



# RICHMOND CHAPTER OF IEEE PES

## PES OFFICERS

Alan Ott – (804)257-4823

Brian King – (804) 320-8005

Dev Walia – (804) 928-8095

Hung-Ming Chou – (804) 418-0598

Tin Nguyen – (804) 257-4999

## *Battery Technology and Application in Power Grids*

**Date:** THURSDAY, OCTOBER 22ND, 2020

**Place:** WEB - ON-LINE TECHNICAL SEMINAR

### Topic:

How to store energy economically has been a challenging problem for the power industry. With an increasing penetration of renewable energy, the need for energy storage becomes more essential, more realistic, and economical. There have been many battery energy storage applications around the US and the world. In this seminar, the industry experts are invited to present various topics on battery energy storage, such as energy storage technologies, use cases, and the application in distributed energy resources interconnection. This seminar will help attendees to get a better understanding of battery energy storage technology itself and its application in power grids.

### Seminar Outline:

8:30 am to 8:40 am	Opening Remarks
8:40 am to 9:30 am	Benefits and challenges of distributed energy resources and battery application
9:30 am to 10:30 am	Battery energy technology overview and application
10:30 am to 10:40 am	Chapter Announcements

### Instructors:

- Dr. Babak Enayati, National Grid, USA
- James H Kennedy MEPPI, USA

### Seminar Cost: Free

IEEE membership is not required to attend this seminar.

**Registration:** Formal Registration is not required to attend this meeting. **We do ask that you send us back a courtesy RSVP to let us know if you plan to attend at one of the email addresses below.** This allows us to inform speakers ahead of time what sort of participation they may expect. It also narrows our list of who we need to inform of any last-minute issues or changes. As we all know, technology can be fickle when we need it most!

**PDH Certificate:** For those interested, please contact one of the following for an electronic PDH certificate

[PESRichmond@ieee.org](mailto:PESRichmond@ieee.org)  
[alan.ott@dominionenergy.com](mailto:alan.ott@dominionenergy.com)

**PDHs:** 3 professional development hours (PDHs) may be issued to those completing this course.

### Webex Information:

Meeting number (access code): 171 549 2876

Meeting password: RpYpqd54Ug7

[Join meeting](#)

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#### **Join by phone**

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### Instructor Bio and abstract:

**Babak Enayati** received his PhD in Electrical Engineering from Clarkson University, USA in 2009. He joined National Grid, USA in 2009 and is currently the Manager of the Technology Deployment team, which is responsible for the implementation of the new technologies to meet National Grid's Intelligent Transmission Network objectives. Since Babak joined National Grid, he has held engineering positions in the Protection Engineering, Retail Connections Engineering, and New Energy Solutions departments. He joined Institute of Electrical and Electronics Engineers (IEEE) in 2006 and currently is a Senior IEEE Member. Babak currently serves as the IEEE Power and Energy Society (PES) Governing Board Member-at-Large. Babak serves as the Vice Chair of the IEEE Standards Coordinating Committee 21 (SCC21), IEEE 1547-Standard for Interconnecting Distributed Energy Resources with Electric Power Systems, and IEEE P2800- Standard for Interconnection and Interoperability of Inverter-Based Resources Interconnecting with Associated Transmission Electric Power Systems. Babak is a registered Professional Engineer (PE) in the state of Massachusetts.

#### **Abstract:** Benefits and challenges of distributed energy resources and battery application

Many countries have implemented renewables portfolio standards (RPSs) to accelerate the pace of deployment of renewables generation, which are distributed across the distribution power system. As the penetration of renewable power generation increases, electricity grids are beginning to experience challenges, which are often caused by intermittent nature of some renewable generation types, sudden changes of the output power due to grid disturbances, low short circuit duty of the inverter based generators, and impact on the transmission and distribution system protection. Due to the increasing amount of Distributed Energy Resources (DERs) interconnections with the Electric Power System, the IEEE 1547 standard went through a major revision to address some of the technical challenges associated with high penetration of DERs i.e. grid support functionalities, etc. This session will provide the participants with the opportunity to learn about the benefits and challenges of the renewable energy resources interconnections as well as major changes to the IEEE 1547 i. e. voltage regulation, response to abnormal system conditions (including voltage and frequency ride through), power quality, islanding, interoperability, etc. The participants will also learn about the utility concerns/solutions to adopt the revised IEEE 1547 standard. National Grid's experience with smart inverters i. e. how to set power factor and Volt/VAR based on the location of the solar facility will also be presented at this webinar.

**James H Kenney** joined Mitsubishi Electric Power Products, Inc.'s Substation Division in March 2019. His primary responsibility is to design and plan for engineering, procurement, construction, monitoring and maintenance of utility scale battery energy storage systems. Mr. Kennedy has led technical and commercial negotiations to deliver turn-key storage system to utilities and power plant project developers in North America. He is a member of IEEE PES and has participated in EPRI's Energy Storage Integration Council and the Energy Storage Association.

**Abstract:** Battery energy technology overview and application

With a broad range of applications, energy storage deployment has grown significantly in the past years both at the transmission and distribution level. This presentation will focus on utility scale energy storage technologies, use cases, system safety, battery performance, installation techniques, and system integration.