



Special Topic Workshop: Grid-Forming IBRs

Tutorial Agenda

Tuesday, June 7 / 9:00 a.m. – 12:00 p.m.

Featured Speakers: Deepak Ramasubramanian & Wenzong Wang, EPRI

- Introduction
 - Trends towards an inverter-dominated system
 - Evolving system needs expected from inverter-based resources
 - Challenges for present-day inverters to meet the future needs
- Definition of grid-forming inverters
 - Comparing control-based and performance-based definitions
 - Definition from system operator's perspective
- Survey of a few grid-forming control methods
 - Introduction on the grid-forming control methods
 - Illustration of the operation principle
 - Basics of grid forming operation from a circuit theory perspective
 - Comparison of grid forming behavior with synchronous machine behavior
- Use cases of grid-forming inverter in distribution and transmission grid
 - Use cases in utility-scale microgrid
 - Use cases in weak distribution grid
 - Use cases in weak transmission grid with higher penetration of distributed energy resources
- Break (30 min)
- Performance requirements of grid-forming inverter in utility-scale microgrid
 - Key considerations in designing performance requirements
 - Performance requirements
 - Demonstration results
- Design considerations for an inverter-based plant to meet the grid-forming requirements
 - Different ways to meet the grid-forming requirements
 - Considerations on plant ratings
 - Considerations on source behind the inverter
- Planning a transmission network with grid forming devices
 - Different ways to set up planning metrics
 - Modeling of grid forming resources across simulation domains
- Summary
- Q&A