



CASES PARTNERSHIP PROJECT

PROGRESS REPORT

2019-
2022
YEARS 1-3



SSHRC  **CRSH**
Partnership Project 895-2019-1007

CASES PARTNERSHIP

The Community Appropriate Sustainable Energy Security (CASES) Partnership is hosted by the University of Saskatchewan and jointly led by an international team of researchers and partners from Canada, the United States, Sweden, and Norway. Our goal is to reimagine energy security in northern and Indigenous communities by co-creating and brokering the knowledge, understanding, and capacity to design, implement and manage renewable energy systems that support and enhance social and economic values.

PARTNERS



CASES

17

northern & indigenous communities

17

public & private sector partners

30+

researchers

4

countries



Deschaumbault Lake, Pelican Narrows, Kinoosao, Southend, Fort McPherson, Aklavik, Inuvik, Tsiigehtchic, Churchill, York Factory First Nation



Arctic Village, Kotzebue, Galena



Gällivare, Jokkmokk

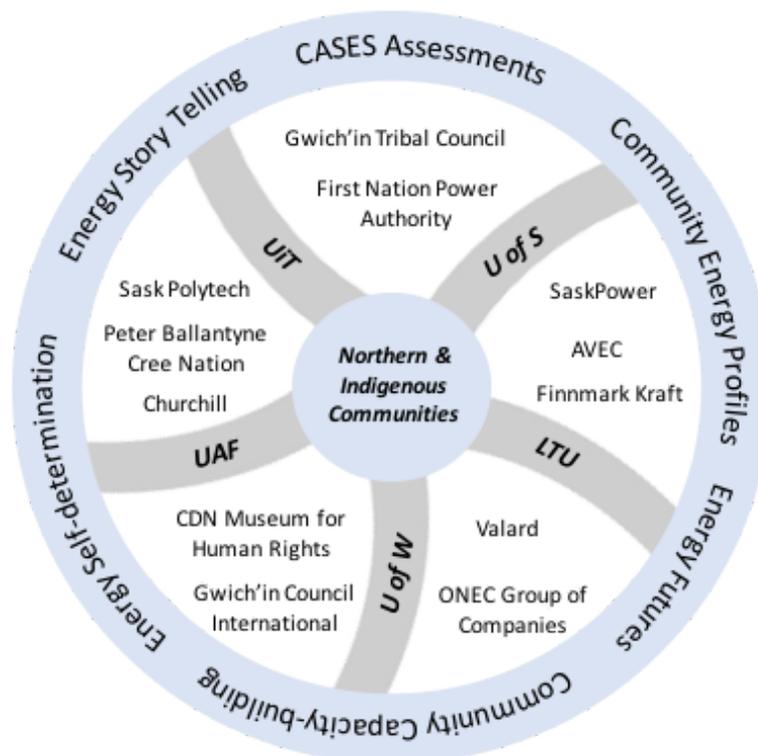


Kautokeino, Senja

PARTNERSHIP OBJECTIVES

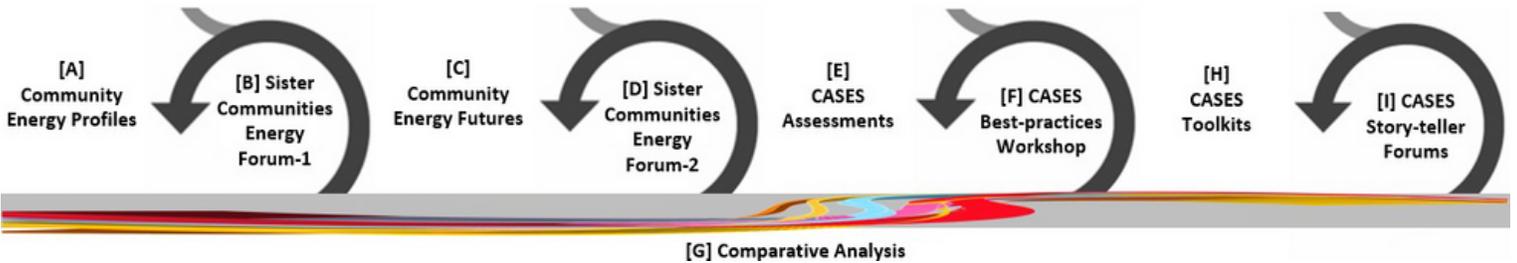
The CASES Partnership is pursuing the following objectives:

