



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>Hirohisa Aki</i>
Affiliation	<i>National Institute of Advanced Industrial Science and Technology (AIST)</i>
Contact Information	<i>Email: h-aki@aist.go.jp Phone: +81-29-861-4194 Address: 35110 Central 2, 1-1-1 Umezono, Tsukuba, Ibaraki 305-8568 JAPAN</i>
<p>What is your working definition of a microgrid? How is it different from the following working definition</p> <p>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.</p> <p><i>A microgrid provides a significant portion of the internal demand with sharing the internal demand appropriately with external energy networks to minimize their environmental impact and costs, and maintain energy reliability.</i></p>	
<p>Briefly describe your research activities on microgrids.</p> <p><i>I am working for local energy networks of electricity, heat, and hydrogen. Fuel cells are considered as primal DER. Photovoltaic generations are also assumed to be involved as main renewable energy resource. The current work is focused on small residential areas, which involves 5-10 homes. They will be expanded to larger networks by merging, connecting each other. The DER are assumed to be operated on grid mode.</i></p>	
<p>Please note which of the following technical issues your research addresses (if any):</p>	

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