Vahan Gevorgian

Position/Department/Division/Institution/Organization

Chief Engineer for Grid Integration

National Renewable Energy Laboratory (NREL)

Country

Colorado, United States

Career history

1994–Present Current position: Chief Engineer for Gird Integration, NREL, Golden, CO. Areas of research include:

- Reliability aspects of grid integration of variable renewable generation and energy storage: essential reliability services by renewables, PV and wind power plant, and energy storage dynamic model development, fault ride through performance, wide area monitoring, protection and control, voltage and dynamic stability of wind and solar power plants, frequency and inertial response, standards and guides development. In collaboration with utilities, regional reliability organization and ISOs, and international organizations (IEC and IEEE)
- PV Inverter/plant, wind power plant, energy storage controls development, testing and validation
- Electrical and control aspects of offshore wind power: WTG electrical topologies, submarine power transmission, high-voltage direct current transmission (HVDC), advance collector system design for offshore WPP
- Advanced Data Acquisition Systems: development of high speed distributed synchronized data acquisition systems for wind turbine testing

1986–1993 Research engineer, State Engineering University of Armenia, areas of research included:

- Power systems, power electronics, and electric machines
- Wind turbine controls development and testing

Awards/Publications

Recent awards

- 2016 UVIG Technical Achievements Award for pioneering work in the demonstration of ancillary services from PV power plants
- 2017 NARUC Innovation Award for a groundbreaking work demonstrating that large utility-scale solar photovoltaic resources can be relied upon to provide essential reliability services to the grid.

Recent Selected Publications

- Conference paper: "Demonstration of Active Power Controls by Utility-Scale PV Power Plant in an Island Grid", V. Gevorgian, B. O'Neill (NREL, USA) 6th International Workshop on Integration of Solar Power, Vienna, Austria, November 2016, (selected among two best papers at the workshop)
- Conference paper: "Controllable Grid interface for testing Ancillary Service Controls and Fault performance of Utility-Scale Wind Power generation", V. Gevorgian, P. Koralewicz, R. Wallen, E. Muljadi, 15th International Workshop on Large-Scale Integration of Wind power, Vienna, Austria, November, 2016
- NREL report: "Demonstration of Essential Reliability Services by a 300 MW Solar PV Power Plant", V. Gevorgian, C. Loutan (CAISO), M. Morjaria (First Solar), et al, March 2017, https://www.nrel.gov/docs/fy17osti/67799.pdf
- Conference paper: "Supercapacitor Energy Storage to Provide Ancillary Services", V. Gevorgian, E. Muljadi, 2017 IEEE Energy Conversion Congress, October 2017, Cincinnati, OH
- Conference paper: "Wind Generation Participation in Power System Frequency Response", V. Gevorgian, Y. Zhang (NREL, USA), 15th International Workshop on Large-Scale Integration of Wind power, Vienna, Austria, November 2016, (selected among three best papers at the workshop)
- NREL report: "The PV Frequency-Watt Function: Simulation and testing for the Hawaiian Electric Companies", A. Hoke, A. Nelson, J. Tan, V. Gevorgian, July 2017, https://www.nrel.gov/docs/fy17osti/68884.pdf
- IEEE PES Magazine paper: "Grid-Level Application of Electrical Energy Storage: Example use cases in the U.S. and China", Y. Zhang, V. Gevorgian, C. Wang, et.al, August 2017
- IEEE PES Magazine paper: "Achieving a 100% Renewable grid: Operating Electric Power Systems with Extremely High Levels of Variable Renewable Energy", B. Kroposki, B. Johnson, Y, Zhang, V. Gevorgian, et al, April 2017

- CAISO Report: “Using Renewables to Operate a Low-Carbon Grid”, C. Loutan, V. Gevorgian, December 2016
- Conference paper: “Multi-MW PHIL Interface for testing Ancillary Grid Services by Converter-Coupled Generation”, P. Koralewicz, V. Gevorgian, 18th IEEE Workshop on Control and Modeling for Power Electronics, (COMPEL 2017), Stanford, CA, July, 2017

Areas of expertise

Grid Integration of Variable Renewable Generation, Energy Storage, Grid Reliability