# UNIVERSITY OF ALBERTA – FUTURE ENERGY SYSTEMS

# WIND

**$2.9M** in research funding to 2023

**6** active wind projects

**15** Principal Investigators and Co-Investigators

**31** students & post-doctoral fellows

## ONE OF OUR MOST FAMILIAR ENERGY SOURCES

Wind has powered human societies for centuries, milling grain, pumping water, and driving ships around the world. In recent years, maturing technologies have enabled the same resource to generate electricity, and contribute significantly to the energy needs of numerous countries. However, the challenges of harnessing wind remain: it is an ever-changing force, and its cycles often do not align with our demands. Effectively integrating wind into our grids and markets requires technological and economic adaptation to accommodate variations in supply. Understanding the challenges of harnessing wind power in the Canadian north will be a specific priority.

## CURRENT RESEARCH PROJECTS

Advanced reliability enhancement and cost reduction techniques for wind energy generation
Principal Investigator: Ming Zuo

Market Design for Increased Wind Generation
Principal Investigator: Andrew Eckert

Micro-scale energy harvesting technology in remote communities of Alberta
Principal Investigator: Arman Hemmati

Optimization of Small Wind Turbines for Gusty Wind Resources of Northern Canada
Principal Investigator: Sina Ghaemi

Remote Micro-Grids
Principal Investigator: Brian Fleck

Wind Farm Operation and Grid Integration
Principal Investigator: Yunwei (Ryan) Li

## RECENT PUBLICATIONS

Investigation of wind-energy-based source dynamics and stability options in DC grids
Lead Author: Ahmed Mohamad

Isomorphic Relationships between Voltage-Source and Current-Source Converters
Lead Author: Yuzhuo Li

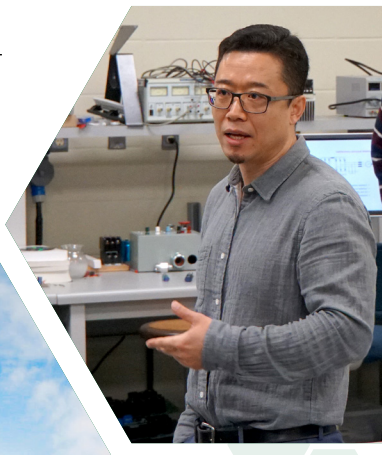
A Wind Farm Control Strategy Considering Reliability and Energy Yield
Lead Author: Millawithanachchige Nayanasiri

Imperfect Competition in Electricity Markets with Renewable Generation: The Role of Renewable Compensation Policies
Lead Author: David P. Brown

## RECENT NEWS STORIES

- Students prepare for the complexity of energy transition
- Controlling the wind (turbines)

**For the latest information:**
**futureenergysystems.ca/wind**



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