

Now Open for

Collaboration!



## **SCHNEIDER ELECTRIC SMART GRID LABORATORY**

Test your products, demonstrate  
solutions and train with us

**RYERSON  
UNIVERSITY**

# WHAT IS THE SCHNEIDER ELECTRIC SMART GRID LABORATORY?

Located in the Centre for Urban Energy (CUE) at Ryerson University, the Schneider Electric Smart Grid Lab serves as a hub for researchers and practicing engineers. It is a collaborative facility for testing and demonstrating smart grid ideas and products to modernize the electricity delivery system and the engagement of customers in managing their electricity usage.

The state-of-the-art facility can physically and electrically represent a substation and feeders of any Local Distribution Company (LDC). It houses all protection schemes, breakers, transformers, supervisory control and data acquisition (SCADA) and advanced distribution management system (ADMS) solutions. Users are able to readily plug in renewables, smart loads, energy storage and much more, as well as utilize the advanced metering infrastructure (AMI) to study their interactions under different scenarios in real-time.

The Schneider Electric Smart Grid Lab provides learning opportunities to educate the next generation of engineers and train highly qualified personnel to build and manage the electrical grid as it evolves.

CUE invites research project proposals from various utilities to simulate the design, and support advanced power system applications using smart grid lab capabilities. These include but are not limited to: energy management systems, outage management systems, automated meter reading, meter data management, home area networks, demand response, distributed generation control and micro-grid operation.

Thank You to Our Partners

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“ Ontario is well positioned to build one of the most advanced electricity grids in the world. Ryerson University’s Centre for Urban Energy and the Schneider Electric Smart Grid Laboratory will offer students leading-edge facilities to develop and test the smart grid advancements that will help Ontario homes and businesses better manage their energy use. ”

— Bob Chiarelli, Ontario Minister of Energy







## SMARTER CITIES BEGIN WITH A SMARTER GRID

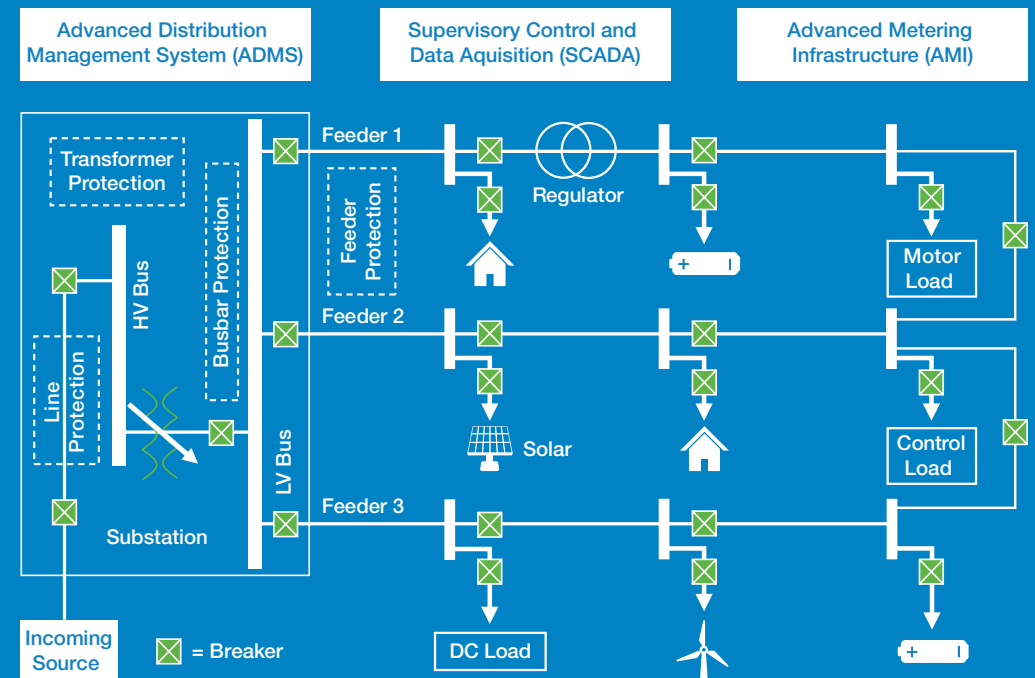
We all want a modern, efficient and resilient electricity system that brings value to customers. Smart grid technologies enable local distribution companies (LDCs) to better detect and restore outages, improve planning and operations, integrate more renewables and electric vehicles, as well as give customers tools to manage their energy bills and reduce greenhouse gas emissions through conservation.

