*CUSTOMER PROFILE — WIRELESS ISP*

# ANTELECOM, INC

**A CALIFORNIA ISP IS EXPANDING BROADBAND SERVICES USING WIMAX AND WIRELESS BACKHAUL**

## Overview

Antelecom, Inc is an independent ISP based in the Antelope Valley, northeast of Los Angeles, CA. Since 1995, Antelecom has been providing various different data communication services, starting with dial-up and then expanding to broadband services. Their services include email/web hosting, VoIP, and hosted PBX.

Antelecom's coverage area is north of Los Angeles, CA, centered at the Network Operating Center (NOC) Lancaster and includes smaller cities in the area such as Palmdale, Quartz Hill, Rosamond, Del Sur, Little Rock, and Juniper Hills. The service offering spans a large area, about 600 square miles, so their system solution needs to have large-cell capabilities. Also, the backhaul from the base station to NOC is done by wireless PTP systems, which needs to cover long link distance without degradation of large-capacity transport.

Figure 1: An example of Antelecom's deployment: 3 sector base station (middle) and PTP backhaul (top)

Early in 2010, Antelecom wanted to upgrade their broadband service platform with the purposes of increasing the bandwidth to subscribers. After careful consideration, Antelecom chose to deploy Solectek's 3.65 GHz SkyWay-MAX WiMAX systems and Excel Backhaul kits. Antelecom's coverage area happens to be in one of the few Federal 3.65 GHz exclusion zones where Antelecom needs to work with the existing user of the frequency band. Despite the cumbersome nature of the registration process, Antelecom found that the prospect of deploying new advanced technologies operating in a clean, virtually unused frequency band is well worth it.

## WiMAX Deployment

Antelecom's initial commercial deployment included 4 sectors at 3 sites with about 30 subscribers per sector. After a few months of operation, Antelecom found that Solectek's WiMAX system indeed delivered what they were hoping for. They did not encounter difficulties during installation and configuration. Since then, the system performance has been solid and reliable. They found that the RF performance exceeded their initial expectation – the system was able to provide services up to 10 miles radius. The radio modulation was maintaining QAM64 to most of the long distance customers, which means the capacity did not measurably suffer toward the edges of the coverage cell. Antelecom is equally pleased with minimum service needs so far, leading to two follow-on service visits so far, one of which was found to be a customer mistake.

SOLECTEK

## WiMAX Service Plans

Antelecom's original WiMAX market approach was a 2 Mbps service to subscribers at $40 per month. An usage analysis, shown in Figure 2 below, indicates that the average bandwidth requirement is about 2 Mbps. Antelecom's trial with a segment of their network has also shown that the system is able to handle enhanced traffic load, as they opened up the bandwidth to customer to 4 Mbps without oversubscription problems. Thus, Antelecom the plan is now to offer 4-5 Mbps plans to customers, especially to business subscribers. In addition, higher-end customers will be provided with VoIP services at no additional charge.

**"Solectek WiMAX system performances are impressive and more so that advertised. The large cell capability gave us more networking planning capability as we plan our expansion."**

