counties.

Lane Council of Governments (LCOG) applied for and received a round-one BTOP grant of \$8.3 million thanks to the match provided by the Regional Fiber Consortium, the city of Eugene and LCOG. The terms of the grant limited connectivity to anchor institutions. BTOP and match funds were used to bring fiber for the first time to two hospitals and 23 medical clinics, to 29 school buildings, nine libraries, 27 police and fire stations, four higher education institutions and 37 other federal, state and local government offices.

This BTOP project installed 100 miles of multistrand fiber, and lit 450 miles of fiber, much of it for the first time. While connections were restricted to anchor institutions, additional strands of fiber were installed throughout the area for other uses. These additional strands have already been used to support a new call center and extend ODOT's Intelligent Transportation System (ITS) system.

An independent review for the BTOP program by ASR Analytics interviewed several anchor institutions, just as the project concluded. Among the positive impacts documented by ASR Analytics:

Days Creek School District 15 is a small, rural district in Douglas County with an elementary school in Tiller and a middle and high school in Days Creek. The district serves about 250 students. Before BTOP, the district connected all three schools with a single 1.5 Mbps T1 line. Now, they share a 100 Mbps fiber connection from Douglas Fast Net. With the T1 circuit, the Internet functioned too slowly for either administrators or teachers to use it effectively, and students often could not complete online tests. Now, teachers use streaming media in the classrooms, and staff have a reliable connection to the student data system which can now be hosted at the Douglas Educational Service District (ESD). The school has begun a program for struggling students to use online content outside of the normal class schedule, and has seen an improvement in student performance and test scores.

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BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM (BTOP) - CONTINUED

Bethel School District, serving northwestern Eugene, is the third largest school district in Lane County. Approximately 5,700 students attend the district's 11 schools. Lane Educational Service District (Lane ESD) is the ISP for Bethel school district and 13 other districts in the county. Lane ESD provisions bandwidth to each district based on average daily student population. Bethel School District shares a 100 Mbps Internet connection among all of its schools. Five of the schools in the district received fiber connections through the project in the summer and fall of 2012, replacing the T1 circuits each had used previously to connect to the district office. Each school now has a 1 Gbps connection to the district office. The district is planning to upgrade these connections to 10 Gbps. The total price of the connections between each of the five schools and the district office decreased from \$25,000 per year to \$5,000 per year after connecting to the LCOG network. One of the schools that received a fiber connection, Prairie Mountain School, is using the increased bandwidth to support administration and to increase the use of technology resources in the classroom. Teachers now use iPads to keep students more engaged, and staff use Google Docs to communicate about students' academic progress. The school is now able to host open computer lab hours in the morning for students and parents.

The Klamath Tribal Headquarters house the council chambers and the administrative offices of the Klamath Tribes which include the Klamath, Modoc and Yahooskin people of southern Oregon. Before BTOP, the headquarters paid \$700 per month for a 1.5 Mbps T1 connection which was used by all 15 departments and approximately 100 staff members in the building. The tribe was unable to implement several desired initiatives including video conferencing, Voice over Internet Protocol (VoIP) and remote monitoring of tribal buses. By early 2013, the Tribes were connected to the BTOP-funded network and were planning to subscribe to service over the network. They expected to subscribe to 100 Mbps, and were quoted a price under \$500 per month for this service. The tribe is considering providing Wi-Fi to the public in the main building. The Tribal Headquarters also hosts a fiber hut for the LCOG fiber route.

Before BTOP, **The City of Florence** did not have broadband connections between most of its facilities, and shared a 1.5 Mbps T1 connection between City Hall and the Justice Center. Now, the City has 1 Gbps fiber connectivity that connects City Hall, the public works department, the police department, the Justice Center, and the Florence Events Center in a wide area network (WAN). The new fiber infrastructure inspired a five-year IT plan, and the City has transitioned to VoIP telephone service, new accounting software, and updated hardware to take advantage of the broadband. The fiber also has a secondary impact of promoting economic development in the area. While the City's economy is largely dependent on tourism, the fiber opens opportunities for local entrepreneurs and businesses as well as attracting broadband-dependent companies to a business park.



WILLAMETTE INTERNET EXCHANGE (WIX)

One of the outcomes of the Broadband Technology Opportunities Program (BTOP) project created the Willamette Internet Exchange (WIX) in downtown Eugene. Supported by a fiber rich set of diverse paths connecting with Oregon Hall on the University of Oregon (UO) campus and the Regional Fiber Consortium fiber paths, the WIX is intended to be a regional hub for telecommunications providers to interconnect.

Designed in consultation with the UO, and already occupied by four service providers and connected to a privately operated data center nearby, the WIX intends to become a regional peering point, supplementing and replacing the facilities at Oregon Hall as those facilities move more toward educational activities. The WIX is also the endpoint for the Downtown Eugene fiber project.

For more information contact Jacob.Callister jcallister@lcog.org 541-682-4114

THE FACILITY

- Easy access to all carriers in the Facility
- Carrier neutral
- Downtown Eugene Location

Power, cooling and space

- 19" and 23" cabinets available
- -48VDC facility, with transition batteries
- A + B power to each cabinet
- Dual natural gas powered generators
- Redundant HVAC supported by backup power systems

Monitoring and security

- Facility systems monitoring - including temperature, humidity, cameras, power conditions
- Card key access

Connectivity

- Multiple fiber optic entrance facilities
- Fiber Optic facilities To University of Oregon's Oregon Hall, and other key locations
- Access to Regional Fiber Consortium fiber optic resources
- Access to Electric Utility fiber optic resources

