

Engineers find new way of utilizing solar farms at night

August 17 2010

(PhysOrg.com) -- New technology from The University of Western Ontario utilizing photovoltaic (PV) solar farms at night will help in connecting more renewable energy sources like wind turbines to Ontario's grid, increasing power transmission limits, and providing a low-cost way of improving grid voltages and system performance.

Wind farms ramp up their production in the nights due to high winds but are unable to connect to the grid due to voltage fluctuations and lack of adequate transmission capacity. Restricted by the current working model, the best way to integrate more wind renewables on the grid is to build new lines, which is very expensive considering the cost is approximately \$2 million per kilometre.

For a fraction of the cost (an estimated \$100,000), this novel nighttime control of PV solar farms, developed by the research group of Rajiv Varma of Western Engineering, would utilize PV solar farms during the night when they are completely idle, to provide much needed voltage control for nearby [wind turbines](#) to send increased [power](#) to the grid.

Two utilities, London Hydro and Bluewater Power, have offered to implement and showcase this PV [solar technology](#) - for the first time in Canada - on two of their 10 kilowatts (kW) PV solar systems for providing voltage control on their networks. If successful, there is a potential for retrofitting several PV systems with this new control for providing benefits to the power systems.

Varma, an electrical engineering professor at Western, is the project co-lead in a recently awarded \$6 million research grant from Ontario Centre of Excellence for this project entitled, Large-Scale Photovoltaic Solar Power Integration in Transmission and Distribution Networks.

“This will not only increase the penetration of more wind into the system but it will also create additional revenue for PV solar farmers that will now see their farms functioning 24 hours a day,” explains Varma. “But most importantly, this technology will also make Ontario’s [power](#) supply greener and cleaner.”

Provided by University of Western Ontario

Citation: Engineers find new way of utilizing solar farms at night (2010, August 17) retrieved 10 April 2024 from <https://phys.org/news/2010-08-solar-farms-night.html>

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