

Wind Developer Uses Triton to Cut Measurement Costs and Improve Project Financing in Canada's Cold, Icy Climate

Sequoia Energy Inc. adopts the Vaisala remote sensor to speed up development across a large portfolio

Sequoia Energy Inc. has been active in Canada since 2003 and was an early adopter of Vaisala's Triton remote sensing technology for use in its pre-construction wind measurement campaigns. Sequoia needed a measurement solution that would work in the harsh climate of central Canada, where sub-zero temperatures, snow, and ice regularly damage measurement equipment, disrupt data collection, and wreak havoc on measurement campaigns.



The Vaisala Triton Wind Profiler stands up to sub-zero temperatures, snow, and ice.

Challenge

- Collect reliable hub-height measurements in a cost-effective manner in Canada's cold winter climate
- Collect accurate hub-height measurements to reduce wind resource uncertainty and maximize the value of projects for financing
- Invest development resources appropriately and efficiently across a portfolio of projects by using a mobile, rapidly deployable, remote sensing measurement asset

Solution

- Use Triton to help identify sites for further project development - before installing costly met towers
- Use Triton in tandem with a 60 meter met tower to reduce vertical wind shear extrapolation uncertainty
- Use Vaisala's daily monitoring, online data access, and field support services to ensure continuous operation and reliable wind measurement in cold weather

Benefits

- Lower equipment and operations costs for wind measurement campaigns
- Lower risk - campaigns run without interruption despite challenging conditions
- Improved flexibility in assessing and comparing multiple competing wind sites
- Increased confidence and speed throughout the development process
- Reduced uncertainty in long-term wind energy resource estimates
- Convenient installation, maintenance, and service of wind measurement systems

“Vaisala’s Triton provides great value by allowing us to quickly gather measurements to improve our financing terms through lower uncertainty in our long-term energy predictions.”

*Dan Cox
Manager of Business Development
Sequoia Energy*

Sequoia originally purchased two Tritons in 2008 to use for shear validation. “Since wind turbines continue to get taller and taller, we could immediately see the value of the Triton,” said Dan Cox, Manager of Business Development at Sequoia.

By pairing a Triton with a 60 meter met tower, Sequoia was able to lower the uncertainty on vertical shear extrapolation while at the same time reducing costs. “Using the Triton in combination with a shorter met tower gives us better representation of hub-height wind speeds, while avoiding the cost of putting up a hub-height met mast at 100 or 120 meters. The cost of such a met tower is significantly higher than the cost of a Triton,” said Cox. “Lowering our uncertainty around long-term energy predictions certainly improves our chances of securing financing and at favorable terms.”

Standing Up to Canadian Winters

Northern latitudes pose special challenges for wind measurement. Met towers can collapse from ice buildup, mechanical sensors can freeze, and many remote sensing systems not engineered with power consumption in mind need constant maintenance

and refueling. With over a decade in the wind energy industry, Cox has had plenty of experience with these challenges.

“Dealing with frozen anemometers on a fixed tower is not fun; it means a more dangerous working environment and also increases your costs,” says Cox.

How do Tritons perform in cold climates? Cox replies simply: “They work.”

“In terms of the design, Triton is much easier to transport, much easier to redeploy, and has much lower power consumption compared to other remote sensing options,” says Cox.

In addition, Vaisala’s SkyServe package—which provides online access to data, secure data archiving, daily monitoring, technical support, and field service—makes maintenance easy and helps developers such as Sequoia control their budgets.

“Vaisala takes care of the products that it puts out in the field,” said Cox.

“The SkyServe warranty program and field service have been great,” said Cox. “Vaisala’s technicians are always there to help you out and are very professional.”

Accelerating Development, Portfolio-Wide

Sequoia has since added two more Tritons to its fleet to conduct greenfield prospecting campaigns. “We really liked the Triton’s ability to collect measurements quickly with increased mobility and flexibility,” said Cox. “You can only put met towers in certain places determined by consultants, landowners, and of course the project terrain. With more Triton units, we can now use them for early-stage prospecting, which helps in our decision-making around installing a met tower and investing further in a location.”



Triton can be serviced in the field and relocated in less than a day. Here, Vaisala field service engineer Ruben Castillo takes photographs that will be used as part of the Triton’s commissioning report.

The Top Line

The Triton’s reliability and convenience have improved Sequoia’s bottom line and streamlined the company’s wind project development process; but Cox finds even more value in the way Sequoia can use Triton data to improve its project financing.

The excellent correlations between the Triton and tower measurements provide added confidence in Triton’s hub-height measurements, and allows significant reductions in measurement uncertainty. Cox says, “Vaisala’s Triton provides great value by allowing us to quickly gather measurements to improve our financing terms through lower uncertainty in our long-term energy predictions.”

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