Civil & Mineral Engineering
UNIVERSITY OF TORONTO

Posting Date: March 2021

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

JOB POSTING – POSTDOCTORAL FELLOW, LIFE CYCLE ASSESSMENT OF LIGHT-DUTY VEHICLE FLEETS

Areas of Research: Sustainable systems assessment, life cycle assessment, low carbon vehicle technologies, technology assessment, fleet-based assessment, greenhouse gas (GHG) assessment, fuel economy standards, low carbon fuel policies

Overview of the position:

Applications are invited for a postdoctoral fellow (PDF) position in the field of life cycle assessment (LCA) of low carbon light-duty vehicle (LDV) technologies, including alternative fuels and powertrains,
at the University of Toronto. The position is available immediately.

The successful applicant will work within an international team (Aramco Asia, University of Nottingham, Automotive Data Center (China)) to develop capabilities to quantify the LDV fleet greenhouse gas emission implications of transport-sector policies. You will have primary responsibility for the development of LCA models and related LDV fleet models for the North American context, while collaboratively developing the modelling framework with project partners. Opportunities will also exist for the candidate to propose novel research directions that match their interests.

The candidate will be a lead contributor to peer reviewed publications in high impact journals, 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 candidate will be responsible for:

- Refining and extending a literature review on the state of the art in fleet-based LCA models for GHG reductions

- Enhancing and extending the capabilities of the University of Toronto Fleet Life Cycle Assessment and Material-Flow Estimation (FLAME) model[1],[2]
- Developing new tools to evaluate designs for a new generation of LCA-based light-duty vehicle GHG standards
- Communicating methods and results to collaborators, project sponsors and at conferences
- Assisting with the supervision of PhD and Master's candidates working on the project.

Salary: **$60,000/ 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 chemical, civil or mechanical engineering, or related field awarded within the past 5 years
- Strong analytical skills
- Awareness of emerging technologies for low-carbon passenger vehicle technologies
- Experience developing LCA models, preferably for fuels and/or vehicles
- Demonstrated creativity in development of novel sustainable systems assessment approaches
- Excellent verbal and written communication skills in English, including ability to communicate with multidisciplinary audiences
- Ability to creatively apply relevant research approaches, models, techniques and methods
- Ability to build relationships and collaborate with others, both internally and externally.
- Some programming experience (e.g., Python, MATLAB, R) is required
- Experience with techno-economic analysis, optimization, and data analysis are strong assets.

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 expertise and interests, and the names and addresses of three references to Professor Heather MacLean at **heatherl.maclean@utoronto.ca** by the closing date. Please use **PDF Application-Fleet-based LCA** as the email subject.

Closing date: April 20, 2021. The search will continue until the position is filled.

Co-Supervisors: Heather MacLean and Daniel Posen

Expected start date: Immediately

[1] Milovanoff, A.; Kim, H.C; De Kleine, R.; Wallington, T.; Posen, I.D.; & MacLean, H.L. A Dynamic Fleet Model of U.S Light-Duty Vehicle Lightweighting and Associated Greenhouse Gas Emissions from 2016 to 2050. Environmental Science & Technology **53**(4), 2199-2208 (2019) DOI: 10.1021/acs.est.8b04249

[2] Milovanoff, A.; Posen, I.D.; & MacLean, H.L. Electrification of light-duty vehicle fleet alone will not meet mitigation targets. Nature Climate Change **10**, 1102–1107 (2020). https://doi.org/10.1038/s41558-020-00921-7

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 and intentional inclusion within its community and encourages applications from racialized persons / persons of colour, women, Indigenous / Aboriginal People of North America, persons with disabilities, and LGBTQ2S+ persons.