SandyNet Goes Gig:
A Model for Anytown USA

A community wireless network in Oregon takes the leap to gigabit fiber.

Fast Facts: Sandy, Oregon
Population: 10,000
County: Clackamas
Network: SandyNet Fiber
Take rate: 60%
Symmetrical gigabit pricing: $59.95
Financing: $7.5 million revenue bond

By Hannah Trostle and Christopher Mitchell
Institute for Local Self-Reliance

Many of the most beautiful communities in the United States are in remote areas where incumbent cable and telephone companies have decided not to offer modern, high-quality Internet connectivity. Sandy, Ore., is one of them. Some 10,000 people live there among the lush green forests and beautiful vistas of the "Gateway to Mount Hood," 25 miles east of Portland. But Sandy decided to build its own gigabit fiber optic system and now has one of the most advanced, affordable networks in the nation.

Sandy joined nearly 100 other local governments that have built municipal fiber-to-the-home networks to give residents and businesses access to world-class Internet connections. However, the overwhelming majority of municipal fiber networks were built by local governments that already owned their local electrical grids. As Sandy does not have a municipal electric utility, it pioneered a low-risk incremental strategy to build its telecommunications utility, SandyNet.

The city started by reselling DSL and building a modest wireless network. Now it offers symmetrical speeds of 100 Mbps for $39.95 or 1 Gbps for $59.95. Sandy's experience offers lessons for local governments across the country.

Origins of SandyNet

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In 2001, when the local telephone company couldn't provide a DSL connection to city hall, city officials began to worry about broadband availability for local businesses and residents. To get the connectivity it needed to perform basic government functions, Sandy formed its own municipal Internet utility. The city began providing DSL to residents and businesses over the phone company's infrastructure before beginning to invest in a wireless system that would ultimately stretch across and beyond city limits. In 2003, it named the Internet utility SandyNet.

City government eventually came to the conclusion that the citywide Wi-Fi network was insufficiently reliable and could not provide the high-capacity connections that were already becoming necessary in 2008. While investigating a fiber network option to connect the five municipal buildings, it realized the route for the fiber should go through the downtown corridor.

Recognizing the economic development potential of a fiber network, city leaders developed a plan to provide fast, affordable, reliable broadband to businesses via municipal fiber. By 2012, most of the larger companies in the downtown area connected to the network. According to Joel Brache, program manager at AEC Inc., which produces technical manuals for the aerospace industry, the decision to switch to SandyNet was an easy one:

"I think at that time it was a 100 Mbps connection for probably an eighth of the cost of what we were getting [from the prior service provider]. So we were going to get 10 times faster than what we could have gotten before for a fraction of the cost. It was a no-brainer. It was a win for us."

AEC Inc. uses high-speed Internet access to communicate better with its facilities and offices around the world. It serves global companies such as Lufthansa Technik, LifePort, and BizJet International.

In 2010, after Google announced its Google Fiber contest, city officials held a "Why Wait For Google?" contest, inviting residents to demonstrate demand for fiber to the home. They intended to build an FTTH pilot project in the neighborhood with the highest response rate. However, the contest demonstrated strong demand everywhere in the city. After comparing the cost of the pilot project with the level of demand, the city decided to pursue a citywide fiber network.

Building the Citywide Fiber Network

Revenue bonds are a common way to finance municipal fiber networks because the revenue to repay the debt is generated by those who chose to subscribe.

SandyNet uses its net income to improve equipment, fund capital investments and service debt. Unlike some cities, such as Santa Monica, Calif., that retained earnings from early fiber buildout phases to help pay for subsequent phases, Sandy needed to find a means of financing its full citywide build. However, using an incremental approach was still valuable because it allowed Sandy to develop the expertise it needed to offer fiber services citywide despite not already having a municipal electric utility.

Sandy has a particularly sharp IT director in Joe Knapp—a reminder that the success of projects like this one can turn on the staff in charge. Knapp is not only well-qualified but also motivated by the idea of building something that will "impact this city for the next 30, 40, 50 years."

He adds, "When I started with the city, we had about 175 customers on our wireless system with some DSL. To take it from that and grow it into a citywide network with over 1,500 customers now and building a fiber network that is going to have 2,000-plus subscribers at the end of the day was just intrinsically motivating for me. I just wanted to do it. … It's different from working for a large telephone company or any communications company in the sense that you have your hands in a lot of different areas that you maybe would be more siloed in, in a larger company."

Sandy first sought a public-private partnership, but the original potential partner changed hands in the midst of negotiations, and the two parties were unable to come to mutually agreeable terms. However, as the city again examined its options, it developed a plan to finance the network itself and build it with a contractor experienced in fiber networks.

In December 2013, SandyNet contracted with OFS to deploy the fiber, and the Sandy City Council issued revenue bonds of $7.5 million in February 2014 to cover the construction costs. Revenue bonds are a common way to finance municipal fiber networks because the revenue to repay the debt is generated by those who chose to subscribe.

Sandy has high praise for OFS. As Knapp explains its role, "OFS has been a great partner for us. They really handled the entire design of the network, and we've really leaned on their expertise for how things should be laid out, how to do the home connections. They pretty much handle all that. The [input] that we've had was in more overarching design decisions.

