Title: Control and Operation Considerations of Three-Phase Autonomous Microgrids

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Power outages due to extreme weather conditions, cyber-attack, and occasional faults sometimes force sections of the electric power grid to operate in isolation to form autonomous microgrid. Advances in power electronics have enabled advanced control and integration of distributed generators to microgrids and distribution systems. The control and operation of the three-phase autonomous microgrid present variants of the challenges required for the operation of the main power grid. This project explores the state of art control and operation strategies of microgrids from literature, and identifies current challenges and proffers potential solutions. Computer simulation models of power electronics interfaced distributed generators are developed and used for simulation studies to verify solutions to different control and operation challenges of autonomous microgrids.