

Faculty position in Environment, Policy and Sustainable Energy

The University of Waterloo invites applications for a tenure-track position in environment, policy and sustainable energy at the level of Assistant Professor or Associate Professor (for an exceptional and appropriately experienced candidate) in one of the five academic units in the Faculty of Environmental Studies. More information about the Faculty of Environmental Studies may be found at <http://www.fes.uwaterloo.ca>.

Applicants should have research expertise in the business, political, behavioural and/or built-environment aspects of sustainable energy (for example, renewable energy, conservation and demand management, or design and planning community energy systems). Applicants should also have an interest in placing their research expertise and activities within a broader interdisciplinary setting that examines the policy, planning and governance of energy systems in an integrated manner. Applicants should have a Ph.D., a demonstrated record of excellence in research in environment, policy and sustainable energy, and the potential to develop a nationally- and internationally-recognized interdisciplinary research program.

This position will add to the existing and growing expertise at the University of Waterloo in areas related to sustainable energy. A senior Ontario Research Chair in Public Policy for Sustainable Energy Management was recently established. The Faculty of Environmental Studies is a partner in the Waterloo Institute for Sustainable Energy (<http://www.wise.uwaterloo.ca>) and has significant ongoing research in sustainable energy, including residential energy efficiency, 'green power', and conservation and demand management strategies.

Applications must include: i) a curriculum vitae and the names (with contact information) of four referees; ii) a research statement outlining the applicant's approach and specific plans; and iii) a teaching portfolio summarizing the applicant's relevant experience and teaching philosophy. The first stage in the review of applicants will be based on the application documents. Referees will be contacted for those being considered in the second stage of the review. Applications will begin to be reviewed on March 1, 2008, and will continue to be accepted until the position is filled.

Applications should be sent to:

Dr. Ian Rowlands

Chair, Faculty Search Committee (Environment, Policy and Sustainable Energy)

Faculty of Environmental Studies

University of Waterloo
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The University of Waterloo encourages applications from all qualified individuals, including women, members of visible minorities, native persons, and individuals with disabilities. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. This appointment is subject to the availability of funds.

Potential Post-doctoral, PhD and Master's positions on project entitled, 'The Energy Hub Management System: Enabling and Empowering Energy Managers Through Increased Information and Control'

The purpose of this project is to develop and to implement an Energy Hub Management System that will allow static energy users to manage effectively their energy requirements. More specifically, this project will empower energy hubs – that is, individual locations that require energy (e.g., manufacturing facilities, farms, retail stores, detached houses) – so that they can contribute to the development of a sustainable society through the real-time management of their energy production, demand, storage and resulting import or export of energy.

This project builds upon relatively isolated advances being made in the development of renewable energy technologies (e.g, solar-PV panels), energy storage devices (e.g., batteries), energy transformation mechanisms (e.g., hydrogen fuel cells) and communication technologies (e.g., wireless networking) by developing ways in which they can be integrated in energy hubs. Not only do these individual technologies need to be able to work in a complementary manner to a greater extent (for example, solar heating should displace natural gas during periods of high solar radiation), but they also need to be integrated within the broader socioeconomic and physical systems in which they are nested (for example, provincial energy markets and transmission grids, respectively, so that energy previously stored would be dispatched during periods of high prices, for instance).

As a tangible example, this project will undertake pilot projects – that is, develop energy hubs – in different locations. Each location would be an energy producer (for instance, have a combined heat-and-power unit), an energy consumer (operation of, conceivably, motors), an energy importer (natural gas requirements for its boilers), an energy exporter (electricity at peak-price periods) and an energy storer (battery bank). Technology will be developed that will integrate these systems,

developing models and decision-rules to determine whether the combined heat-and-power unit should be operated or whether energy should instead be imported, to determine whether excess energy should be sourced (through generation and/or import) and stored in order to be used later, and to determine whether manufacturing operations should be curtailed in order to take advantage of 'demand response' programs being offered (for example, interruptible load tariffs). To do this effectively, the hub's control technologies must be embedded within the 'bigger picture' (markets and grids) and must also be reactive to the demands of the individuals (workers and citizens) who work and/or live within the hub.

This project brings together experienced energy researchers who are presently active in meeting Ontario's energy challenges. Drawing upon – and integrating – different disciplinary approaches (particularly engineering, economics and behavioural science), deployment of control technologies in energy hubs will potentially take place in industrial, commercial/institutional, agricultural and residential sectors across the province. For more information, contact Prof. Ian Rowlands, Faculty of Environmental Studies, University of Waterloo, (519) 888-4567, ext. 32574; irowland@fesmail.uwaterloo.ca <mailto:irowland@fesmail.uwaterloo.ca>