'Do you want a distributed split network or you want a consolidated split network? Here's the cost impact of that. Do you want this type of fiber or that type of fiber? Here's the cost impact of that.'"

Knapp recalls that Seth Atkinson, then the city finance director and now the city manager, did extensive spreadsheet modeling of budgets over the next 10 to 20 years to test assumptions before committing to the project. SandyNet calculated that the network would need a 35 percent take rate to pay off the bond. Even before finishing the network, SandyNet has achieved a take rate of 60 percent, almost double what it requires.

The network construction was finished in the fall of 2015. The network was built to serve those in the city limits but it is possible SandyNet may be extended to those living nearby in the future. However, there is currently no timetable for such an investment. Some of the wireless network is being retired, with its customers having been migrated to the fiber.

Building a great local fiber network is one thing, but finding high-capacity, reliable, affordable connections to the rest of the Internet can be a challenge outside major metropolitan areas. Fortunately, Sandy is located in Clackamas County, which had built a middle-mile fiber ring, using a broadband stimulus grant, to connect area community anchor institutions. The county needed some conduit and space in Sandy's data center. In exchange, it gave the city dark fiber into Portland's Northwest Access Exchange, where the city now interconnects for access to the wider Internet.

Sandy City Council President Jeremy Pietzold, an elected official with a deeply technical background, has long been a strong supporter of the project. While attending the 2015 Broadband Communities Summit in Austin, he bumped into an engineer from Google who noted that Google is watching Sandy. Pietzold was surprised enough to clarify, "Sandy, Oregon?" Sure enough, Sandy's success is attracting attention.

Benefits of SandyNet

"It's not something you'd get from your local Qwest, or your local Comcast. That's not something you see, typically."

The internal cost savings of the fiber network have been substantial. For instance, the city replaced its aging phone systems with VoIP. Other savings, however, are less obvious. Sandy police officers now use the high-speed connections to deliver grand jury testimony. What would have taken added fuel costs and extra time to travel to the grand jury location many miles away now takes only an hour at the local police station.

Having reliable, affordable, high-speed Internet gives people greater opportunities to work from home. This has even changed the real estate market in Sandy. Kyle Ball, principal broker for Mal & Seitz Real Estate, explains:

"Being in real estate, I encounter a lot of people who have very specific Internet needs—people who do work from home, primarily. And in the outskirts of Sandy, where Internet is not as available, that's a big concern for a lot of people. And some people even choose to live closer to town because of it."

Residential speeds are symmetrical, with two tiers available—100 Mbps for $39.95 and 1 Gbps for $59.95, with no caps or contracts. Phone services can be bundled with Internet access, but digital TV packages are still being negotiated.

Incumbent providers have shown little reaction to SandyNet's citywide fiber program. Frontier and Wave Broadband have been offering DSL and cable respectively in Sandy for many years, but they have done little to improve their services. Instead, they have lowered their promotional rates, which has done little to dampen enthusiasm for the new fiber network. But now, Sandy residents have options.

For many businesses, the fast speeds and responsive customer service of SandyNet are essential. The car dealership Suburban Chevrolet depended on SandyNet even before fiber was available. For selling parts, looking up customer information or upgrading vehicle software, the dealership needs Internet connectivity. When it deployed the original wireless network, the city partnered with the dealership to gain access to its roof. According to service manager Ron King, SandyNet and the dealership have maintained a good partnership:

"Quite honestly, that was a win-win for everybody. It worked well for us, and it was good for the city, and then we were able to transition into the fiber optics. … I know we are close with the people at SandyNet, I

know they bring their vehicles in here for service, so it's good to have those close relationships. It's not something you'd get from your local Qwest, or your local Comcast. That's not something you see, typically."

More businesses will soon experience the same level of service and reliability the car dealership has long enjoyed. Sandy is using an urban renewal district (often called a tax increment financing, or TIF, district) to add a business fiber loop to the almost-completed network. Until recently, individual businesses paid to connect to the fiber network because utilities in the downtown area were underground and each new fiber path required significant construction. However, businesses that take advantage of the network expansion during this window enabled by some $650,000 in funds from the urban renewal district will have no connection fee and will be able to take advantage of the new business rates from SandyNet.

The city will use the urban renewal district funds to connect businesses and offer commercial services at prices seen nowhere else in the country: $39.95 for 100Mbps and $59.95 for 1 Gig, the same service at the same price points as for residential service. The usual $350 install fee will be waived for businesses previously connected to the wireless network. If a business wants a dedicated line, pricing will still be on a case-by-case basis.

SandyNet is succeeding in its goal of offering ultra-high speeds at affordable prices for both homes and businesses. Its incremental strategy offers lessons for any other community that wants to ensure its residents and businesses have a real choice in modern, affordable connectivity.

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Hannah Trostle is a writer for MuniNetworks.org, a publication of the Institute for Local Self-Reliance.

Christopher Mitchell is director of community broadband networks at the Institute for Local Self-Reliance, a nonprofit that supports environmentally sound and equitable community development.

WATCH: Gig City Sandy:
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