

Connecting Communities

Disaster and refugee stories have demonstrated the undeniable value of connectivity. Wireless broadband technology can also change lives in neighborhoods of major cities throughout the world, where millions of people also struggle to improve their situation.



Many of these neighborhoods are food deserts without any food stores. They are also economic deserts, with no local access to savings institutions. In a similar way, they are also connectivity deserts where there is no adequate access to all that the Internet brings. Residential broadband is often prohibitively expensive for members of underserved communities, and access points such as WiFi hotspots can be rare in neighborhoods that feature few public spaces or amenities. Lives are negatively impacted by this lack of access; information technology increasingly acts as a gatekeeper to success in education, the job market, navigation of the healthcare system, even the procurement of basic utilities such as electricity.

When businesses leave the area, over the long term, their departure creates a cycle of disconnected disadvantage. Government broadband plans and renewal programs aim at connecting every household, and while connecting each residence in a community is a noble goal, visionary local leaders have found another solution. They have taken the initiative to connect themselves and create a connected community hub that provides all members access to connectivity to improve their lives.

By pooling resources, the **Windsor Park community** in Chicago's South Shore neighborhood has created a safe oasis of high-speed connectivity.

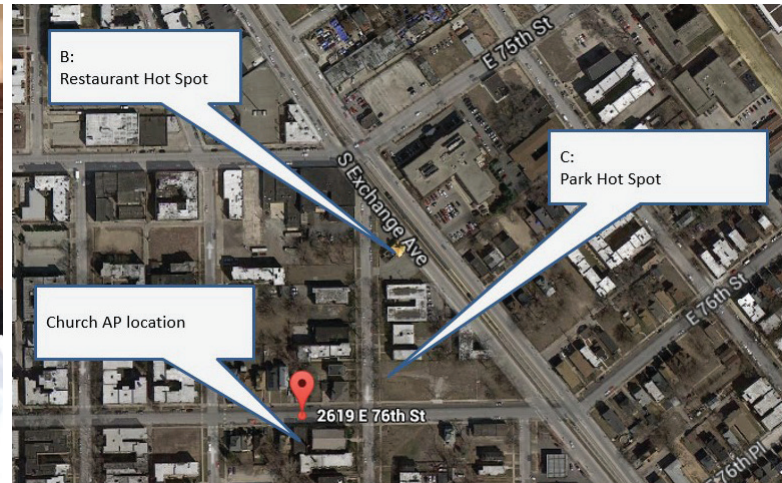
HISTORY AND OPPORTUNITY

Many neighborhoods are cut off from connectivity. Cable and fiber installations are labor intensive and take a long time to deploy. Communications service providers' business models prioritize revenue generation, which favors high-density locations that yield high residential subscription rates and maximize average revenue per user (ARPU). Low income areas with generally lower subscription rates, coupled with the same installation costs, represent a less attractive return on investment for large service providers. Unfortunately for the residents, this business model keeps their communities unconnected.



EMPOWERING COMMUNITY MEMBERS

To provide connectivity as a fundamental part of a community, local organizations can bring multi-purpose broadband connections to people who need it. Windsor Park leaders came together to provide first-class high-speed connectivity to a hub location, equipping a community building with an online computer lab and WiFi. The broadband system also connected a nearby restaurant, which now provides a free WiFi hotspot in the neighborhood. In addition, community leaders leveraged the IP-based high-speed network to install video surveillance cameras at the Windsor Park Church hub location.



The small wireless broadband network has created significant benefits for all members of the community, and the video surveillance system has increased safety in the immediate area. Young people can study, participate in extracurricular programs, learn about technology, and experience a new connection to the world in safety. Adults can access professional development tools, search for jobs, and participate in online training programs.

Local volunteers living nearby have Internet access to work on church and community activities. Members of the volunteer-powered Leave No Veteran Behind (LNVB) organization have learned new skills — managing a wireless broadband network and installing equipment — and now have first-hand understanding of wireless broadband applications.

