



Montréal 2006 Symposium on Microgrids

LE GRAND LODGE MONT-TREMBLANT

June 23, 2006, Québec, Canada

The steering and local organizing committees for the *Montréal 2006 Symposium on Microgrids* is looking forward to another successful event. The symposium follows the previous symposium held in Berkeley Laboratory in June 2005 to encourage the exchange of information on research, development and demonstrations projects.

The goal this year is to focus on applied Microgrid research and results from early demonstrations, as well as to identify key technical and policy issues that must be addressed by future research. We have invited speakers from around the world to present their work and provide summaries of the state of research from Japan, Europe, the United States and Canada. This will encourage discussion on current knowledge, research priorities and gaps.

The symposium will favour an effective exchange and international collaborations with experts to address multi-disciplinary issues and foster discussion between research, demonstration, results, lessons learned to date and market/economic implementation issues.

Chris Marnay
Symposium Chair

Lisa Dignard-Bailey
Local committee Chair

Sponsored by:

Lawrence Berkeley National Laboratory, (LBNL)
California Energy Commission (CEC) and
CANMET Energy Technology Centre-Varenes,
Natural Resources Canada.



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Symposium Agenda

Date	Time	Event	Room
Thursday June 22	13:00 – 18:00	Technical Tour	
Thursday June 22	19:00 – 19:30	Steering Committee Meeting	Chez Borivage
Thursday June 22	19:30	Dinner	Chez Borivage
Friday June 23	8:00 – 17:45	Microgrid Symposium (incl. Breakfast and Lunch)	Grand Lodge 1-2-3
Friday June 23	18:00 – 19:00	Program Manager Meeting ————— Short Tour of Mont-Tremblant	Grand Lodge 4
Friday June 23	19:30	Banquet Dinner (Hosted)	Robert Hanley

Steering Committee

- Hiroshi Asano (U. of Tokyo, Japan),
- Lisa Dignard-Bailey (NRCan, Canada),
- Johan Driesen (K.U. Leuven, E.U.),
- Nikos Hatziagyriou (National Technology University of Athens, E.U.),
- Reza Iravani (U. of Toronto, Canada),
- Toshifumi Ise (Osaka U., Japan)
- Chris Marnay (Berkeley Lab, U.S.),
- Mark Rawson (California Energy Commission, U.S.),
- Kiichiro Tsuji (Osaka U., Japan),
- Giri Venkataramanan (U. of Wisconsin-Madison, U.S.).

Local Organization Committee

- Chad Abbey (NRCan, Canada),
- Sylvie Bertrand (NRCan, Canada),
- Isabelle Bouchard (NRCan, Canada),
- Lisa Dignard-Bailey (NRCan, Canada),
- Reza Iravani (U of Toronto, Canada)
- Geza Joos (McGill University, Montreal, Canada),
- Farid Katiraei (NRCan, Canada),
- Georges Simard (Hydro Quebec, Canada),
- Dave Turcotte (NRCan, Canada).

Technical Tour

The technical tour planned on the Thursday before the Symposium will depart from downtown Montreal and will bring participants to the Grand Lodge in Mont-Tremblant, Québec. The technical visit includes the following:

- **Hydro Québec Distribution Power System Test Line:** This test line was built by Hydro-Québec Distribution to test equipment, control cabinets, and software for advanced distribution systems. The development plan for the test line will incorporate distribution energy resources testing for integrated electricity networks and Microgrids studies.
- **IREQ Power System Simulation Laboratory:** The Power System Simulation Laboratory of Hydro-Québec Research Institute (IREQ) has over 30 years of experience in power system simulation. The Laboratory has been developing leading-edge simulation technologies that are among the most advanced in the world for studying transmission and distribution systems and for off-line and real-time power system studies, testing and evaluation of equipment performance.
- **Lachute Independent Power Producer (IPP) and Distribution Sub-station:** The Lachute generation station includes a hydraulic generating station installed on the Rivière du Nord, north west of Montreal. The original 4.7 MW generating station was built in 1926 and consists of a set of two synchronous machines of 1.7 MW each, and a 1.35 MW generator supplying a textile factory. In 1992, the installation was connected to the 25 kV distribution network as part of a Québec's Independent Power Producer program. In 1994, an additional 1.0 MW asynchronous machine (induction generator) was added. The Lachute generation station is connected to one of the twelve feeders of a 25kV/120kV substation which is located nearby the generating station. Since the connecting feeder is equipped with automated reclosing, the protection has been modified to avoid a non synchronous reclosing on the generating station that could result in major mechanical breakdown of the machines.

