The Edward S. Rogers Sr. Department of Electrical & Computer Engineering
UNIVERSITY OF TORONTO

UNIVERSITY OF TORONTO | Grid Modernization Centre

Powering a Sustainable Tomorrow: A Global Hub for Grid Modernization

The Grid Modernization Centre (GMC) is a world-class testbed and innovation hub within The Edward S. Rogers Sr. Department of Electrical & Computer Engineering at the University of Toronto.

Equipped with advanced simulation platforms, real-time testing capabilities, and unparalleled computational resources, GMC empowers utilities, manufacturers, and technology developers to validate and optimize clean energy innovations, from renewable generation and energy storage to EV infrastructure, data centres, and microgrids.

More than a facility, GMC is a collaborative engine for change, uniting utilities, regulators, municipalities, OEMs, and SMEs to drive the commercialization and integration of sustainable technologies, foster innovation and workforce development, and shape the resilient, low-carbon grid of the future.

Established under the Climate Positive Energy initiative, GMC is the first facility of its kind, dedicated to accelerating the transition toward a decarbonized, decentralized, and digitalized power grid.

The Grid Modernization Centre is equipped with:

Leading software platforms

A wide range of protection relays

State-of-the-art tools

Real-time simulators

Our Services

Modelling and Simulation

- High-fidelity EMT and RMS modelling
- Real-time simulation using RTDS, Opal-RT, and Typhoon HIL platforms
- Power system co-simulation and digital twin development

Testing and Validation

- HIL testing for controllers and protection systems
- Grid connection and impact assessments for IBRs, DERs, data centres, EV charging, and storage
- Microgrid control and protection testing under realistic grid conditions

Design and Compliance

- System protection and automation design
- Grid code and standards compliance evaluation
- Cybersecurity and resilience assessments
- Distribution system operator studies and planning support

Join us in powering a clean energy transformation