



Consortium for Electric Reliability Technology Solutions
Berkeley 2005 Symposium on Microgrids
June 17, 2005
UC Berkeley Faculty Club, Berkeley CA



Participant Contact Information and Research Activities

Name	<i>Tim Green</i>
Affiliation	<i>Imperial College London</i>
Contact Information	Email: t.green@imperial.ac.uk Phone: +44 20 7594 6171 Address: E&E Eng, South Kensington, London SW7 2AZ, United Kingdom
What is your working definition of a microgrid? How is it different from the following working definition? A microgrid is an integrated power delivery system consisting of interconnected loads and DER which, as an integrated system, can operate in parallel with the grid or in an intentional island mode. The integrated DER are capable of providing sufficient and continuous energy to a significant portion of the internal demand, and the microgrid possesses independent controls and can island and reconnect with minimal service disruption. <i>The definition given aligns very well with our thinking and does not exclude any of the things we would include.</i>	
Briefly describe your research activities on microgrids. <i>Our main activity focuses on the control opportunities provided by inverter interfaced DER. We are working on stability analysis of inverters operated on droop control principles as a function of those droop settings and of network parameters. We also examine appropriate control and communication schemes to support ancillary objects such as power quality assurance. Both of these topics are being examined in both simulation and experiment. We have some initial work on fault identification and management in inverter dominated networks. We are also collaborating with others at Imperial College London on the economic and environmental assessment of micro-grids and using fuel-cell based micro-grids as a working example.</i>	

Please note which of the following technical issues your research addresses (if any):

Intentional islanding and resynchronization	Yes
Protection within the microgrid	Yes
Voltage control within the microgrid	Yes
Frequency control within the microgrid during islanded operation	Yes
Fast load sharing among microsources (for load changes faster than the ramping rates of the prime movers)	No
Heat load matching and load prioritization	No
Economic dispatch of assets	Yes
Meeting environmental constraints	Yes
Other	<i>Waveform quality control and stability</i>