**Mike Hughes, CEO, Antelecom**

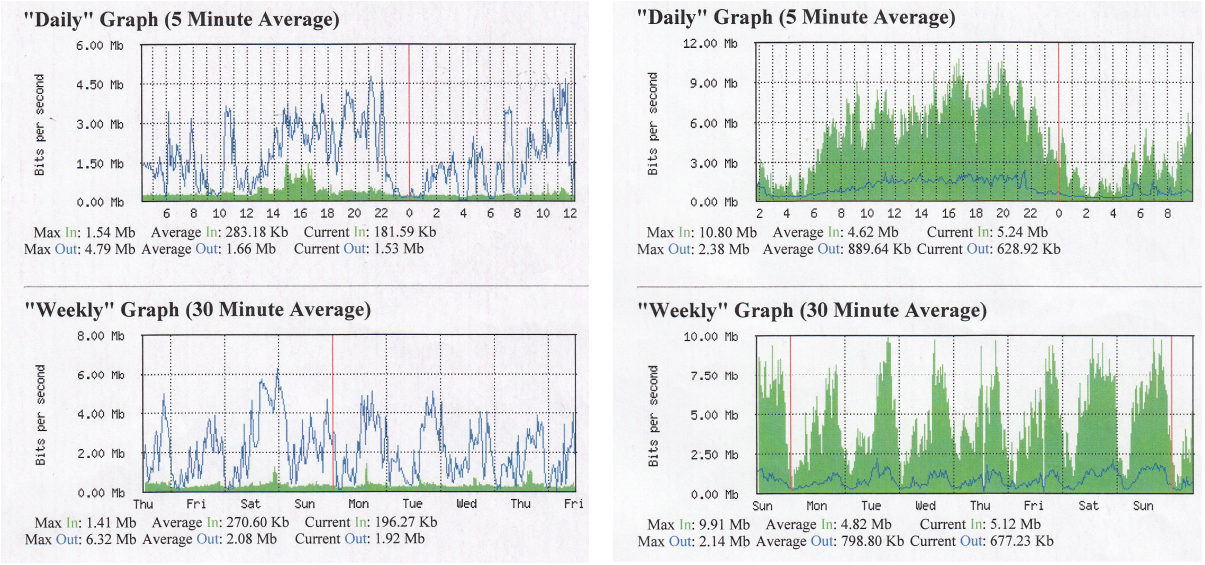


Figure 2: The left graphs are for each base station and the right ones are for the backhaul link that aggregated two sectors at the site. The average bandwidth use per subscriber is about 2 Mbps. A trial with a controlled set of customers has shown that enhanced levels of services can be offered.

## WiMAX Service Strategy

Antelecom anticipates that 3G/4G mobile services have reached some parts of his service area and will expand in the future. As much of the 3G smart phone data traffic today is being carried by wireline broadband services (Cable/DSL) via Wi-Fi, Antelecom anticipates that their fixed WiMAX services will provide "4G Offload" functions in the market. In fact, Antelecom packages indoor premise Wi-Fi provisioning just for that purpose. In addition, the large service area that they will cover will include sparsely populated areas, which will not see 3G/4G services in the near future.

Also, Antelecom's future plans are not to focus on delivery of certain data rates, but to highlight the "device connectivity", enabling additional applications (VoIP, video, etc). As the data networks are carrying more video traffic than ever, Antelecom anticipates that they want to emphasize video streaming capability to their customers.

## Backhaul Network

Antelecom's plan is to build out its WiMAX network that will eventually a foot print of over 3,000 sq. km around Lancaster (see Figure 3 below). A key piece of the networks is wireless backhaul, as they want to bypass local telcos without paying leased line fees. Such fees will get even more expensive, as the network traffic increases over time. Long distance from the NOC to each base station site makes wireless backhaul even more critical in their plans.

