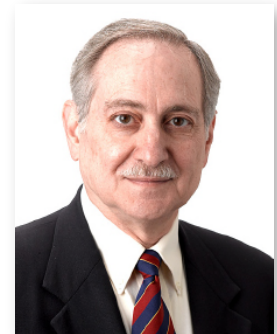


Microgrid Projects at Naval Base Ventura County

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With Dr. Robert B. Schainker

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Abstract

This lecture presents a pictorial summary of two microgrid projects underway at Naval Base Ventura County (NBVC) in Southern California, one funded by the DoD-Environmental Security Technology Certification Program (ESTCP) and one funded by the California Energy Commission (CEC). The DoD-ESTCP project is titled "Transportable Microgrid with Energy Storage" (TMES), and the one funded by the CEC is titled "Adaptive Microgrid." The first microgrid will be tested at NBVC's new Engineering and Expeditionary Warfare Center (EXWC)'s Microgrid Test Facility (MTF); and, the second microgrid will also be tested at NBVC-MTF but will also be deployed at the NAVSEA database server farm building PH1388, which is within the boundaries of NBVC. Each microgrid will include controller, energy storage, photovoltaic solar, protection relays, synchronous condenser, circuit breaker, and diesel genset components, to enable each microgrid to respond to local public electric utility outages (i.e., from Southern California Edison) by successfully islanding itself to provide reliable power to critical loads. To enlarge the footprint of the number of military sites where this type of microgrid can be successfully deployed, each microgrid is designed to operate under a wide range of in-rush currents that would likely cause other microgrids to fail during microgrid islanding and resynchronization events. This lecture concludes with estimates for microgrid performance metrics that include savings-to-investment ratio (SIR), payback period (PP), and estimated CO2 emission reductions during operation of this type of microgrid when in grid connected and islanding modes.

Biography

Dr. Robert Schainker is a Senior Technical Executive at the Electric Power Research Institute (EPRI). His activities encompass microgrids, energy storage, generation and transmission technologies with special focus on integrating microgrids into grids, battery energy storage, strategic planning, electric grid dynamic stability, transmission substations, high voltage power flow controllers, transformers, and power quality. He has authored over 100 papers and has given expert testimony to the U.S. Congress, the U.S. Federal Energy Regulatory Commission and the California Public Utility Commission on strategic planning and a wide variety of electric utility technologies to improve the efficiency and "smartness" of the U.S. grid. He holds three patents and he has written chapters in two encyclopedias on electric grid and energy storage technologies. Dr. Schainker holds a BS degree in mechanical engineering, an MS degree in electrical engineering, and a PhD in applied mathematics.

