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Ph.D. Position: Multi-scaled modelling of Canada's electricity system decarbonization

The transition to a sustainable energy system encompasses time scales that range from milliseconds to centuries and spatial scales that range from individual appliances to the globe. To address energy system transition questions, researchers employ a variety of models and methodologies that span such spatial-temporal scales. In this project, two distinct but commonly used models will be applied to gain deeper insights into Canada's energy system transition. The capacity expansion models, CREST, takes a broad spatial and temporal perspective on the energy system transition, which facilitates a National dialogue on electricity system planning. With such a perspective, decarbonization strategies can be coordinated at a high-level, facilitating conversations about inter-provincial transmission capacity or National carbon policies. However, to maintain computational tractability, this broad spatial inclusion must sacrifice temporal detail. On the other hand, the production cost model, SILVER, represents the electricity system with greater temporal resolution, at the expense of spatial breadth. Here, a two-step modelling methodology will be employed to leverage the spatial breadth of the CREST model as well as the temporal resolution of the SILVER model. Once developed, the CREST-SILVER platform will be used to build a credible renewable energy blueprint to achieve Canada's Paris commitment and Pan-Canadian Framework goals.

This position will be supervised by Dr. Madeleine McPherson, who leads the *Sustainable Energy Systems Integration & Transitions Group* and will work closely with collaborators at the David Suzuki Foundation and the University of Regina. The successful applicant will work within the multi-disciplinary environment of the Institute for Integrated Energy Systems (IESVic) at the University of Victoria.

Requirements:

- A Master's degree in engineering, computer science, or a similar department. Exceptional candidates without a master's degree may be considered.
- Fluency in English
- Working knowledge of Python, or expert knowledge of another object-oriented programming language and the ability to learn Python quickly
- Familiarity with the energy system space is desirable

Timeline:

Start date is January or May 2019; please specify your availability in your cover letter.

How to apply:

Interested candidates should email mmcpherson@uvic.ca with the subject DSF Ph.D. Position, attaching the following items:

- A detailed curriculum vitae
- A one-page cover letter describing your programming expertise, previous research experience, and fit for the position
- The names and contact information of two references