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Marshall University
/ Success Story

SECONDWIND by Vaisala

Two Marshall University programs supported by the state of West Virginia, the Center for Environmental, Geotechnical, and Applied Sciences (CEGAS) and the Center for Business and Economic Research (CBER), are breathing new economic life into thousands of acres of former coal mining land. The Triton Sonic Wind Profiler is providing Marshall University with crucial wind data to use in determining whether wind power is viable on these sites.

Research team prospects for wind in abandoned coal mining sites, relying on Triton and SkyServe for economy and flexibility

CUSTOMER PROFILE

Marshall University is a public research university with an enrollment of 13,435 graduate and undergraduate students. The University's Center for Environmental, Geotechnical, and Applied Sciences (CEGAS) and the Center for Business and Economic Research (CBER) are collaborating with the state of West Virginia to explore industrial, agricultural and recreational options for coal brownfields.

Founded:	1837
Headquarters:	Huntington, West Virginia
Employees:	2000
To learn more:	www.marshall.edu

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"When you look at the cost to put up a met tower, maintain it and move it to another location, it doesn't take too long to realize that investing in a Triton up front pays for itself."

George Carico, Environmental Manager, Marshall University

Marshall University uses Triton® for:

- Early stage prospecting

Marshall University uses SkyServe® for:

- Monitoring Triton
- Viewing wind data as it is collected
- Aiding in early qualification of wind sites

West Virginia has tens of thousands of acres of "brownfields," or land left behind by strip mining, spread across its coal-producing regions. Much of West Virginia's brownfield land has been restored through coal tax revenue over the years, but when the coal was gone, so was the economic engine that sustained adjoining communities.

"A lot of the brownfield acreage has been reclaimed to a point, but just by planting grass and small shrubs and new trees. The coal is gone, so the question now is what else can be done to make something positive happen on the property? Forest and pasture land are nice, but a couple of thousand acres with just a few cattle grazing on it might not provide the most benefit to the community. Some of the brownfields are near economic infrastructures, so they could conceivably be used for other energy and economic activities," said George Carico, environmental manager at Marshall Univ.

In 2005, the West Virginia legislature passed a bill establishing regional assistance centers at Marshall University and West Virginia University to find new uses for coal brownfields. Marshall was charged with serving West Virginia's southern 22 counties. The University's Center for Environmental, Geotechnical, and Applied Sciences (CEGAS) and the Center for Business and Economic Research (CBER) are exploring industrial, agricultural and recreational options for brownfields. Wind power is among the options the agencies are studying and the Triton Sonic Wind Profiler is playing a key part in Marshall's strategy for attracting wind farm developers.

The CEGAS and CBER staffs realized that data about wind production at these brownfield sites would be key to attracting wind farm developers to the brownfields. Brownfields aren't typically considered prime wind farm locations, so developers were unlikely to spend money evaluating them without evidence that their investment might pay off. West Virginia lacked the necessary wind data to meet that need, so CEGAS and CBER decided to collect data on brownfield land and use it to identify the most promising sites. The Appalachian Regional Commission and the West Virginia Department of Energy funded Marshall University for a study of wind resources at these brownfield sites.

"We're trying to get major wind developers interested so they'll come in and do their own studies," Carico said. "Developers are already looking at the prime spots like ridge lines, so we're looking to introduce them to new possibilities among the most promising brownfields. Some of the sites will not have significant wind potential, so if we can rule them out before involving the developers it will help us focus on the most attractive sites making the siting evaluation process more efficient and hopefully successful."

Carico and Christy Risch, director of research for the CBER, wanted a wind data collection system that enabled them to evaluate many sites in as short a time as possible, with minimal cost and maintenance demands. They chose Triton because it's portable, reliable, accurate, and doesn't need an outside power source. Triton uses SoDAR (sound detection and ranging) to profile wind conditions up to 200 meters high – across the entire rotor sweep of a wind turbine.

"When you look at the cost to put up a met tower, maintain it and move it to another location, it doesn't take too long to realize that investing in a Triton up front pays for itself," Carico said.

"We also don't have to worry about icing, lightning or any of the other reasons a tower-mounted anemometer could go down," Risch added. "And if you want a tower higher than 60 meters, you're also getting into a lot of complicated permitting issues."

Carico and Risch's team can bring Tritons to brownfield sites on flatbed trucks and have them running in a few hours. Triton's solar panel and low power requirements make it easy to maintain without frequent site visits. SkyServe wind data service also helps make Triton easy to manage by enabling the Marshall team to collect wind data remotely.

"The data is available in 10-minute intervals," Risch said. "Right now, the Triton is sitting on a site two-and-a-half hours away. Going up there to check it could be an all-day affair. Instead, I can sit at my desk, see that the Triton is running and see the numbers it's recording. The data is imported directly into spreadsheets."

The Triton's ability to collect data at heights of up to 200 meters is important to the brownfield project because the typical wind turbine has an 80 meter hub height and an 80 meter rotor diameter. At a lower quality wind site, hub heights and blade lengths would be greater. Developers need data collected at hub height and above to determine how productive wind turbines would be and to help them select the right turbine for the site.

"Triton is being looked on favorably as something people might be able to base their investment decisions on," Risch said. "It's enough to get someone to take a closer look at a site, and that's our goal for the program."

SECONDWIND by Vaisala

Through the combined expertise of Vaisala, a global leader in atmospheric observation, and Second Wind, a global leader in remote sensing technology and data services for the wind energy industry, we offer an integrated suite of wind measurement solutions.

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