

**Graduate Funding Opportunities (2022-2024): Residential development Impact Scorecard for the Environment (RISE)**

Government of Canada's Environmental Damages Fund / Environment and Climate Change Canada Grant; Professors Dawn Cassandra Parker (co-PI) (PI: Michael Drescher, additional co-Is: Bruce MacVicar, Derek T. Robinson, Rebecca Rooney, and Maria Strack)

**Project summary**

Canada is a highly urbanized country where both intensification and greenfield residential development often reduce green infrastructure (GI). While cities are setting ambitious climate mitigation goals, they are concurrently losing GI's contributions towards these goals. Novel green development standards create some developer incentives to provide GI, but on the whole, as GI on private lands creates public benefits but is financed by private costs, developer GI provision is too low. Further, cities lack complete and cost-feasible information on how greenhouse gas (GHG) profiles of developments evolve temporally. Our proposed research, led by a team of internationally recognized experts in modelling coupled socio-ecological systems, will:

- employ novel scientific methods to quantify urban terrestrial and wetland-based carbon stocks, sequestration and GHG emissions;
- develop a simple, dynamic carbon and GHG scorecard that will complement existing green building standards by tracking the state and trajectory of residential developments; and
- test the scorecard's potential to induce developer behavioral change by incentivizing GI investments through social norms and status-seeking behaviour.

Professor Parker is recruiting for 1-2 master's students, to start in Fall 2023. Student(s) will contribute in the following areas:

<p><b>MA/MsC 1a: Illustrating the RISE dynamic natural asset scorecard through quick prototyping</b></p>	<p><b>Start date</b> 2023 Q4</p>	<p><b>End date</b> 2024 Q3</p>	<p><b>Tool/method:</b> Estimate and report above-ground carbon sequestration trajectories using RISE-Beta (now under development). Work with developers and planners to develop and interpret RISE-Beta.</p>	<p><b>Goal/Results</b></p> <ul style="list-style-type: none"> <li>• Work with team to complete RISE-Beta scorecards for 2 completed and 2 proposed development site plans</li> <li>• Contribute to a journal article presenting the RISE concept and prototype results</li> </ul>
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<b>Task 2a: Implementing the RISE 1.0 Scorecard with Developer and Planner Stakeholders</b>	<b>Start date</b> <b>2023</b> <b>Q4</b>	<b>End date</b> <b>2025</b> <b>Q3</b>	<b>Tool/method:</b> Official plan/bylaw analysis. Participatory tool development/implementation with planner and developer stakeholders	<b>Goal/Results:</b> <ul style="list-style-type: none"> <li>• Update policy context for Province and municipal partners</li> <li>• Participatory site plan scenario modelling using RISE 1.0 with individual developers (3 case studies).</li> <li>• Participatory scenario modelling for planning/developer case studies (3 case studies)</li> <li>• Complete thesis/journal article(s)</li> <li>• Complete stakeholder/policy briefs.</li> </ul>
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Application guidelines:

1. Only apply if 1) you meet all the admissions criteria for your program of interest at UW; and 2) you have substantive interest and, ideally relevant training for work related to this proposal;
2. Send an e-mail to Professor Parker with the heading “RISE 2022 graduate interest” and your name.
3. Include a short (1-page) letter explaining your interests in and preparedness for joining this research project. Evidence of preparedness includes previous coursework, work experience, theses, publications, and experience working in interdisciplinary research groups and with professional and stakeholders. Please also highlight any relevant lived experience or differential challenges you have faced relevant to your studies.
4. Include a recent CV, unofficial transcript, and writing/research sample.
5. Professor Parker will contact you for an interview; if you don’t hear back, unfortunately that means you were not selected, and I wish you good luck in your future studies.

Trainees will gain specific skills and experience in carbon and stormwater modelling and interpretation, development and application of software, participatory modelling with professional stakeholders, residential development landscaping design and planning, systems thinking, and knowledge translation and mobilization. **Applicants with relevant experience in these areas should clearly articulate that experience in their letter of application.**

All trainees will participate in Parker’s Urban Growth and Change Research Group (UGCRG) bi-weekly meetings, reporting regularly on their research, providing feedback on research, scholarship applications, and manuscripts to other group members, practicing presentations, and collaborating on public outreach

communications. trainees agree to follow the UGCRG lab guidelines, which describe our data and model management, confidentiality, and archiving protocols.

Trainees will also participate in sub-team and team meetings of the RISE research group, following its terms of reference. All trainees will interact regularly with researchers from Biology, Geography, Engineering, Environment, Economics, and Planning. Their many informal (project meetings, collaboration) and formal (project seminar series) will provide opportunities to develop multidisciplinary skills and knowledge. Throughout all project phases, senior trainees will interact with non-academic sector partners such as municipal governments, land developers, and not-for-profits. These experiences will build trainees' inter-sectoral communication skills and networks outside of academia. Graduate trainees will build pedagogical skill sets as teaching assistants at the University of Waterloo, training their communication and teaching skills in classroom settings. All trainees will participate in research ethics training run by the U Waterloo Office of Research Ethics and in U Waterloo EDI training. This will include knowledge of resources to resolve conflicts and training to overcome unconscious biases.

Trainees often participate in the 3-Minute Thesis and the Map the System competition (a global competition where students adopt a systems-thinking approach to address complex social challenges). trainees will network with other researchers through WICI, which hosts student and general research talks, research symposia, workshops, and conferences. trainees can also access specialized training through Parker's "Modelling the City," "Introduction to ABM," and SMART Healthy Cities Training Platform implementation science "Methods Café" course, and additional courses of the PI and co-I's and across the University of Waterloo. PhD students at UW also have access to specialized teaching development programs. They will develop specific skills in research methods and theories, publication and research communication, knowledge mobilization and dissemination, data management and analysis, research ethics, interdisciplinary research, complex systems science, consultation and community engagement, project and human resources management, and leadership and teamwork.

Additional information on graduate student funding in the Environment faculty at the University of Waterloo is available here: See <https://uwaterloo.ca/environment/graduate/future-graduate-students/funding-packages>.) Students working on relevant topics may also apply for additional funding through the SMART Healthy Cities Training Platform (<https://smart-training.ca>)

The project is a collaboration between the [Waterloo Institute for Complexity and Innovation](#) and the [Waterloo Climate Institute](#). Additional information available at <https://uwaterloo.ca/climate-institute/projects/residential-development-impact-scorecard-environment-rise>.