Fall 2021 Sustainability Scholars Program Internship Opportunity

The UBC Sustainability Initiative (USI) is pleased to offer current UBC graduate students the opportunity to work on funded sustainability internship projects. Successful candidates work under the mentorship of a partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region.

- Visit the Sustainability Scholars Program website to learn how the program works and to apply.
- Be sure to review the application guide to confirm your eligibility before applying.

Applications close at midnight on Sunday September 19, 2021

Research project title: Research on Project Ownership Models for Renewable Electricity Generation in Remote, Indigenous Communities

Project Background & Overview:

Remote Indigenous communities in BC have been heavily reliant on diesel fuel for heating, electricity generation and transportation. Remote communities can be settlements or long-term commercial outposts and camps for mining, fishing, forestry, and other cultural activities. These communities characteristically rely on imported fuel and have high energy costs. Residential and commercial retail electricity rates are generally subsidized in remote communities to varying – usually significant – degrees.

Most diesel-dependent remote communities in BC are not connected to BC Hydro's provincial electricity grid. A limited number (3) of remote communities that are at the end of BC Hydro's transmission lines experience reliability issues. These 'end of line' communities depend on diesel for back-up power generation during outages.

BC Hydro provides electric utility service to thirteen diesel-dependent remote Indigenous communities, referred to as Non-Integrated Areas (NIA). Most BC Hydro NIA communities are governed by Indigenous nations. The remaining diesel-dependent remote Indigenous communities in BC, sometimes referred to as non-NIA communities, are not serviced by BC Hydro and have independent or private utilities/electricity providers.

BC Hydro has used the Independent Power Producer (IPP) industry to supplement electricity supply. Independent Power Producers develop and operate electricity generating assets (e.g., Solar units, run-of-river hydro facilities, biomass broilers, etc.) and hold contracts to sell the power to BC Hydro. As of April 2021, BC Hydro has electricity purchase agreements in place with IPPs for 126 commercially operational projects.

Several Indigenous nations have used the IPP model to develop renewable energy projects (e.g., biomass, hydro) to supply the local microgrid, and in doing so displace the use of diesel for electricity generation. BC Hydro continues to be interested in purchasing power through IPPs, for two reasons: (1) it is cost prohibitive to extend the provincial grid to remote communities, and (2) the displacement of diesel electricity generation is aligned with provincial and utility objectives, specifically:

- CleanBC goal to reduce diesel electricity generation in remote communities by 80% by 2030, and
- BC Hydro's Phase 2 commitment to supply NIA communities with 75% renewable electricity (up from the current 50%) by 2030.

The IPP ownership model continues to be preferred by some NIA communities, and it would be beneficial for the Province's relationships with Indigenous communities if the IPP project development option is retained. Some NIA communities, with the support of BC Hydro, are interested in exploring alternatives that involve increased levels of technical and financial collaboration. The goals of this increased collaboration include improving relationships between Indigenous nations and the utility; achieving early consensus on the appropriate path for a given microgrid through dialogue that considers technology options, project costs, risk, and community priorities; accelerating the pace of project development; and taking meaningful steps toward achieving diesel reduction goals and reconciling Indigenous and provincial interests.

The research conducted by the UBC Sustainability Scholar will have support from the NIA Working Group as required. The NIA Working Group consists of representatives from:

- Ministry of Energy, Mines and Low-carbon Innovation (EMLI)
    - Community Clean Energy Branch
    - Generation and Regulatory Branch
    - Transmission and Inter-Jurisdictional Branch
- BC Hydro

Project description

The purpose of this project is to better understand the opportunities and limitations of different project ownership models in order to help inform the Province's approach to further study and engagement on alternative ownership structures for Indigenous communities, with the possibility of future policy recommendations. This work will be foundational to the Province's exploration of project ownership models and ability to assess if expanding beyond current possibilities would better support project development in line with CleanBC and BC Hydro's diesel reduction goals. The outcomes of this project will help determine next steps for this work.

Project scope

1) Conduct a jurisdictional scan of project ownership models in BC and Canada and use this to research and develop case studies of different project ownership models.
2) Identify the benefits and limitations of different ownership models, possibly through a SWOT analysis approach. Time permitting, this may include some or all of the following:
    a. Consideration from a technical, cost effectiveness and project risk, and relationships and reconciliation perspective that is cognisant of the unique context of NIA communities.
    b. Analysis of which models provide the best net-present value for a community and the utility, or theoretical analysis of cost effectiveness of ownership models.
    c. Analysis on how each ownership model supports/is a barrier to:
        i. Achieving provincial and utility objectives to reduce diesel consumption and increase renewable energy generation;
        ii. Improving relationships between Indigenous nations and the utility;
        iii. Achieving early consensus on the appropriate path for a given microgrid through dialogue that considers technology, risk, costs, and community priorities
        iv. Accelerating the pace of project development;
3) Time permitting, work with the NIA Working Group to identify and refine key questions related to implementing new project ownership models for renewable electricity generation projects in NIA

communities. This might include suggestions for further research on BC's regulatory and policy landscape.

Deliverables

- A final report (or executive summary) for the online public-facing Scholars Project Library.
- A final report containing a summary of the work completed including:
    - Case studies of community-utility ownership models that have been implemented in Canada (time permitting a scan and summary of cross jurisdictional examples). The NIA Working Group will provide data where required/possible for case studies of BC projects.
    - Compilation and analysis of benefits and limitations from case studies
    - If interviews conducted, a summary report of interviews with key experts and stakeholders
    - Analysis approach and sections to be determined with the Scholar. Time permitting, this may include, but is not limited to: analysis of which models provide the best net-present value for a community and the utility, theoretical analysis of cost effectiveness of ownership models, SWOT analysis based on key indicators established with NIA Working Group.
    - Recommendations for further research
- A final presentation to the NIA Working Group

Time Commitment

- This project will take **250** hours to complete.
- This project must be completed between **October 15, 2021 and March 15, 2022.**
- The scholar is to complete hours between 9am and 5pm Monday to Friday, approximately **12** hours per week.
- Occasionally attend NIA Working Group meetings that are 1.5 hours duration and occur monthly.

Required/preferred Skills and Background

☒ Excellent research and writing skills
☒ Demonstrated interest in sustainability
☒ Familiarity with research methodologies and survey techniques
☒ Strong analytical skills
☒ Ability to work independently
☒ Project management and organizational skills
☒ Demonstrated experience in analysis of how individuals and organizations respond to market or contract incentives. (This could include: game theory, industrial organization, information and incentives, theory of the firm, Coasean bargaining, or similar topics)
☒ Comfortable interacting with strangers to conduct public/in person surveys an asset
☒ Experience with financial modelling and analysis
☒ Strong understanding of Indigenous issues in Canada an asset, particularly in understanding special relationship between the Province and Indigenous Nations, including acknowledgement of DRIPA, UNDRIP, and TRC obligations. Commitment to reconciliation and decolonization an asset
☒ Understanding of project ownership structures an asset. This includes: utility ownership model, Independent Power Producer model, Indigenous community energy producer model, and consortium or partnership models.

☒ Familiarity with the energy systems, renewable energy project development, and energy industry regulation an asset.

Applications close **midnight Sunday September 19, 2021**
Apply here: Click here to apply
Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

Below are some links to useful resources to help you with your resume and cover letter (there are many more online). Some of these resources also provide information on preparing for your interview.

https://students.ubc.ca/career/career-resources/resumes-cover-letters-curricula-vitae

https://www.grad.ubc.ca/current-students/graduate-pathways-success

https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services