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UM network aims to speed research links

Fiber-optic network to speed up, expand communications with map

By Jessica Bloch
BDN Staff

ORONO, Maine — In U.S. history, May 10, 1869, is notable because it was the day a golden spike was driven into the ground in Utah to indicate the final step in the connection of the country's first transcontinental railroad.

What happened Monday in Salem, N.H., may not have the same national historic implications, but it represented a huge step forward for research facilities, universities and colleges in Maine, Massachusetts, New Hampshire, and possibly beyond.

At about 3 p.m. Monday, a fiber-optic line from Cambridge, Mass., was spliced with a line from Durham, N.H., forming a connection with the Maine Research and Education Network, or MaineREN, whose northern end points are The Jackson Laboratory and MDI Biological Laboratory in Bar Harbor and the University of Maine in Orono.

Now connected but not yet up and running, the Maine-to-Massachusetts system forms a fiber-optic-based research and education network that will make it quicker and easier to transmit large amounts of information online.

Jeff Letourneau, the associate director of Communications and Network Services in the Information Technology Services at the University of Maine System, said all that remains is testing. The network, composed of roughly 400 miles of fiber, should be up and running by the time students return to college campuses later this summer.

"We're on the cusp of getting the full route running," he said. "Assuming all the tests go right, we're supposed to have that fiber by the end of the month so that we can put our equipment on it to light it, and we can start making use of it before the end of August."

Oxford Networks of Lewiston built the New Hampshire portion of the fiber-optic line. That company met in Salem with Lightower Fiber Networks of Boxborough, Mass.

A Bar Harbor-to-Portland section of the line has been active since fall. Portland-to-Durham, N.H., went online this past spring, providing high-speed communication between the University of Maine and the University of New Hampshire.

"It was the first time the two land-grant institutions had their own facilities to communicate with each other, and now we can go down to Boston," said

Letourneau, who will present an update Wednesday to the Maine Legislature's Joint Standing Committee on Appropriations and Financial Affairs.

MaineREN was funded by a $3 million state appropriation in 2007, a $1.9 million Jackson Lab research bond and a $300,000 National Institutes of Health grant to MDI Biological Laboratory.

The Maine fiber-optic route runs roughly along Interstates 95 and 295, which means that institutions such as Bates, Bowdoin and Colby colleges and the Maine public libraries and schools that are located near the network are also on board.

David Hales, president of College of the Atlantic in Bar Harbor, said the fiber-optic line is invaluable for the researchers and students on his campus.

"Luckily, we are in between the start of the line and the terminus at Jackson Labs," he said. "Just like Jackson couldn't exist without, we can't. To be on the cutting edge of education, you just have to have it. It's a necessity for every college in Maine, just like it's a necessity for every elementary school in Maine."

The schools and libraries farther from the network also have broadband service, but MaineREN leases those lines from other service providers.

The institutions involved in MaineREN already are looking at expansion plans, including one called the North East Cyberinfrastructure Consortium, or NECC. That proposal would bring a fiber-optic line as far north as Presque Isle, opening opportunities to expand to the University of New Brunswick in Fredericton and Can-ada's research network, west into Vermont and south into Rhode Island and Delaware.

That proposal would require a $6 million federal grant.

"We can create a corridor where others are passing through Maine to get to New Brunswick, Nova Scotia, [eventually] to Europe," Letourneau said. "You may end up with more opportunities because it's passing through here."

Letourneau said the MaineREN partners are waiting to hear about another grant proposal that would light up lines between Brunswick and Ellsworth, forming a loop in the system.

"One of the things you don't want to do is lose connectivity," he said. "When you have a single point of failure, and we have just a single spine, and it breaks, you're out. When you have a ring, if one side of the ring is broken, traffic flows the other way."

Funds from the federal economic stimulus package could be available for regional interconnected fiber rings that would bring service to underserved areas and towns with less than 20,000 residents. Letourneau said the University of Maine might propose working with commercial Internet service providers to bring service to ar-eas such as the St. John Valley, Washington County and western Maine.

Letourneau said there are approximately 645 community anchors — schools, libraries, hospitals, town halls and other similar locations — that could be hooked into the service rings.

Along the proposed rings of service, Letourneau added, are downsized or

shuttered paper mills in towns such as Madawaska, Baileyville, Bucksport, East Millinocket, Millinocket, Lincoln and Old Town. Those mill buildings, he said, could serve as data facilities that are used to house computer systems. The facilities could run on energy from biomass boilers or pulp byproducts and be cooled with nearby river water.

All that's missing, Letourneau said, is advanced communication for data transmission. Fiber-optic lines would accomplish that.

"It's an example of what the current infrastructure in the state could do if there was modern infrastructure to support that," Letourneau said. This is 21st century infrastructure the state "needs to be made to [keep the] economy strong."