

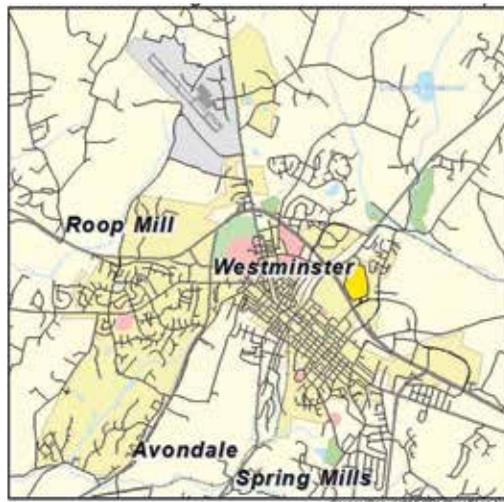
The Westminster P3 Model

The city of Westminster, Md., chose a three-layer, public-private partnership model for its fiber-to-the-home network. Here's why.

By Robert Wack / *Common Council of Westminster, Md.*

Look at a map of Maryland, and, right in the middle of the state, you'll see a town at the center of a spiderweb of secondary roads that radiate toward all points of the compass. A hundred years ago, before the interstate highway system was built, this web of roads put Westminster, Md., in the thick of all commercial traffic between Harrisburg, York, Gettysburg, Frederick, Baltimore and Washington, D.C.

Westminster is once again going to be at the central node of a network, but this time it's a network of fiber optic lines that will connect every home and business in the city to deliver gigabit data service and more. The Westminster



Westminster sits at the center of a spiderweb of roads.

Fiber Network is using an innovative public-private partnership (P3) model to build one of the first gigabit networks in the Mid-Atlantic region. To fully appreciate how the Westminster model might be applied to other U.S. cities requires an understanding of how it differs from the many other possible P3 models.

Public-private partnerships have a long, and by some accounts uneven, history in the world of public infrastructure. There have been some spectacular P3 failures, but no model is impervious to the universal human failings of incompetence and malfeasance. The success or failure of a P3 project is a function of that project's specific circumstances rather than of anything inherent to the P3 model.

A successful P3 project is at its core a true partnership in which both parties achieve their goals while sharing the risks and rewards in ways they are comfortable with and can sustain over the life of the deal. Striking that balance requires each party to have a very clear idea of its strategic goals. Those goals will, in turn, drive the decision making as the terms for the P3 are crafted.

The city of Westminster entered discussions with potential partners with three core principles: (1) public ownership of the fiber network; (2) a multitiered service model that would partition risks and responsibilities to separate operational layers; and (3) a commitment to open access at the service level as the end state of the service environment. Each of these is important on its own and closely interrelated with the others.

Crowds enjoy a market on Westminster's Main Street.



PUBLIC OWNERSHIP OF FIBER

Public ownership is the starting point. As in all business relationships, ownership equals control, and control is absolutely necessary for a community to ensure that it achieves the economic development goals of a fiber project. The expectations of the 1996 Telecom Act were unmet in part because the last-mile infrastructures of the nation's telecom networks were never truly opened up to unfettered competition. The best way to ensure open access going forward is for local government to own and control the local infrastructure.

However, that's not the only reason for public ownership. As a steward of the public interest, local government has a duty to ensure that public goods, such as essential infrastructure, are widely deployed, well-maintained and open for use by all citizens. Is there any more essential infrastructure in the 21st century than the physical assets necessary for high-capacity data services?

Only with public ownership and control can the current problems of

redlining and the growing digital divide be comprehensively addressed and solved. A commitment to public ownership enables universal access to broadband, which in turn is a major source of public support for committing the resources that network construction requires.

In other words, when a local government assures its citizens that they all will benefit from an infrastructure project, public support for the necessary expenditures to implement that project becomes much easier to secure.

From a financial perspective, the construction, maintenance and ownership of dark fiber fit perfectly with the other infrastructure obligations of local government. Just as municipalities and counties are responsible for building and maintaining roads, pipelines, sidewalks, curbs and gutters, so too should they be tasked with building the basic pipelines for 21st-century data services.

But that doesn't mean local governments should all become ISPs. Some have chosen that path, in many cases quite successfully. Just as not all municipalities are well-suited to operate

electric utilities or water utilities, not all local governments need to offer data services. However, all local governments build and maintain roads, and fiber networks are the roads of our future.