Since the initial network deployment in 2014, the facility has become the hub of the neighborhood and is open every day. The connected, safe environment has bolstered the activities of the food pantry, extracurricular, and adult education programs.

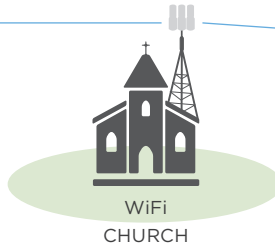
PTP Backhaul



150 Mbps

Multipoint Access

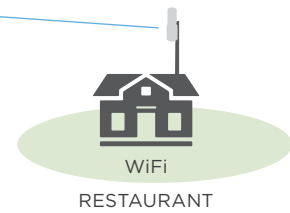
- 1 ePMP™ Access Point
- 3 *cnPilot*™ R200 Gateways
- 2 Axis cameras



100 Mbps

WiFi Access

- 1 ePMP Subscriber Module
- 1 *cnPilot* R200 AP



This success story relies on the same technology that powers thousands of connections in both private and industrial applications around the world. The network connects to an existing broadband source, extends it over a distance to the desired point, and distributes it to a number of WiFi access coverage areas.

With the source broadband located in the center of the city of Chicago, a point-to-point (PTP) high-speed backhaul connects to the hub location. This connection can be designed to provide up to 500 Mbps or higher, and operate in either the licensed or unlicensed RF spectrum. The link also can be either Line of Sight (LoS) with no obstructions or operate in a Non Line of Sight (NLoS) mode where buildings or foliage obstruct the wireless path.



With the broadband connectivity at the hub location, a point-to-multipoint (PMP) distribution network can connect multiple buildings. In this case, the hub location is connected to a restaurant a few blocks away. This distribution network can connect hundreds of locations in a wide radius around the hub location and operate in either the licensed or unlicensed RF spectrum and in either LOS or NLoS conditions.

WiFi connectivity provides the final link to access. In the initial installation, indoor WiFi is provided in the church's computer center, gathering area, and food pantry and at the restaurant located nearby. Students participating in after-school programs plan to install a solar-powered WiFi access point in the near future.

In the event of a power failure to the hub location, an uninterrupted power supply (UPS) maintains power for the church end of the PTP backhaul and PMP distribution access point. It also supplies continuous power for the computers and WiFi access points in the computer lab. If there's a neighborhood-wide outage, the hub location's WiFi will still have access to the Internet.

SOLUTION PARTNERS

The Windsor Park project demonstrates that connectivity is possible for all kinds of communities and areas, when community leaders identify and coordinate the resources they have to connect to the Internet.

LOCAL COMMUNITY LEADERS:

- **Windsor Park Church**
<http://www.windsorparkchurch.org/>
– provided the location for community center and project area for youths and veterans.
- **Leave No Veteran Behind**
<http://leavenoveteranbehind.org/>
– providing leading after school activities for local youth and providing on-scene coordination of the connectivity project.



Communications technology providers enabling access to the source broadband and wireless infrastructure technology:

- **American Wide Broadband** <http://www.awbworld.com/> - leading wireless broadband service provider in Chicago.
- **Cambium Networks** <http://www.cambiumnetworks.com/> - providing equipment to connect the church with nearby residences to facilitate work on community activities.

Applications partners provide IP-based solutions that interact with the broadband network to extend additional capabilities:

- **Axis Communications** <http://www.axis.com/products/video/camera/index.htm> - providing video surveillance cameras at the hub's activity locations to promote public safety.
- **InSPIRE** (Institute for Solar Photovoltaic Innovation, Research, and Education)
<http://www.inspireillinois.org/> - providing solar panels to power the park location's WiFi access.

MAKING A REAL DIFFERENCE

Connectivity creates measurable and lasting change in communities when visionary leaders take action to achieve results that immediately transform the lives of people in their neighborhoods. Windsor Park church and LNVB have not only proven that wireless broadband connectivity can be practical and attainable, but they've also provided similarly underserved communities with a replicable model for successful community development.



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