- i. Co-develop and apply tools for assessing, understanding, and enhancing the social and economic value of renewable energy in northern and Indigenous communities.
- ii. Determine the necessary and sufficient conditions, including common challenges and solutions, for successfully introducing renewables into the energy mix of northern and Indigenous communities.
- iii. Facilitate co-learning between partners and 'sister communities' to share knowledge and innovations that contribute to long-term sustainable energy security, through a network of model energy communities across the Circumpolar North.
- iv. Create a northern Circumpolar knowledge sharing platform, comprised of model community energy plans, energy transition tool-kits, and stories from international experience for communities, utilities and researchers to network, exchange knowledge, and facilitate long-term capacity building.
- v. Train a new generation of interdisciplinary researchers, policy makers, and practitioners to transform energy systems and promote sustainable energy patterns in northern and Indigenous communities.



PROJECT APPROACH

[J] Open Access Knowledge Mobilization Platform & Project Database



Research

Community energy profiles: Constructing community energy profiles (use, load, vulnerability, demand) as a planning resource for communities and utilities

Community energy futures: Co-producing bottom-up visions for community energy systems based on local values and aspirations

Community energy assessments: Exploring energy possibilities, value generation opportunities, and the needed investments in technology, infrastructure, governance and capacity to achieve energy self-sufficiency

International best-practices: Identifying international best practices in community energy transition, technological solutions, energy systems ownership, and governance arrangements

Connection



Sister communities: Building capacity in northern and Indigenous communities through international community-to-community partnerships to learn about energy transition solutions.

CASES toolkits: Co-creating resources for northern and Indigenous communities to lead energy planning, build energy literacy, and maximize renewables opportunities

Story-teller forums: Sharing northern experiences with energy transition and social and cultural meanings of energy security

Energy gateway: Establishing an open-access online platform for community energy data, energy planning, knowledge translation, and local capacity building



Monthly Webinar Series

November 16, 2020: Northlands ERAAES Pilot Project, Dan Benoit

December 14, 2020: MicroFEWs Project, Dr. Whitney and Dr. Schmidt

February 4, 2021: Smart Senja Project, UiT and Arwa

March 23, 2021: Watay Project, Margaret Kenequanash

April 28th, 2021: Supporting Indigenous clean energy shifts, Nicolas Mansuy and Jennifer Buss, NRCAN

October 13th, 2021: Energy transitions in remote Arctic communities: Drivers and community priorities, Dr. Chad Walker and Dr. Vikas Menghwani

November 17th, 2021: Introduction to Smart Grids, Dr. Tony Chung

January 13th, 2022: Community Energy Planning, Pat Bell

February 22, 2022: Michael Ross

March 15, 2022: Tim Kalke

April 13, 2022: CASES Student Panel

Academic Conference, May 2021

18 Student Presentations

This conference brought together (virtually) students, researchers and industry partners from Canada, Alaska, Norway and Sweden to discuss issues of common interest. The virtual conference was co-hosted by the University of Alaska Anchorage (UAA), University of Alaska Fairbanks (UAF), University of Saskatchewan (USask) and the UArctic Thematic Network on Renewable Energy and held on May 5th and 6th, 2021.

Full conference details, including recordings, can be viewed here:

<https://renewableenergy.usask.ca/events/cases-academic-conference21.php>

CASES ACTIVITIES



Mitacs Accelerator



On January 1st, 2021, seven CASES Students began a three month Mitacs Accelerate internship, each paired up with an industry partner. The purpose of the program was to help the students expand their research, develop skills, and gain valuable experience as they look to a career in academia, industry, or the not-for-profit sector.

4 Partner Organizations



7 Graduate Students



In addition, students were required to complete three professional development courses offered by Mitacs and attend two professional development seminars, including presentations on:

- Introduction to RETScreen, University of Saskatchewan
- Marc Ouimet, Director Indigenous Relations, Valard Construction: Community Relationships

A big 'Thank You' to our industry partners for providing time and resources for this program.