Local governments can confine their roles to simply owning and maintaining the outside plant (OSP), the inert components of the network that comprise the fiber itself, the boxes and enclosures used to make connections and house equipment, and the conduit through which the fiber travels. All other components of the system – anything that requires power or transmits data – can be delegated to the private-sector partner.

This is an obvious partitioning of ownership and responsibilities because of the major differences in the useful life and cost of the system components and the different risk tolerances and expected return horizons of the partners. Public-sector entities epitomize "patient capital." They are able to make long-term investments with no pressure to expect fast, high-margin returns. Local governments routinely spend millions of dollars on infrastructure with the only expectation

Fiber can be financed over time frames that are comparable to other public infrastructure projects and can provide revenue that will pay the debt. Fiber can be self-supporting.

of return being the long-term beneficial impact on the local economy and the consequent maintenance or improvement of the local assessable tax base, which allows them to maintain tax revenues without rate increases.

Like most modern technology, network equipment has a useful life of between three and five years, after which it must be replaced with newer, faster equipment. In contrast, fiber has a useful life of at least 40 years, as the first fiber networks were built in the 1970s and are all still in operation. Fiber strands do not decay, corrode, rot, wear or expire. If left undisturbed, they will continue transmitting data for decades without any maintenance or upgrades.

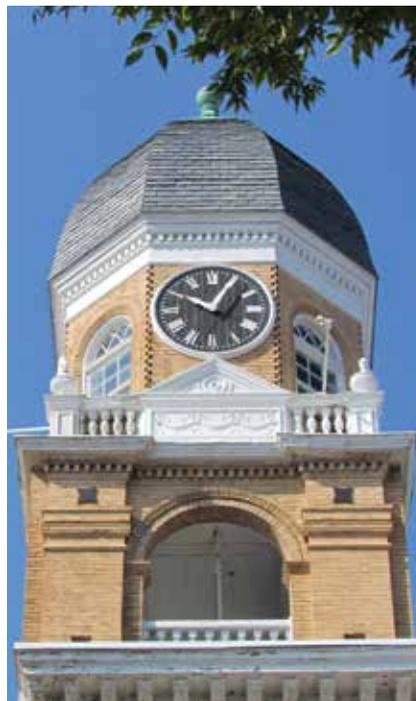
Fiber is the perfect asset for a local government to invest in to improve the local infrastructure for economic development. Fiber can be financed over time frames that are comparable to other public infrastructure projects, such as asphalt or concrete, and in ways the private sector cannot contemplate. What's more, unlike concrete and asphalt, fiber can provide the revenue stream necessary to repay debt without unduly burdening the other capital obligations of the local government. Fiber infrastructure can be self-supporting.

By taking responsibility for the OSP, the public sector improves the economics of any given network project. Approximately two-thirds of the capital expense of building a network resides in the OSP. The rest of the capital expense is for networking equipment and software. In contrast, operating expenses for the OSP are minimal compared with the significant overhead of staffing network operations and service provision.

Removing the capital expense of OSP construction from the ROI equation of the private partner radically transforms the economics of a broadband project, enabling a private partner to contemplate services in markets it otherwise would never consider. With the right partner, the local government need not embark on the expensive and much riskier enterprise of staffing and operating a network to provide services.

A MULTITIERED MODEL

Assigning ownership of the OSP to the public partner opens the door to further segmentation of roles within network operations. To see how this is possible and why it is important for network services going forward



The Westminster clock tower

requires understanding the history of telecommunications technology and how that history informs existing telecom business models.

In the early years of telecommunications networks, the infrastructure consisted of copper wires that carried one channel of data (an analog sound signal). Configuring a connection between any two points on a network required actuating mechanical switches to create a temporary physical circuit. At first, that mechanical switch was a human operator who physically pulled plugs and replaced them to create the circuit; eventually, that function was automated. To ensure maximum control of the customer service relationship, a service provider had to own and control every last bit of infrastructure down to the telephone at the end of the circuit.

As automation gradually replaced each component and as software and IP technologies gradually transformed networks, the need for control of the infrastructure to provide services gradually disappeared. Today, a service provider can be entirely virtual, riding on someone else's network and using someone else's fiber, yet maintain very close, reliable, high-touch relationships with customers.

