University of Victoria
Institute for Integrated Energy Systems
PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
T 250-721-8931 | Website | LinkedIn

PhD Researcher - Wave Energy Systems and Array Modelling

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 wave energy resources, marine renewable energy technology array modelling, and coastal energy planning. The successful candidate will contribute to research that advances understanding of wave energy resources, wave energy converter performance, and the role of marine renewable energy within resilient and sustainable energy systems.

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 the opportunities, constraints, and long-term implications of marine renewable energy development.

The successful candidate will work directly with community and research partners to assess wave energy opportunities and their potential role in future energy systems. Research activities may include wave resource characterization, wave energy converter array modelling, site identification and assessment, evaluation of nearshore impacts, and analysis of marine energy integration pathways. The technical analysis work will support ongoing community engagement, feedback, and co-design activities to guide both the research and real-world outputs. The position will contribute to both project specific objectives and a broader portfolio of marine renewable energy, and decarbonization research undertaken by IESVic and ACET,

helping build foundational knowledge that can support future wave energy development in coastal and remote communities.

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 marine renewable energy, coastal engineering, energy systems modelling, and community-informed energy transitions. Potential areas of work may include, but are not limited to:

- Wave energy resource assessment and characterization
- Wave energy converter modelling and performance analysis
- Wave energy converter array design and optimization
- Nearshore wave transformation and coastal process modelling
- Site identification and spatial assessment for marine renewable energy development
- Environmental and operational considerations associated with wave energy deployment
- Decision support tools for marine renewable energy planning

The research is expected to contribute both to peer-reviewed academic outputs and practical insights that support marine renewable energy development, community energy planning, and informed decision making in coastal and remote communities.

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 wave energy systems, marine renewable energy, and coastal energy infrastructure
- Work collaboratively with community partners and research collaborators to co-develop research objectives, scenarios, and assessment approaches that reflect local priorities and decision-making needs
- Publish research findings in peer-reviewed journals and present at conferences
- Prepare and defend a doctoral dissertation that meets University of Victoria requirements

2. Wave Energy Systems Modelling and Analysis

- Develop and apply numerical models to characterize wave energy resources and evaluate wave energy converter performance
- Assess wave energy converter array configurations, energy production, and deployment scenarios across a range of site conditions

- Conduct site identification and spatial analysis to evaluate opportunities and constraints for marine renewable energy development
- Investigate nearshore wave transformation and potential physical impacts associated with wave energy deployment
- Contribute to the development of modelling tools, methodologies, and decision support resources related to marine renewable energy planning

3. Collaboration and Engagement

- Work directly with community partners (First Nations and municipal), industry collaborators, public sector organizations, and other stakeholders to understand local energy priorities, opportunities, and challenges
- Support research activities that integrate community knowledge, values, and objectives with technical assessments of wave energy opportunities
- Contribute to applied research that connects academic insight with real world energy planning and infrastructure decisions
- Participate in community engagement activities, workshops, meetings, and knowledge sharing sessions to help inform research assumptions and development scenarios
- Collaborate with multidisciplinary researchers across engineering, environmental sciences, planning, and social science disciplines

4. Knowledge Sharing

- Contribute to technical reports, project summaries, and presentations for research partners and funders
- Translate complex modelling results into accessible insights for technical and non-technical audiences
- Support development of community-facing materials that communicate wave energy opportunities, limitations, 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 marine renewable 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

<u>Qualifications</u>

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 the University of Victoria
- 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 marine renewable energy, wave energy systems, coastal processes, or energy systems engineering
- Familiarity with renewable energy systems, ocean engineering, coastal engineering, or energy system modelling
- 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: "Wave Energy Systems-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.