



**Posting Date:** 28 September 2017

Department of Civil Engineering  
Faculty of Applied Science and Engineering  
University of Toronto

## **JOB POSTING – POSTDOCTORAL FELLOW**

**Areas of Research:** Life cycle assessment, construction materials and processes, uncertainty analysis, decision modelling & decision support tools, data integrity and validation, greenhouse gas (GHG) assessment & mitigation,

### **Overview of the position:**

Applications are invited for a Postdoctoral position in the Reducing GHG Emissions from Large-Scale Infrastructure (InfraGHG) research group at the University of Toronto. The position is available immediately.

The InfraGHG research group has recently been established to develop a decision support toolset to drive GHG reductions in the emissions associated with design and construction of large-scale infrastructure. The research program is led by Prof. Heather MacLean and includes four other professors of civil engineering, Prof. Brenda McCabe, Prof. Daman Panesar, Prof. Daniel Posen and Prof. Shoshanna Saxe. The objective of the research is to drive rapid, large-scale reductions in the GHG intensity of the design and construction of infrastructure. A large team of academic researchers will be working in collaboration with industrial partners, led by a major construction services company, to address the complex challenge of changing how the built environment is designed and constructed. This research includes:

1. Analysis of GHG emission drivers in the construction industry
2. Development of harmonized life cycle inventory databases for construction projects
3. Development of a life cycle-based decision support tool to track and forecast greenhouse gas emissions associated with large-scale infrastructure projects
4. Evaluation of uncertainty in forecasted life cycle GHG emission, and development of decision support under uncertainty

**We are seeking two postdoctoral fellows with a research and/or practice background working with life cycle assessment (LCA).** The postdoctoral fellows will be lead contributors to peer reviewed publications, technical reports, and conference proceedings; assist in the supervision of students; and participate in meetings with academic, industrial, and government partners.

## **Description of duties:**

The candidates will be responsible for:

- Conducting an extensive literature review on the state of the art in life cycle assessment of infrastructure design and construction
- Compiling, analyzing, updating and harmonizing life cycle inventory databases
- Designing and carrying out interviews with construction industry personnel to determine relevant sources of GHG emissions, sources and quality of required data, and appropriate decision support analytics
- Developing a detailed framework to capture GHG emissions in the construction industry
- Identify GHG emission reduction opportunities and evaluate implications and trade-offs associated with use of different materials, fuels and construction techniques
- Implementing techniques to analyse emissions uncertainty, and to provide decision support for industry users
- Assisting with the supervision of PhD and Master's candidates working with the InfraGHG program

**Salary: \$57,000/ year**

*Please note that should the minimum rates stipulated in the collective agreement be higher than rates stated in this posting, the minimum rates stated in the collective agreement shall prevail.*

## **Required qualifications:**

- PhD degree in engineering, or related field awarded within the past 5 years;
- Extensive knowledge of life cycle assessment
- Demonstrated experience with issues of sustainability and GHG emissions
- Experience managing large datasets containing confidential data;
- Knowledge of advanced statistics and probabilistic analysis methods
- Experience with framework development, uncertainty analysis and decision support modeling
- Experience conducting interviews or managing surveys is desirable
- Programming or Machine Learning skills are desirable
- Experience with design/construction documents and software is a plus
- Excellent communication skills in English;
- Desire to engage in applied research with near-term applications
- Demonstrated ability to work independently and as part of a team and a drive to create their own novel research direction.

## **Application instructions**

All individuals interested in this position must submit a single electronic file consisting of a cover letter, detailed CV, a one page statement of research interests, and the names and addresses of three references to Prof. Shoshanna Saxe ([s.saxe@utoronto.ca](mailto:s.saxe@utoronto.ca)) by the closing date. Please use **Application for InfraGHG LCA Postdoctoral Position** as the email subject.

**Closing date:** October 20, 2017. The search will continue until the positions are filled.

**Supervisors:** Heather MacLean, Daman Panesar and Daniel Posen

**Expected start date:** Immediately

**Term: 1 year with potential for renewal**

**FTE:** 1

Employment as a Postdoctoral Fellow at the University of Toronto is covered by the terms of the CUPE 3902 Unit 5 Collective Agreement.

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The normal hours of work are 40 hours per week for a full-time postdoctoral fellow (pro-rated for those holding a partial appointment) recognizing that the needs of the employee's research and training and the needs of the supervisor's research program may require flexibility in the performance of the employee's duties and hours of work.

*The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from racialized persons / persons of colour, women, Indigenous / Aboriginal People of North America, persons with disabilities, LGBTQ persons, and others who may contribute to the further diversification of ideas.*