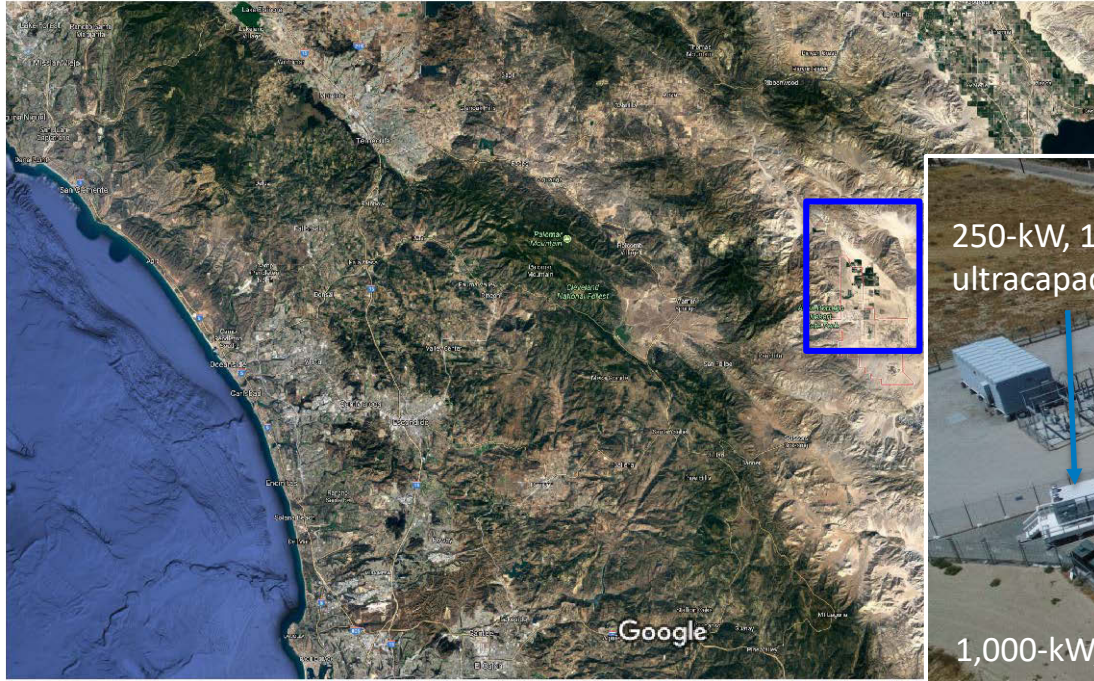


Site-Specific Evaluation of Microgrid Controller Using Controller- and Power-Hardware-in-the-Loop

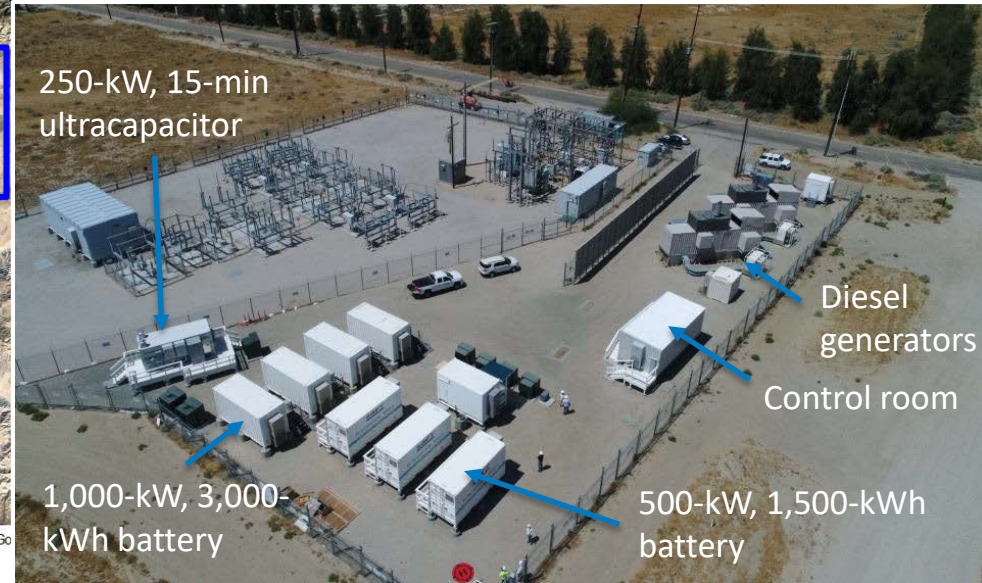
Annabelle Pratt, Principal Researcher, NREL
45th IECON2019
October 14-17, 2019
Lisbon, Portugal

