Puget Sound Energy (PSE) is Washington state's oldest energy utility, providing power and natural gas to nearly 1.4 million homes and businesses. Spanning 6,000+ square miles and providing electricity to over one million customers and gas to a further 790,000, PSE's service territory is home to some of the world's most-recognized brands, including Microsoft, Amazon.com and Starbucks.

The Challenge

PSE were looking to link a new mobile radio site to transfer voice and data over hilly terrain with a path distance of 9 miles (14km). Given the critical nature of the utilities industry and the high expectation of grid reliability from several nationally significant customers, PSE needed to ensure that the linking to this site was secure and offered high availability.

Furthermore, latency and jitter are serious factors for the transfer of PMR voice and data traffic for mission critical applications. As a result, PSE were requiring a solution that could deliver the high performance that they required with the assurance that the system would not fail in a state of emergency.

In addition, the repeater sites would be at busy RF sites which had the potential to be subject to interference due to the large number of transmitters in adjacent or nearby bands. While exploring many options, PSE also encountered the reliability limitations of lower cost solutions and the high installation and maintenance costs associated with some of the high reliability solutions on the market. Although the link path was only 9 miles, the cost to lay a fiber connection was considered too high (buried fiber being more than 10 times the cost of a narrowband link) and ran the risk of vulnerability in extreme scenarios such as earthquakes. Given the challenge in isolating and correcting problems in a buried fiber link, the organization sought a different solution which would offer the required reliability but would also be easy to deploy and cost-efficient.

The Solution

PSE chose a Mimomax 900MHz NDL linking solution to link to an MPT-IP LMR repeater. Selected for the ultra-spectral efficiency, the Mimomax solution can deliver many radio channels with very low latency and jitter (latency typically 8ms in a 25 kHz channel). The link can also support all open PMR network standards including MPT 1327, MPT-IP, P25, DMR, TETRA and QS Simulcast in trunked and conventional configurations.

The 900MHz frequency band was selected because of the availability of spectrum and the fact that using 900MHz MiMO panel antennas provided a high gain of 16dBi with independent horizontal and vertical polarizations. Equipped with a fully enclosed radome, this low-cost antenna was also a good fit for harsh weather conditions.

Specializing in "customized" wireless linking solutions, Mimomax worked closely with PSE to design a solution meeting their unique requirements. The NDL link equipment was delivered preconfigured and tuned to the customer's specifications and was tested under laboratory conditions for a week to ensure performance met the specifications provided by Mimomax. As a result of the successful lab test, the equipment was subsequently deployed into the field without any issues due to the radio's ability for "Plug and Play" with most PMR systems.

The Results

Offering ultra-high spectral efficiency and exceptionally low latency, Mimomax NDL radios have provided PSE with a linking solution capable of supporting multiple radio channels with real-time data transfer and

low error rates. Improving network efficiency, the NDL solution also provides higher data throughput in less RF bandwidth, resulting in return on investment in spectrum and substantial cost savings. In addition, Mimomax radios have the capability of integrating seamlessly with other onsite IP-based equipment such as routers – a flexibility allowing ease of implementation and further reduction in the cost of ownership.

Furthermore, Mimomax NDL radios deployed in the end customer's network are equipped with remote Configuration, Control & Monitoring Software (CCMS). The CCMS allow system operators to access their network "over-the-air" (web-based) without having to visit the site physically, thereby reducing travel time and offering lower associated support costs for PSE in the future.

About Puget Sound Energy (PSE)

Location: Bellevue, Washington

Industry: Electricity & Gas Utility

Services: Serving more than a million customers in a 6,000 square mile service area in the Puget Sound region of Western Washington, PSE is committed to providing safe, sustainably produced low-cost energy.

Source: www.mimomax.com