Statistics and Actuarial Science Seminar

Paula Carroll (University College Dublin)

will speak on

Designing low voltage electricity distribution networks to facilitate low carbon technologies

Thu 10th October 2019 at 3:00PM

Location: Seminar Room SCN 1.25

EU directives set out targets for renewable electricity, heat and transport. Low carbon technologies (LCTs) such as heat pumps (HPs) and electric vehicles (EVs) are critical components of the Government of Ireland's Climate Action Plan to respond to the need to decarbonise heating and transport. The rate of adoption of these LCTs and other technologies such as domestic photovoltaic (PV) generation is uncertain. The impact of geographic clustering, and the range of technology options for EVs and HPs further complicate the evaluation of the impacts on the low voltage (LV) electricity distribution network, and pose considerable challenges to the management and operation of distribution networks. In this paper we review design demands of LV networks in urban areas, focusing on the potential of PV for local energy communities. We describe a mixed Integer programming (MIP) model to support electricity smart grid upgrade decisions in the context of an energy community in an existing urban setting. We evaluate the MIP model on an adaption of an IEEE radial network benchmark instance augmented with geographic data, and present interesting computational results. We highlight potential research avenues to address uncertainty in the problem instances.

This talk is part of the **Statistics and Actuarial Science** series. For more, see
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