

GRIDED

The Center for Grid Engineering Education

IEEE 762

Course Description

This course covers the principles of IEEE Standard 762, "IEEE Standard Definitions for Use in Reporting Electric Generating Unit Reliability, Availability and Productivity" (2006 version, reaffirmed 2011). It also explores how plant performance standards need to be adopted for variable wind and solar. The standard provides a methodology for the interpretation of electric generating unit performance data from various systems and it facilitates comparisons among different systems. It also standardizes terminology and indexes for reporting electric generating unit reliability, availability, and productivity performance measures. This standard is intended to aid the electric power industry in reporting and evaluating electric generating unit reliability, availability, and productivity while recognizing the power industry's needs, including marketplace competition. The course includes unit states, time destinations, energy states, performance indices, calculations of indices, and how the standard can be extended from conventional power plants to non-dispatchable solar and wind powered generation. Sample spreadsheets will be provided in the course; and, a copy of the standard itself will be provided to those who do not have one.

Who Should Attend

Individuals that are responsible for reporting power plant performance or for market participation of company's generating assets should take this course. Participants should have a level of education and training at least comparable to an Associate's degree in Engineering Technology. A course in probability theory will be helpful, but is not essential.

Registration Information

PDH Available: 12 hours

Registration Fee:

- \$1,200 per person
 - 20% discount for organizations with three or more attendees
 - 25% discount for government employees (non-utility)
 - 25% discount for university professors*
 - 75% discount for graduate students*
- *University IDs required to qualify for professor or graduate student discounts.

Students need to bring: laptops or tablets to access online resources and to follow class notes. Wi-Fi access is provided. Lecture slides will be provided electronically in PDF format.

For More Information

Amy Feser, afeser@epri.com, (865) 218-5909

Course Instructors

Agustín A. Irizarry-Rivera, PhD

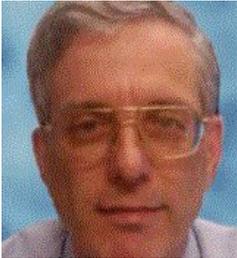
Alex Schneider

Tom Key, tkey@epri.com, (865) 218-8082

Meet the Instructors



Agustín A. Irizarry-Rivera, PhD, PE obtained his Bachelors, Magna Cum Laude, at Universidad de Puerto Rico Mayagüez (UPRM) (1988), Masters at University of Michigan, Ann Arbor (1990) and Ph.D. at Iowa State University, Ames (1996) all in electrical engineering. Since 1997 he has been a Professor at the Electrical and Computer Engineering (ECE) Department UPRM where he teaches graduate and undergraduate courses such as: Fundamentals of Electric Power Systems, Power System Analysis, Advanced Energy Conversion, Power Systems Dynamics and Control and Transmission and Distribution Systems Design.



Alex Schneider, Principal Advisor, Transmission, has extensive experience in planning, analysis and simulation of EHV power systems and impact studies of nuclear, fossil steam, combustion turbine and wind power plants, and studies coordinated by Regional Reliability Councils. He has experience in NERC and IEEE groups establishing standards and collecting the data needed to support power system studies. He has forty-six years of experience in the electric power industry, serving in roles as Principal Power Systems Engineer for TRC Engineering, Senior Engineer at Reliability First, Inc., Senior Engineer at Mid-America Interconnected Network, and Staff Engineer at Commonwealth Edison



Tom Key is a Senior Technical Executive at EPRI. He has over 30 years' experience in technical direction, planning and management of energy related R&D in the US Navy, at Sandia National Laboratory in Albuquerque, and at EPRI. He has specific expertise in electric power systems, energy storage, renewable technologies, power quality, and related power electronics and system integration. He is a Fellow of the IEEE and a nationally recognized leader in power system compatibility research, integration of distributed and renewable energy resources, and application energy storage and power electronic technologies. He is currently leading EPRI activities in the area of integration of renewable energy into the electric grid

Course Outline

Day 1

- **Overview**
Electric Power Situation and Challenges in Puerto Rico Power System Operations Overview and Characteristics of Wind and Solar
- **Overview**
Unit States, Time Designations and Unit States
- **Exercise**
Capacity Terms, Energy Terms, Performance Indexes of an Individual Unit
- **Exercise**
Unweighted (Time-Based) Calculations for Group Performance
- **Exercise**
Capacity-weighted Calculations for Group Performance Indexes

Day 2

- **Review of Day 1**
 - Specific Situations in Puerto Rico with Renewable Generation
 - Panel Discussion with Presenters
 - Future Directions for Extending Performance Standards to Renewable Generation

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Electric Power Research Institute

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