Borrego Springs Utility-Owned Microgrid

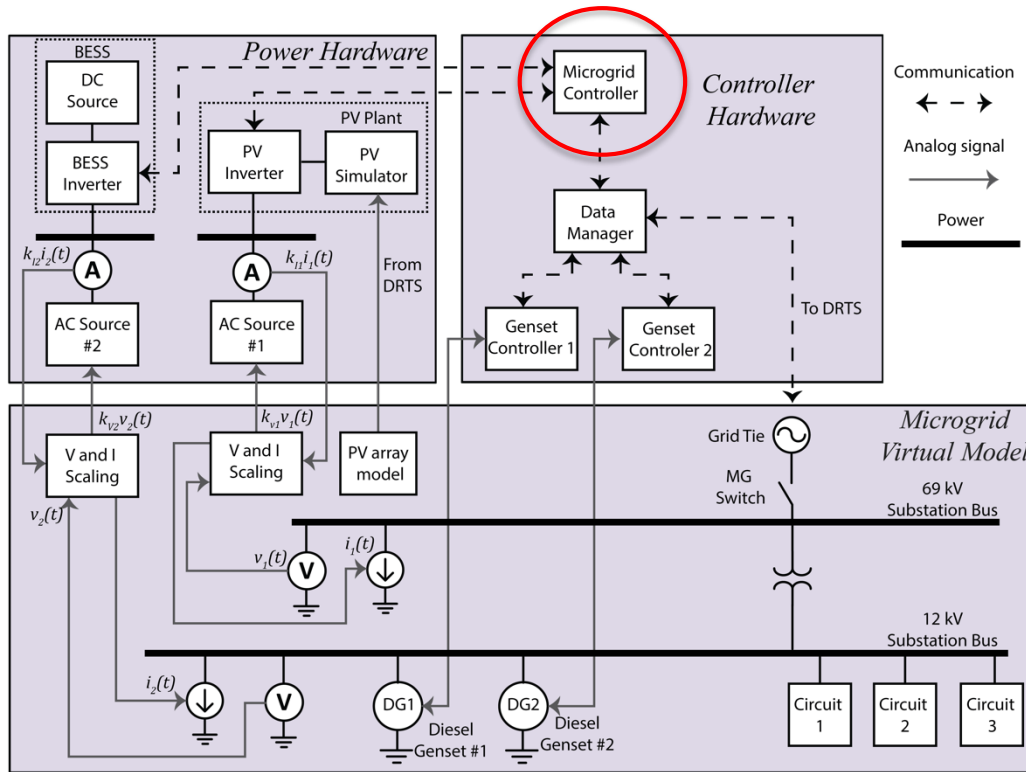
Google Maps Borrego Springs



Imagery ©2017 Landsat / Copernicus, Data SIO, NOAA, U.S. Navy, NGA, GEBCO, Data USGS, Data LDEO-Columbia, NSF, NOAA, Map data ©2017 Google



1 MW-Scale HIL Evaluation Platform at NREL



Summary

- A hardware-in-the-loop (HIL) test bed to evaluate the performance of microgrid controllers at the Energy Systems Integration Facility at the National Renewable Energy Laboratory (NREL) prior to field deployment
 - Use site-specific models that determine the microgrid performance.
 - Use either the same or representative hardware as that deployed in the field.
 - Use the same communications protocols as those used in the field.
- An overall approach to the design of an HIL setup to perform site-specific evaluations of microgrid controller performance with references to previously published works.
- A subset of the test cases evaluated using the test bed and results for these test cases
- The HIL setup could be used by a utility to run scenarios that can provide useful insight prior to field deployment.

Thank You

www.nrel.gov

annabelle.pratt@nrel.gov

NREL/PR-5D00-75024

This work was authored in part by the National Renewable Energy Laboratory, operated by Alliance for Sustainable Energy, LLC, for the U.S. Department of Energy (DOE) under Contract No. DE-AC36-08GO28308. Funding provided by California Energy Commission. The views expressed in the article do not necessarily represent the views of the DOE or the U.S. Government. The U.S. Government retains and the publisher, by accepting the article for publication, acknowledges that the U.S. Government retains a nonexclusive, paid-up, irrevocable, worldwide license to publish or reproduce the published form of this work, or allow others to do so, for U.S. Government purposes.

