University of Victoria
Institute for Integrated Energy Systems
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PhD Researcher - Microgrid and Renewable Energy Systems Analysis

Institution: University of Victoria, Mechanical Engineering
Reports To: IESVic Director, Dr. Bryson Robertson
Location: Victoria, British Columbia, Canada
Working Arrangement: On-Site
Appointment Type: Grant Funded – 4 Year Doctoral Appointment
Start Date: 05 January or 05 May 2027

Position Overview

The University of Victoria is seeking a highly motivated PhD student to join the Institute for Integrated Energy Systems (IESVic). This doctoral position focuses on applied research into long term energy planning, end-of-line microgrid development, and the integration of regional coastal renewable energy technologies to support resilient, secure, and sustainable energy systems in coastal, remote, and rural communities including First Nations communities.

IESVic charts feasible pathways to sustainable energy systems through the development of new knowledge, technologies, processes, and policies. Established as a UVic Institute in 1994, IESVic provides leadership at the University of Victoria in the study of critical energy related issues, human dimensions of energy, policy development, and energy technology. IESVic is a multidisciplinary research institute with faculty from Engineering, Public Administration, Business, Economics, Psychology, Environmental Studies, Earth and Ocean Science, Chemistry and Biology. The PhD researcher position is funded by the Accelerating Community Energy Transformation (ACET), a multi-partner initiative accelerating the global push for resilient and equitable clean energy solutions through community-based collaborations. Established in 2023 with support from the Canada First Research Excellence Fund, ACET is a partnership between Royal Roads University, University of British Columbia, Université du Québec à Trois-Rivières and Yukon University, led by the University of Victoria.

The PhD researcher will work within a multidisciplinary environment spanning academic researchers, industry technology developers, public sector partners, as well as First Nations and municipal communities. The role combines rigorous fundamental doctoral research with hands on experimentation, system integration, and collaboration with communities and partner organizations seeking to better understand future energy opportunities, challenges, and development pathways.

The successful candidate will work to characterize existing energy systems, evaluate future energy needs, and explore future regional renewable pathways that align energy infrastructure planning with community priorities and long-term development goals. Through the development of energy system models, regional renewable energy resource assessments, and future planning scenarios, the researcher will evaluate pathways for renewable energy integration (waves, winds, solar, etc.), energy storage deployment, energy resilience, and sustainable economic development. The technical analysis work will support ongoing community engagement, feedback, and co-design activities to guide both the research and

real-world outputs. Research activities may include microgrid modelling, renewable resource assessments, energy demand forecasting, techno-economic assessment, and long-term scenario analysis to support decision making under a range of future assumptions and scenarios. The position will work in companion with a PhD project focused on defining the regional wave energy opportunity. Both will contribute to a broader portfolio of integrated energy systems and decarbonization research projects undertaken by IESVic and ACET.

Based in beautiful Victoria, Canada, this position offers an excellent opportunity for the candidate to expand their knowledge base, build new skills, publish high-impact work, and collaborate with leading scientists and industry in a supportive and intellectually stimulating environment.

Research Focus and Scope

The PhD researcher will be housed within the Mechanical Engineering department, and the final research direction will be determined through discussion between the candidate and supervisor following selection.

This position is ideal for a candidate who is interested in applied research at the intersection of energy systems engineering, renewable energy integration, community energy planning, and long-term infrastructure decision making. Potential areas of work may include, but are not limited to:

- Hybrid and resilient microgrids, including end-of-line configurations
- Renewable energy and marine energy integration and capacity expansion modelling
- Long term energy system planning and pathways analysis
- Community and regional energy systems planning
- Techno-economic analysis of future energy development pathways
- Energy demand forecasting and scenario development
- Community engaged energy systems and infrastructure planning
- Energy security, resilience, and reliability assessment including uncertainty quantification

The research is expected to contribute both to peer-reviewed academic outputs and practical insights that support community energy planning, infrastructure investment decisions, and the development of resilient and sustainable energy systems.

