MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO:	Commissioners Simpson, Helgeson, Manning, Mital and Brown
FROM:	Frank Lawson, General Manager
DATE:	July 11, 2016
SUBJECT:	Fiber Network Current and Future State
OBJECTIVE:	Information Only

Issue

At the June 7, 2016 board meeting, Commissioner Manning, asked if customers in Bethel are receiving the benefits from fiber that other customers in our service area receive. I am happy to report that the Bethel Schools do receive the benefits of EWEB's fiber network. To better illuminate those current and potential future benefits, I'll describe the fiber system, how it works today, and how it will change once EWEB completes the downtown project. Thanks to Mel Damewood, Engineering Manager, Nick Nevins, Engineering Technician, and Matt Sayre of Technology Association of Oregon, and others for their input.

Background

Currently, fiber comes to downtown through a limited number of existing Internet Service Providers (ISP's) such as CenturyLink and Comcast. From their local facilities it then travels on their fiber, phone lines, or cable infrastructure to downtown customers. The service providers own the physical infrastructure and have exclusive rights to provide Internet services using it. There is limited competition and Internet speeds are lower than many other cities in Oregon.

Discussion

EWEB's dark fiber is a component to a complementary system that is open to all ISP's to utilize. Local ISP's lease EWEB's dark fiber and use it to provide retail service to the end use customer - often referred to as lighting up the fiber. This a model is called "open access", meaning the infrastructure is open to all private sector ISP's to use. EWEB will own the proposed downtown dark fiber network and be responsible for its ongoing maintenance, with dark fiber lease rates currently based on mile increments.

The project recently voted on by the Board will be paid for by the City of Eugene and will expand EWEB's dark fiber network. The network will expand out from a carrier neutral facility on Willamette Street called the Willamette Internet Exchange (WIX), owned by LCOG. It will travel through underground electrical conduits, adding new short laterals to each building in the impacted downtown area.

Once the Downtown Project is complete, ISP's can lease EWEB's dark fiber from the WIX to the individual buildings, lighting the fiber and delivering internet service to individual tenants in the

building. The ISP's charge retail customers directly for the Internet service.

An important related aspect of the downtown project is to complete the "middle mile" which would connect the WIX, and by extension EWEB's regional dark fiber network, to a much larger Internet Exchange facilities in Portland, Seattle, or San Jose, California. That effort could be compared to making a regional connection to BPA for power. The middle mile is outside of EWEB's scope but is envisioned to be built out as part of the downtown project.

With regard to Bethel, EWEB's existing dark fiber network currently stretches to all regions of the city. EWEB's fiber in the Bethel area primarily consists of backbone cable running parallel with the Beltline Highway with a few taps running down roads like Barger Drive and Royal Avenue. Those laterals currently serve schools, libraries, fire stations, and medical centers. EWEB serves the Bethel School District schools through an agreement with the Lane Education Service District. Through the Lane Education Service District, Bethel receives the same EWEB discounted fiber lease rates as 4J, Springfield, and other public schools taking service through Lane ESD.