Tour Schedule

Time	Location	Description
13:00	Downtown Montreal	Shuttle bus from “Palais des Congrès” (IEEE 2006 PES General meeting location)
14:00-15:00	Hydro Quebec MV Test Line and IREQ Power System Simulation Laboratory	The medium voltage test line and installed equipment will be described. The visit of the simulation lab will include presentations of various off-line and real-time simulation tools, illustrated with their use in recent studies, including wind turbine generator and wind farm modeling and integration studies.
16:15 - 17:00	Lachute IPP and sub-station	Visit of the generation station and sub-station exterior. This will include a briefing by George Simard on Hydro Quebec’s distribution automation program and activities.
18:00	Le Grand Lodge - MONT-TREMBLANT	Microgrid Symposium location for Thursday dinner and Friday Symposium meeting

Symposium location

Mont Tremblant Hotel Resort and Conference Center - Le Grand Lodge

Located on the shores of Lake Ouimet and only 5 minutes from Tremblant ski resort, Le Grand Lodge Mont-Tremblant is an oasis of pleasure for the senses.

2396 rue Labelle, Mont-Tremblant QC, Canada J8E 1T8

Reservations (800) 567-6763, Office: (819) 425-2734, Fax: (819) 425-9725

Website: <http://www.legrandlodge.com/>

Driving direction

- **From Montreal - 75 miles / 120 km, 75 minutes**
Take Highway 15 North toward Sainte-Agathe. It will become the 117 North. Stay on 117 North all the way. Past Ville de Mont-Tremblant (old St-Jovite). Take exit # 119, turn right onto Montée Ryan and continue for about 5 km. Just before the Tourist office, turn right onto rue Labelle (327). The Grand Lodge Mont-Tremblant is about 300 meters on your left.
- **From Montreal Trudeau Int'l Airport (YUL) - 75 miles / 120 km, 75 minutes**
From the airport follow Cote de Liesse (520 East) and follow indications for Autoroute 13 North. On Autoroute 13 take exit 22 onto Autoroute 640 East and then take exit 21 onto Autoroute 15 North. Take Highway 15 North to Sainte-Agathe. It will become the 117 North. Stay on 117 North all the way. Past Ville de Mont-Tremblant (old St-Jovite). Take exit # 119, turn right onto Montée Ryan and continue for about 5 km. Just before the Tourist office, turn right onto rue Labelle (327). The Grand Lodge Mont-Tremblant is about 300 meters on your left.



About Our Sponsors

CANMET Energy Technology Center (CTEC-Varenes)



The CANMET Energy Technology Centre - Varennes (CTEC-Varennes) is one of the three research and innovation centres of the Natural Resources Canada (NRCan). Established in 1992, CETC-Varennes' mission is to encourage targeted

sectors of the Canadian economy to reduce their greenhouse gas emissions, use energy more sustainably, and improve their innovation capabilities. CTEC-Varennes has recently initiated a comprehensive and collaborative R&D program entitled "Grid Integration of Decentralized Energy Resources (DERs)" to investigate technical challenges and regulatory barriers associated with decentralization of electricity grid with the aim of accelerating deployment of DERs, in particular Renewable Energy Resources. The Grid integration program also supports research and development projects on Microgrids and investigation of the implementation opportunities for Canadian networks. The focus of the Canadian Microgrid studies is in the area of applications, through consideration of existing case studies as well as investigating the intentional (planned) islanding operation of an integrated electricity network with multiple DERs.

For further information refer to: http://cetc-varennes.nrcan.gc.ca/en/er_re/inter_red.html

Lawrence Berkeley National Laboratory – CERTS Program



The Lawrence Berkeley National Laboratory (Berkeley Lab) located on the hillside above the University of California at Berkeley, offers a unique opportunity for scientific and academic partnerships and helps to foster the academic excellence that is the hallmark of the Laboratories scientific endeavours. The Berkeley Lab is member of the Consortium for Electric Reliability

Technology Solutions (CERTS) which has developed the CERTS Microgrid concept as an alternative approach for integrating small scale distributed energy resources into electricity distribution systems, and the current wider power sector, the macrogrid. The CERTS Microgrid consists of multiple devices that are viewed by the traditional power system as a single, controllable system. The main objective of CERTS Microgrid is to achieve a modular and dynamically adoptable architecture based on peer-to-peer and plug-and-play model for each component of a Microgrid.

For additional information on CERTS projects refer to: <http://certs.lbl.gov>

California Energy Commission - Public Interest Energy Research (PIER) Program



The California Energy Commission (CEC) is the primary energy policy and planning agency for the state of California. The CEC's role includes overseeing funding programs that support public interest energy research; advance energy science and technology through research, development and demonstration; and provide market support to existing, new and emerging renewable technologies. PIER brings new energy services and products to the marketplace and creates state-wide environmental and economic benefits.

For additional information on PIER projects refer to: <http://www.energy.ca.gov/pier>