NWESS
Northwest Energy Systems Symposium

"Reinventing & Transforming the Energy System"
Alder Commons Hall Auditorium
at the University of Washington
April 4-5, 2018

Speakers: Dr. Gonçalo Cardoso, Principal Scientific Engineering Associate and Dr. Miguel Heleno, Senior Scientific Engineering Associate, Lawrence Berkeley National Laboratory

Title: Distributed Energy Resources-Customer Adaptation Model (DER-CAM) and Supervisory Microgrid Controller

Abstract: This talk will provide an overview of core components and features of the Distributed Energy Resources-Customer Adaptation Model (DER-CAM) and one of its supported applications, Supervisory Microgrid Controller. The Distributed Energy Resources Customer Adoption Model (DER-CAM) is an economic and environmental model of customer DER adoption and used to address the problem of optimally investing and scheduling DERs under multiple microgrid settings. This model has been in development at Berkeley Lab since 2000. The objective of the model is to find the optimal combination of technology adoption and operation to supply all energy services required by the site under consideration, while optimizing the energy flows to minimize costs and emissions.

The *Supervisory Microgrid Controller* application developed by Lawrence Berkeley National Laboratory is an advanced software solution designed to meet the IEEE 2030.7 standard. It is implemented as two-stage controller, combining day ahead model predictive capabilities with minute based optimization, enhanced by powerful forecasting algorithms that leverage diverse geographically resolved data sources including sky imaging for PV forecast. This talk will benefit those working on DER Integration and Operations, Integrated Resource Planning and those dealing with customer behind the meter initiatives.

Bios: Dr. Gonçalo Cardoso is currently a Principal Scientific Engineering Associate at Lawrence Berkeley National Laboratory, where he leads the development of DER-CAM. He received a M.Sc. in Civil Engineering from Instituto Superior Técnico, Portugal, and later a Ph.D. in Sustainable Energy Systems from the same institution within the MIT-Portugal Program. His research focuses on DER and microgrid modeling and optimization, having contributed to DER-CAM since 2009.

Dr. Miguel Heleno is a Senior Scientific Engineering Associate at Lawrence Berkeley National Laboratory, who received a PhD degree from the University of Porto under the MIT Portugal Program. He worked at the Centre for Power and Energy Systems at INESC TEC, participating in several European projects in the areas of power flow studies, reliability analysis, smart metering and demand response. His current work is focused on optimization methods applied to planning, operation and control of microgrids.