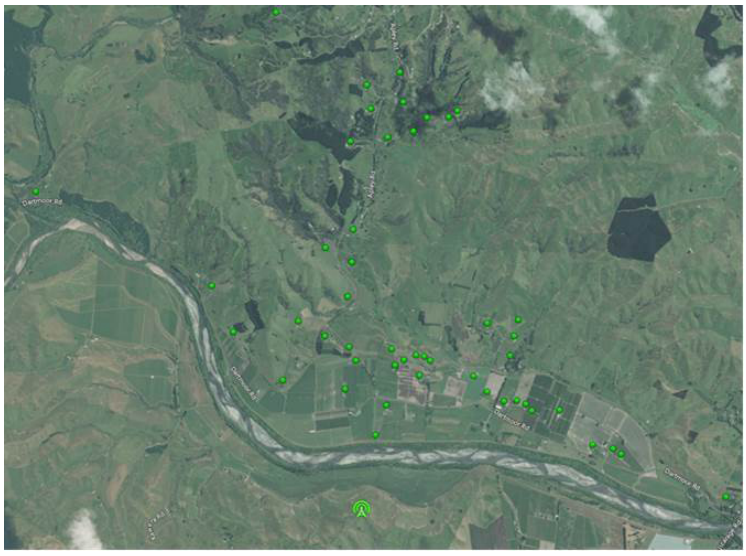
Cambium Networks™

Smooth Transition to Higher Speed

PEOPLE NEED INCREASING BROADBAND SPEED TO stay connected to the world, and people in the remote areas of Hawkes Bay, New Zealand, are no different. The local farming businesses need data connectivity to run their operations and market their products. Broadband connectivity is an essential part of running a modern business, and farming is the backbone of the New Zealand economy, of which Internet access provides a competitive advantage in world markets.

"Synchronization is highly important. Self-interference from co-located radios and co-site interference is my biggest headache, even when shielding is used, so it's important to use a manufacturer such as Cambium with reliable GPS timing in the protocol."

- RAY TAYLOR, CEO, TAYLOR BROADBAND



ePMP AP (bottom center) connects 33 subscribers in New Zealand

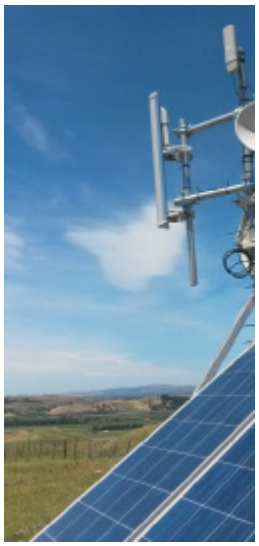
As subscriber growth and demand for bandwidth has increased, customers of Taylor Broadband have exceeded the capacity of their PMP 100 system, which had been providing connectivity for years.

Challenge

"WE NEEDED TO UPGRADE our PMP 100 Canopy system," said Ray Taylor, CEO, Taylor Broadband. "We have many solar-powered sites in remote areas, so we also had to maintain low power consumption while we transitioned to a higher throughput solution."

Taylor Broadband needed a solution that would connect more than 30 active subscribers at ranges from 500 meters to 3 kilometers simultaneously per Access Point (AP). In addition, the AP was constrained to operate at a maximum power load of 16 watts at 12 volts so that the existing solar power facility could be used.

Taylor said, "We chose the ePMP™ solution because we could provide a high-speed throughput with 30 subscribers attached and consume less power than the two Canopy sectors that were previously at the site, while still increasing the total throughput. No other 5 GHz solution we looked at could handle that number of subscribers on a single sector."



Solar-Powered AP location

Solution

"GPS SYNC IS MORE IMPORTANT IN AREAS of wide open spaces where channel re-use is much harder," said Taylor. "This is because you generally don't have much down tilt on sectors so you make the best use of the hills to cover longer distances between sites. This has the effect of causing self-interference with another sector at another site 30 km away. If both of those sectors were transmitting at the same time, there is no self-interference and the front to back ratio of the SM dish eliminates the unwanted signal from the sector at the secondary site. In hilly terrain, you aim sectors downward more and although you may still have potential co-location interference, which GPS sync will solve, unwanted noise between sites is less likely and the terrain can be used as shielding."

ePMP AP Solutions	
Frequency	2.4 GHz, 5 GHz
Throughput	200 Mbps
Synchronization	GPS Synchronization
Quality of Service	Multi-Level Prioritization Scheme
Loading per Access Point	120 Subscribers per AP

ePMP Force 200 SM	
Frequency	2.4 GHz, 5 GHz
Throughput	200 Mbps
Synchronization	GPS Synchronization

Results

THE UPGRADE WAS DONE OVER THREE DAYS. THE new ePMP AP and 10 Subscriber Modules (SM) were installed on the first day. Because the ePMP Force 200 radios are fully compatible with the existing PMP 100 power supplies, customers did not need to be present for inside access to their homes while Taylor Broadband swapped the SM radios on their rooftops. "We were especially impressed with the ease of assembly, mechanical design, and build quality of the Force 200," said Taylor.

ePMP Force 200 connecting a residence

About Taylor Broadband

www.taylorbroadband.co.nz

Taylor Broadband provides broadband access and VoIP services to Hawkes Bay, New Zealand, and the surrounding area.

Customers include

- Rural residential and small business connectivity
- Urban residential and business leased-line replacement

Why Taylor Broadband chose Cambium Networks:

- **Reliable connectivity** - for connections that work right all the time
- **High Speed throughput** - to support file transfer and video
- **Network Capacity -** to provide coverage to communities

On the second and third days, the team swapped over the remaining subscriber radios and then removed the PMP 100 AP sector antennas from the high site. The most populated ePMP AP in the network is connecting 33 simultaneous active subscribers with no problems.

"All customers noticed an improved throughput and higher results with speed tests," said Taylor. "Many customers were happy that we were also able to remove their PMP 100 reflector dishes and only needed to use the basic model SM."

Ray Taylor on the new ePMP Force 200 equipment	• **Less visual eyesore on customers rooftop with smaller SM** • **No need for customers to be home when changing SM** • **Less power consumption at solar-powered high site with higher total throughput**

Taylor shares his advice for network operators starting out. "Standardize on everything across your entire network. As you grow, having things standardized is beneficial for a huge number of reasons, most importantly of which is you carry fewer parts in your truck and can fix problems faster. Cambium's ePMP works great for us, and we will be rolling it out to more sites over the next twelve months."