In partnership with Schneider Electric and the Ministry of Energy, the Centre for Urban Energy at Ryerson University has built Canada's first university-based smart grid laboratory. The Schneider Electric Smart Grid Lab is a dedicated facility for collaborative industrial research and will serve as a sandbox for Ontario institutions and the electrical industry to develop, demonstrate and discover products, solutions, ideas and algorithms. It will also provide a platform for the training of the next generation of smart grid engineers, scientists, planners and operators.

## INTELLIGENT DESIGN

The Schneider Electric Smart Grid Lab houses everything a utility requires, mimicking a distribution system at a reduced scale. It is as close as one can get to testing on the real system. The laboratory's cutting-edge technology and infrastructure was provided by Schneider Electric, a world leader in global energy management. The features include:

- Advanced distribution management system
- Supervisory control and data acquisition
- Advanced metering infrastructure
- Custom switchboard and smart metering products
- Relays for feeder, transformer, busbar and line protection
- IEC 61850 ring
- Renewables - solar panels with inverters
- Energy storage - batteries with controlled bi-directional converters
- Programmable AC and DC loads





## LET'S WORK TOGETHER

The Schneider Electric Smart Grid Lab has a wide range of capabilities and the Centre for Urban Energy welcomes partners and collaborators for research, development, demonstration and training. Users can:

- Experience operation of their local distribution company (LDC) infrastructure and/or micro-grids under different scenarios or contingencies
- Examine integration of renewables and energy storage
- Utilize advanced metering infrastructure
- Assess infrastructure for data security, privacy and protection
- Analyze big data solutions
- Perform power system harmonics studies
- Optimize and explore functions of an advanced distribution management system
- Explore economics of operation and reduction of energy bills through volt/var control
- Test reliability and resilience techniques
- Assess and improve conservation and efficiency efforts
- Carry out pilot testing of new energy products, solutions and innovations
- Conduct industrial grade testing of distribution system products
- Benefit from training of highly qualified personnel
- Work alongside our dedicated lab engineer

## A SANDBOX FOR ONTARIO INSTITUTIONS

All are welcome to use the laboratory and some examples of groups that could benefit include:

### Vendors, Entrepreneurs and Industrial R&D Organizations

- Demonstrate products and understand customer experience
- Investigate performance or troubleshoot issues in a utility environment
- Test prototypes
- Conduct third-party evaluations such as feature testing and Canadian Standards Association (CSA) benchmarking
- Learn about LDC operations and train employees

### Utilities

- Ensure standards' compliance prior to full completion and implementation of projects
- Analyze operational strategies such as automatic reconfiguration
- Investigate the effectiveness of short-term and long-term planning strategies
- Test and verify new system solutions and products and mitigate the potential system and customer risks
- Carry out research on all aspects of LDC operations and assets
- Examine issues such as those caused by harmonics and equipment interoperability
- Train employees on LDC assets

### Colleges and Universities

- Research and develop innovative solutions and products
- Provide internships, giving students valuable hands-on experience in a utility environment
- Learn about LDC operations and provide real-world training for students
- Explore areas such as big data, energy storage and smart meters
- Collaborate with industry

To learn more, please contact:

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“ Harnessing smart grid technologies in a way that benefits the broader electricity system and the consumer is a key focus of the Ontario Smart Grid Forum. The Forum has been advocating for open standards and an integrated testing facility in order to advance innovation. This new lab represents an important step toward achieving this common aim by bringing together Ontario’s researchers, solution providers and utility companies. ”

— Bruce Campbell, President and CEO,  
Independent Electricity System Operator  
and Chair, Ontario Smart Grid Forum



“As we move towards a new era of intelligent energy management, it is increasingly important to continue learning about the ways smart grids are able to transform energy use. Ryerson University is one of the Canadian leaders in education and innovation and we are excited to work with them in this area.”

— Daniel Péloquin, President, Schneider Electric Canada





**Centre for Urban Energy**  
*Energizing the Future*

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<b>3 trees</b>	<b>9,312 L of water</b> 27 days of water consumption	<b>114 kg of waste</b> 2 waste containers	<b>374 kg CO2</b> 2,505 km driven	<b>2 GJ</b> 10,348 60W light bulbs for one hour