For 21st-century networks, this enables a further partitioning of network services into two levels, both entirely operated by the private sector: utility bandwidth services provided by a network operator and customer-facing services provided by one or several service providers.

This division of operations and services into wholesale and retail levels has several advantages. Specialization further decreases the capital and operating expenses of the providers at each level. Specialization also enables competition at the service level because there are very low barriers to entry. A wholesale network operator is motivated to bring more retail service providers onto the network and to create new retail revenue streams by increasing the diversity, as well as the number, of services.

Retail service providers benefit

from the drastically reduced capital expenditures necessary for them to compete. Consumers benefit from lower prices, better service, more kinds of service and the relentless pressure to improve that healthy competition fosters in a truly open market.

The fundamental advantage of this model is the allocation of expenses (and therefore of risk) to the levels at which they are most appropriately handled. Each role has responsibilities and risks peculiar to it, which are handled best by entities most comfortable and experienced with mitigating that risk.

Local governments are very good at building and maintaining infrastructure with a useful life of many decades (roads, pipes, fiber). Network management is a distinct problem requiring particular skills and particular capital and operating expenses. Security, stability and reliability are the key attributes that affect risk in that arena. The life cycle of the services and infrastructure for network operations is measured in a few years.

Provision of services to residential and business customers, compared with network management, requires significantly more investment in human capital, shorter product life cycles and higher risk of failure but generates potentially much higher margins. Time frames in this arena are much shorter – in some instances as short as months. In a properly configured broadband ecosystem, this is where the innovation will occur to drive economic growth in the 21st century.

OPEN ACCESS

The multilayer service model lays the groundwork for the creation of a true open-access environment at the service level. In such an environment, customers can switch providers without barriers, try new services as they are developed and enjoy greater transparency into the cost and quality of providers' offerings.

Lowering the barriers to entry for new providers allows real competition to take place and rewards service providers that deliver better services at lower prices. In addition, there are no

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barriers to entry for any provider that wants to offer new, innovative services, thus accelerating innovation and economic development. The consumer wins in all instances.

The multilayer model also aligns the interests of all parties. Having more service providers increases revenues for the network operator, which in turn increases the incentive for the local government to continue expanding the physical network, as the network operator's financial success underwrites the expansion of the OSP. The larger the network footprint, the more potential customers, who in turn can support a larger ecosystem of competing service providers, which then incentivizes further growth, all while accomplishing the larger public interest goals of universal access, increased utilization, competitive pricing and numerous diverse services.

THE WESTMINSTER MODEL

Westminster's current contract with Ting captures these elements. Initially, Ting is both network operator and sole service provider while it installs equipment, ramps up staffing and develops its service capabilities. When it achieves various negotiated milestones, it will be contractually obligated to structurally separate its wholesale and retail services and begin admitting additional service providers to the network. Ting's wholesale arm is required to treat each new service provider in exactly the same manner as its own service provider arm.

The exact manner in which a service provider accesses the network, and the specific equipment responsibilities that may entail, will depend on the business relationship between Ting and the service provider and the specifics of the service offering. Westminster did not want to unnecessarily encumber its

network operator partners with unduly specific requirements because the types of services and the technologies required to deliver them are changing too fast to prudently enshrine in a contract.

The Westminster Fiber Network is sufficiently overbuilt that other users of fiber infrastructure (for example, wireless carriers, specialized business users and government agencies) may also lease fiber from the city, separate from other users.

The first phase of construction is complete, lit and providing services to an area that has several hundred serviceable business and residential addresses plus several large MDUs in a retirement community. The next phase, currently in engineering, will add approximately 2,000 serviceable addresses. Construction of the second phase will begin in early 2016 and, depending on subscription take rates, will speed up or slow down to match the demand. Eventually, the network will reach more than 7,000 homes and businesses inside Westminster; if demand warrants, it can be extended to another 8,000 just outside city limits.

In summary, the Westminster model of public-private partnership provides a scalable blueprint for any local government of any size to implement a communitywide broadband network in a financially sustainable manner. Through public ownership of the infrastructure, partitioning of the network operations by layer and a commitment to open access, any community in the country can realize the economic development potential of massive broadband. ❖

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