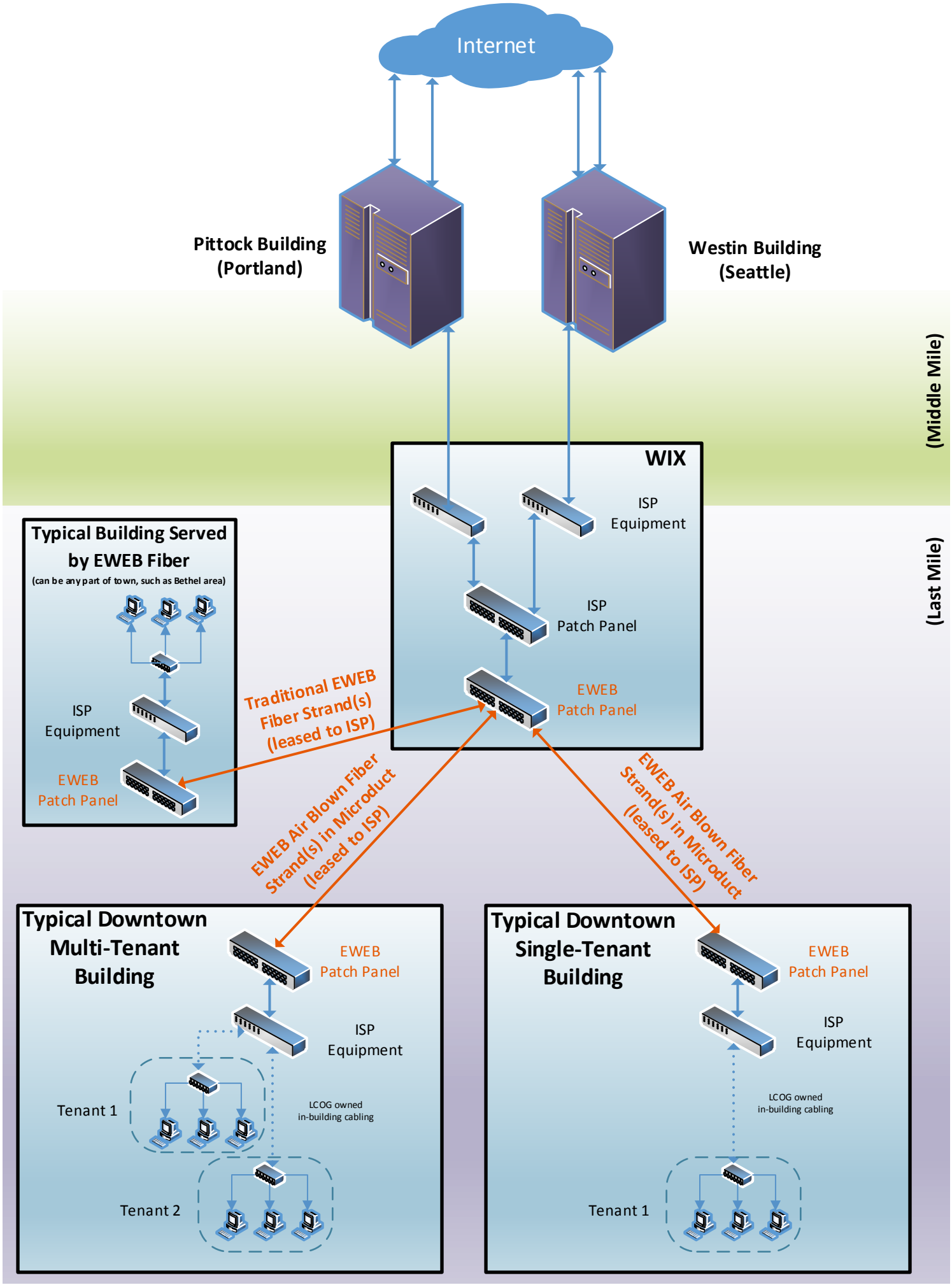
With regard to the Downtown Project, there are at least three ways that the downtown fiber network could benefit the Bethel area:

- The "middle-mile" portion of the project – this is the portion of the fiber network that would connect EWEB's regional dark fiber network with fiber in larger cities, improving regional connections into the WIX and to our region. This connection is contemplated but is not currently funded. The effect of an improved connection will have a rebounding effect throughout Lane County. All major internet customers, including Bethel School District, could potentially see savings and/or increased performance due to the increased speed and capability of the overall system. TAO (Technology Association of Oregon) estimates that these savings could approach 50% ranging from $10,000 to $20,000 annually for school districts throughout the southern Willamette Valley.

- The Downtown Project will increase the visibility of EWEB's dark fiber in the community, which could spur interest and further build outs of the system in other parts of EWEB's broader territory – both residential and commercial. For example, if a business on Barger heard about the Downtown Project and wanted the same level of service they could get it by paying EWEB to build a lateral connection off of its backbone service. The cost for recent laterals have ranged from $10,000 to $100,000. Just like the downtown network, this would provide dark fiber optic infrastructure that is open access to any ISP, creating a market where providers compete for customers.

- Existing businesses in downtown Eugene have expressed support for the fiber network and its promise of high-speed, low-cost service. Many businesses have written letters of support with estimates of over 200 new jobs that could potentially be created if the downtown fiber network is established. It is reasonable to assume that these jobs would be available to people living throughout our community, including the Bethel area. A growing local economy will also increase the tax base in the community. Increased consumption of EWEB water and power help EWEB keep rates competitive for all customers including those in the Bethel area.

Recommendation and Requested Board Action
This item is for informational purposes only and no Board action is being requested at this time.


Internet
Pittock Building
(Portland)
Westin Building
(Seattle)
(Middle Mile)
(Last Mile)
WIX
ISP
Equipment
ISP
Patch Panel
EWEB
Patch Panel
Typical Building Served
by EWEB Fiber
(can be any part of town, such as Bethel area)
ISP
Equipment
EWEB
Patch Panel
Traditional EWEB
Fiber Strand(s)
(leased to ISP)
EWEB Air Blown Fiber
Strand(s) in Microduct
(leased to ISP)
EWEB Air Blown Fiber
Strand(s) in Microduct
(leased to ISP)
Typical Downtown
Multi-Tenant
Building
EWEB
Patch Panel
ISP
Equipment
Tenant 1
LCOG owned
in-building cabling
Tenant 2
Typical Downtown
Single-Tenant
Building
EWEB
Patch Panel
ISP
Equipment
LCOG owned
in-building cabling
Tenant 1