Key Responsibilities

1. Doctoral Research

- Design and execute an original PhD research program aligned with the objectives of IESVic and ACET
- Conduct analytical and modelling based research on microgrids, renewable energy systems, and long-term energy pathways
- Work collaboratively with community partners to co-develop research questions, scenarios, and planning approaches that reflect local priorities and objectives
- Publish research findings in peer-reviewed journals and present at conferences
- Prepare and defend a doctoral dissertation that meets University of Victoria requirements

2. Energy Systems Modelling, Scenario Development, and Analysis

- Develop energy system and microgrid models to assess future energy development pathways

- Evaluate the integration of renewable energy technologies, energy storage systems, and other distributed energy resources
- Analyze energy demand trends, infrastructure constraints, and future growth scenarios
- Conduct techno-economic, resilience, and energy security assessments of alternative energy system configurations
- Develop and evaluate scenarios that reflect community priorities, economic opportunities, infrastructure constraints, and long-term development goals
- Support the development of decision support tools and technical analyses for community energy planning

3. Collaboration and Engagement

- Work directly with community partners (First Nations and municipal), public sector organizations, utilities, and other stakeholders to understand local energy systems, priorities, opportunities, and challenges
- Support research activities that integrate community knowledge, values, and objectives with technical energy systems analysis
- Contribute to applied research that connects academic insight with real world energy planning and infrastructure decisions
- Collaborate with multidisciplinary researchers across engineering, policy, planning, and social science disciplines

4. Knowledge Sharing

- Contribute to technical reports, project summaries, and presentations for research partners and funders
- Translate complex results into accessible insights for technical and non-technical audiences
- Support development of community-facing materials that communicate research findings, opportunities, trade-offs, and potential future pathways
- Participate in workshops, conferences, and partner engagement activities as appropriate
- Contribute to the development of knowledge products that support community energy planning and decision making

5. Training, Safety, and Professional Conduct

- Complete required university training and adhere to all applicable university policies and procedures
- Maintain responsible research practices and appropriate data management procedures
- Contribute to a collaborative, respectful, and inclusive research environment
- Represent the University and research partners professionally when engaging with external stakeholders

Qualifications

Required

- A completed Bachelor's or Master's degree in a field that is relevant to renewable energy generation, distribution, and utilization (engineering, physics, etc.)
- Strong academic background suitable for admission to a PhD program at UVic
- Demonstrated interest in energy systems, renewable energy technology, decarbonization, integrated energy solutions, or related areas

- Ability to work independently while contributing effectively within a multidisciplinary team
- Strong written and verbal communication skills

Preferred

- Experience conducting analytical, modelling, or applied research related to energy systems, microgrids, renewable energy integration, or long-term energy planning
- Familiarity with microgrids, renewable generation, energy storage, or control systems
- Experience working with industry or applied research projects
- Interest in energy challenges facing coastal, remote, or Indigenous communities
- Programming or data analysis skills relevant to energy systems research

Personal Attributes

- Interested in shaping their own research direction within a supportive environment
- Intellectually curious and motivated by real world impact
- Comfortable working across academic and industry settings
- Organized and able to manage complex research activities over a multi-year timeline
- Collaborative and respectful in working with diverse partners
- Committed to advancing clean energy solutions and decarbonization

Compensation

The position is considered a fully funded PhD program for four years, subject to satisfactory academic progress. The successful candidate will benefit from:

- Competitive graduate student support ($35,000 per year)
- Professional development and training opportunities
- Access to state-of-the-art laboratory facilities and shared testing infrastructure
- Support for conferences travel and publications costs

Application Process

Applicants should submit a single email with subject: "Microgrid Systems Analysis-PhD Position_[Name]" to:

contactacet@uvic.ca

Applicants should submit the following materials as a single document:

1. Cover letter outlining research interests and future career ambitions.
2. Curriculum Vitae (CV)
3. University Transcript
4. Contact information for 2x professional references
5. (Optional) Sample publications or writing samples

Application Deadline: November 6th, 2026.

Equal Opportunity Statement

UVic is committed to upholding the values of equity, diversity, inclusion and human rights in our living, learning and work environments. In pursuit of our values, we seek members who are eager to actively participate in that shared responsibility. We actively encourage applications from members of historically and systemically marginalized groups. Read our full equity statement.