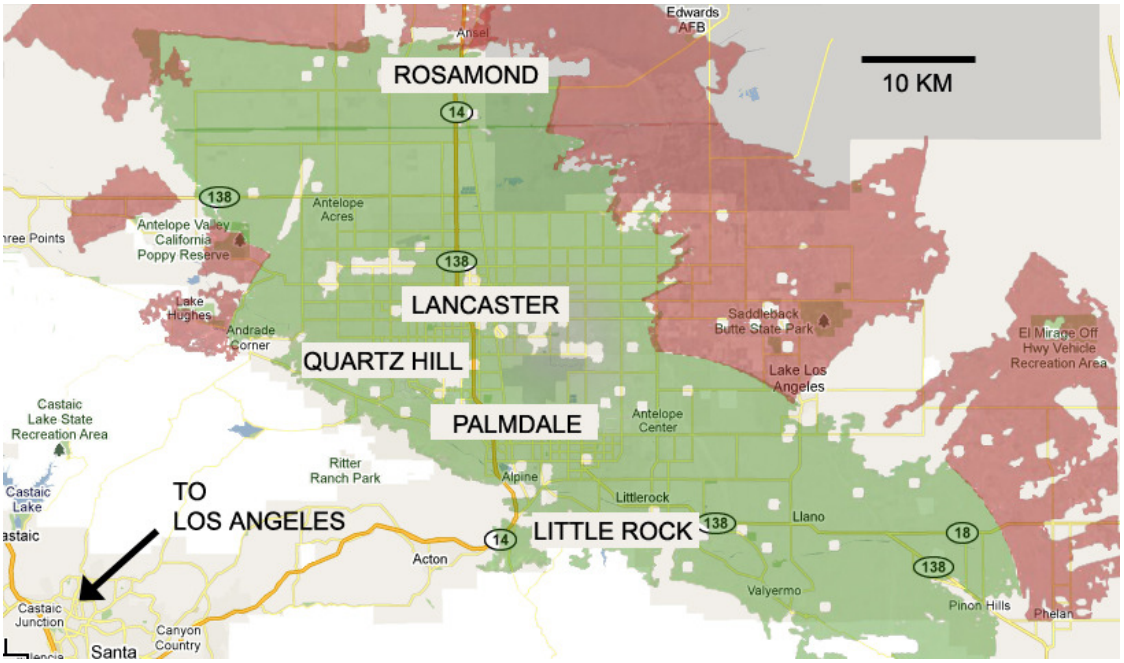


Figure 3: Antelecom's coverage area plan. The service level will be 4G in the green area and 3G in the red area.

Antelecom was equally impressed with the XL PTP backhaul solutions. In particular, they like the fact the link throughput was not affected even if the link distance was quite long. The system was easy to install and configure and remains virtually maintenance-free, which is just fine with their network administrator who would prefer to "put up the link, verify the performance, and let it do the work from there".

**"Solectek XL series backhaul links have been "purring" without a hitch. We are planning to use XL PTP links for our upcoming backhaul upgrade to go with subscriber traffic increases."**

**Mike Hughes, CEO, Antelecom**

Given the large territory they cover, Antelecom's backhaul links tend to be long. Some of the links are over 20 miles. Antelecom also built a ring topology of PTP backhauls by using OSPF routers at each site. This will further improve the uptime by eliminating single points of failure in their backhaul strategy. The use of adaptive coding/modulation feature (ACM) has provided further insurance that the link will stay up and running in adverse RF conditions.

## Future Plans

Antelecom will build out WiMAX services in most of their coverage area, as they acquire more tower rights and approval from incumbent 3.65 GHz users in the area. Their measure approach to insure the WiMAX service is viable and reliable has worked to their advantage. They now have established a solid deployment models and are ready to replicate the model well beyond the initial deployments.

Figure 4: Example of a subscriber unit installation

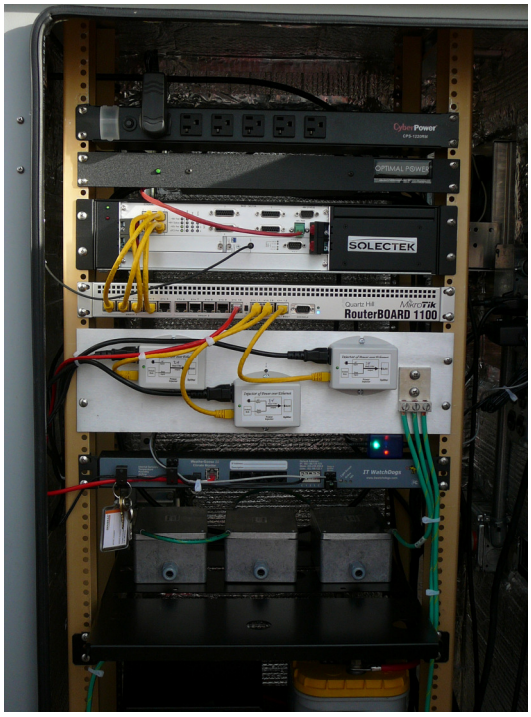


Figure 5: Base station network closet: the enclosure is climate-controlled. Solectek Base station controller is shown in the middle.

Founded in 1989, Solectek has long been a leader in the broadband wireless networking industry. Headquartered in San Diego, CA, USA with offices and partners worldwide, Solectek has installations in over 100 countries. Solectek manufactures a full line of broadband wireless connectivity products including telecom last-mile access, video surveillance transport and high capacity backhaul up to 1 Gbps spanning frequencies from 400 MHz to 70 GHz. For more information, visit www.solectek.com or email info@solectek.com

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