Toronto Metropolitan University

Centre for Urban Energy
Faculty of Engineering
& Architectural Science

Research case study > transmission and distribution

Dynamic Reconfiguration and Feeder Power Management

Version 1 (October 2024)

Context: Climate change is driving up the use of HVAC (heating, ventilation, and air conditioning) units and associated electrical load. In a similar vein, climate change concerns will drive the transition to electric vehicles (EVs) leading to increased electric loads. This large increase in electricity demand, expected in the near future, will significantly challenge distribution utilities such as TPDDL in feeder load management. It is expected that these demands will peak during night hours.

While local distributed energy resources (DERs), such as solar generation, may help in lowering demand, they will be accessible only during the day when the load is not at the peak. In fact, instead of lowering peak demand, they will further lower feeder utilization by lowering demand during off-peak.

Problem: Transitioning to deep electrification will lead to increased electric loads, and significantly challenge distribution utilities in feeder load management.

Solution: Developing methods and strategies for dynamic reconfiguration and feeder power management.

Impact: Addressing the operational challenges that utilities such as Tata Power DDL may encounter.

CUE's Role: In collaboration with Tata Power DDL, CUE will develop methods and algorithms to address dynamic reconfiguration and power management.

Partners: Tata Power DDL, Mitacs

Timeline: 2023-2024

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Key stats
Software
4 Tech reports