

450m Beats Growing Customer Demand

“The PMP 450m Access Point was loaded with 126 small business and residential subscribers, and supported connection plans of 25 Mbps. The 450m was able to deliver 138 Mbps *in a 20 MHz channel* consistently without breaking a sweat.”

- TAD VERNOR, ISP MANAGER, GVEC

Challenge

THE GUADALUPE VALLEY ELECTRIC

Cooperative (GVEC) service area spans 3,500 square mile over 13 counties in South Central Texas. With an established base business in providing electric service, over the years GVEC has leveraged its reputation for affordable and reliable service to include high-speed internet and heating, ventilation and air conditioning (HVAC) services.

A few years back, GVEC deployed wireless broadband technologies that enabled them to cost effectively serve the under-served and rural populations that had been left behind by other providers. While the system provided reliable connectivity at the outset, the number of internet connected devices per house and the increasing properly of streaming video on Netflix and YouTube created a demand level that taxed the limit of their system.

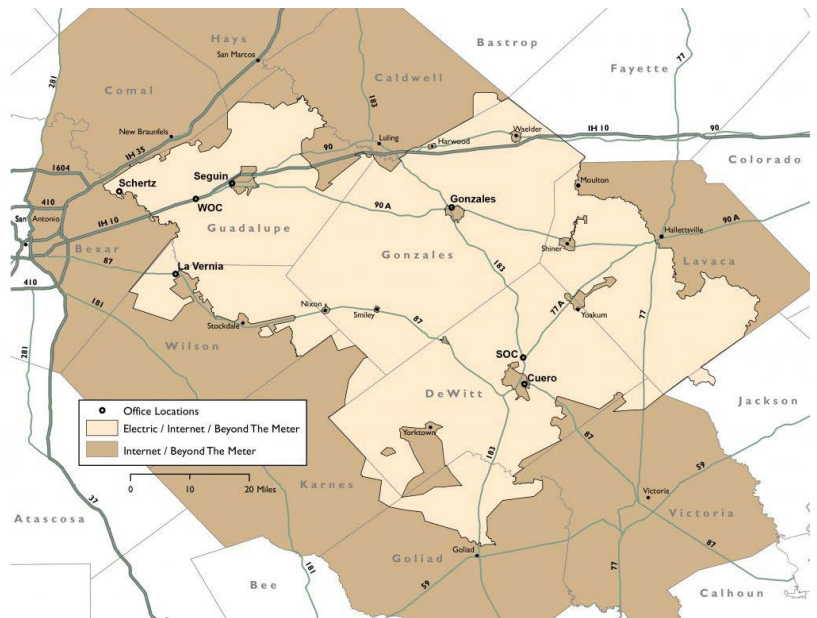
GVEC decided to investigate the alternatives to find a high-speed wireless broadband solution that would provide consistently reliable service for their rural customers.

Solution

GVEC OFFERS AN array of data plans tailored to meet the needs of their customers. While many may start at the low cost basic rate, their need for throughput and streaming video drives demand for higher level service rates.



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Basic	Essential	Enhanced	Advantage	Premium	Extreme
Great for casual surfing and sending and receiving email.	Great for email, casual surfing, and paying bills online.	Great for downloading music and sharing photos.	Great for downloading videos and playing games online.	Great for uploading pictures and working from home.	Great for homes with multiple users, video chats and gaming.
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“We have more than 10,000 subscribers, and are adding hundreds more each month,” said Tad Vernor, ISP Manager, GVEC. “The demand for throughput continues to grow with no end in sight. We had great experiences with the PMP 450i from Cambium Networks, and it has provided great performance with 125 Mbps of throughput per sector - but our subscribers were pushing that limit. From the moment we heard about the PMP 450m, with the Massive MU-MIMO technology, we wanted to check it out. Our goal was to find the limit of the “m” equipment.”

A very compelling aspect of the PMP 450m is that it will interoperate with the existing PMP 450 subscriber modules, so there is no need to dispatch technicians to replace any equipment at the subscriber locations. Currently, their network consists of primarily PMP 450i Access Points and Subscriber modules, and the standard customer plan calls for 8 Mbps of throughput. They wanted to see how high the system would go.



GVEC decided to test the PMP 450m on its most congested tower on the outskirts of San Antonio. “We have one sector with 84 subscribers, where there is high growth in the area. The installation was easy, and the new AP was installed in a few hours.”

PMP 450m Access Point with cnMedusa Massive MU-MIMO technology	
Frequency	5.150 - 5.925 GHz
Throughput	More than 400 Mbps in a 20 MHz channel
Synchronization	GPS Synchronization

PMP 450 and 450i Subscriber Modules	
Frequency	2.4, 3.5, 3.65, 4.9 - 5.9 GHz
Throughput	125 Mbps in a 20 MHz channel
Synchronization	GPS Synchronization

Results

“THE PMP 450M ACCESS POINT WAS LOADED WITH 126 SMALL BUSINESS AND RESIDENTIAL SUBSCRIBERS, AND supported connection plans of 25 Mbps,” said Vernor. “The 450m was able to deliver 138 Mbps *in a 20 MHz channel* consistently without breaking a sweat.”

“We tested the tower and subscribers by offering speeds of 25 Mbps download and 5 Mbps upload,” said Vernor. “The 450m was able to satisfy the customers when the tower was loaded with 126 subscribers – and it was able to deliver the throughput in a 20 MHz channel.”

“Frame utilization is typically the first indicator when the network is being stressed,” said Vernor. “We never saw the PMP 450m struggle. The customers were not aware of the tests we were doing, and we know we were succeeding by what we weren’t hearing: there were no service complaints during peak times.”

“The traditional pain points for a wireless ISP are: 1) The number of subscribers per AP and 2) The number of subscribers per frequency channel.” said Vernor. “The PMP 450m is exactly the product that everyone needs because it leads the pack in delivering on both of these points.”

“The PMP 450m is worth every penny of the investment,” said Vernor. “With the dramatically higher capacity delivered in the same small 20 MHz channel, we have confidence we can deliver the offerings our customers want. We can offer good speeds, quality service, and we have peace of mind.”

Next Steps

THE TRIAL TOWER HAS OPERATED WITHOUT INCIDENT FOR NEARLY A YEAR, AND GVEC IS PLANNING

network-wide expansion. “The PMP 450m is exactly what we need to offer the higher service level plans that our customers are migrating to,” said Vernor. “Based on our testing, we are confident that we can now offer the service levels with high quality connectivity. Our intention is to deploy the PMP 450m on every site in our capital plan, so that we have the higher data rate ready to sell.”

GVEC has long been dedicated to our mission of investing in products and services to meet the needs—and hopefully exceed—the expectations of GVEC members and customers alike. GVEC.net is a prime example. We were the first to bring affordable Internet service to our members in rural areas and have extended our service territory throughout the area.

About Guadalupe Valley Electric Cooperative

Why GVEC chose Cambium Networks

- **High capacity throughput** – meeting bandwidth demand for business and residential customers
- **Frequency re-use** – to provide higher levels of connectivity while using the minimum amount of scarce RF spectrum