Students: Rhys McMaster, Renata Leonhardt, Peter Sigurdson, Bobbie Balicki, Sara Thompson, Bo Hu, and Camila Martins Godinho

Community Interviews

The COVID-19 pandemic brought with it many challenges for our researchers and students. Unable to travel to the remote northern and Indigenous communities meant we needed to adapt the way in which we conducted our research. In the summer of 2020, we partnered with the Gwich'in Tribal Council and hired 4 local youth community researchers to assist us in conducting interviews in the four NWT communities. As a result, over 70 interviews were completed with local residents.

70+ Community Interviews

45 Leadership & Industry Partner Interviews

In addition, CASES graduate students were able to conduct over 45 interviews (remotely) with local, regional and territorial leaders and industry partners. A similar approach is currently underway in PBCN communities in northern SK.



Publications

Journal Articles

- Dutta N, Noble BF, Poelzer G, Hanna K. 2021. From project impacts to strategic decisions: recurring issues and concerns in wind energy environmental assessment. *Environmental Management*
<https://doi.org/10.1007/s00267-021-01518-2>
- Hu B, Gong Y, Chung CY, Noble B, Poelzer G. 2021 Price-maker bidding and offering strategies for networked microgrids in day-ahead electricity markets. *IEEE Transactions on Smart Grid*
<https://doi.org/10.1109/TSG.2021.3109111>
- Lauf, T., Ek, K., Gawel, E., Lehmann, P, and Söderholm, P. 2020. The Regional Heterogeneity of Wind Power Deployment: An Empirical Investigation of Land-Use Policies in Germany and Sweden. *Journal of Environmental Planning and Management* 63(4), 751-787.
- Leonhardt R, Noble BF, Poelzer G, Belcher K, Fitzpatrick P, Holdmann G. 2022. Advancing local energy transitions: A global review of government instruments supporting community energy. *Energy Research and Social Sciences* 83:<https://doi.org/10.1016/j.erss.2021.102350>
- McMaster, R., Noble, BF., Poelzer, G. & Hanna, K. (2021). Wind energy environmental assessment requirements and processes: an uneven landscape. *Impact Assessment and Project Appraisal*, 39(1): 11-23.<https://doi.org/10.1080/14615517.2020.1815271>
- Nwanekezie K, Noble BF, Poelzer G. 2021. Transitions-based strategic environmental assessment. *Environmental Impact Assessment Review*
<https://doi.org/10.1016/j.eiar.2021.106643>
- Rizzo, A., Ekelund, B., Bergström, J., and Ek, K. 2020. Participatory design as a tool to create resourceful communities in Sweden. In *Co-creation of Public Open Places: Practice - Reflection – Learning*, Editors Carlos Smaniotto Costa, Monika Mačiulienė, Marlucci Menezes, Barbara Goličnik Marušić, *Edições Universitárias Lusófonas*, pp. 95-107. Layout 1 (grupolusofona.pt)



Publications

Technical Reports & Other Publications

- Bespflug, C., Leonhardt, R., McMaster, R., Thompson, S., and Yoursy, A. 2020. Aklavik: Energy Profile Background Technical Report. Saskatoon, SK: CASES.
- Bespflug, C., Leonhardt, R., McMaster, R., Thompson, S., and Yoursy, A. 2020. Fort McPherson: Energy Profile Background Technical Report. Saskatoon, SK: CASES.
- Bespflug, C., Leonhardt, R., McMaster, R., Thompson, S., and Yoursy, A. 2020. Inuvik: Energy Profile Background Technical Report. Saskatoon, SK: CASES.
- Bespflug, C., Leonhardt, R., McMaster, R., Thompson, S., and Yoursy, A. 2020. Tsiigehtchic: Energy Profile Background Technical Report. Saskatoon, SK: CASES.
- Brinley, K. 2021. A comparative analysis of the advancement of biomass energy in Alaska, Finland, Sweden, and Canada. Background Technical Report. Saskatoon, SK: CASES.
- Holdmann G., Wies R., Vandermeer J. 2019. Paper published in the Proceedings of the IEEE (Volume: 107, Issue: 9, September 2019, p. 1820-1837) "Renewable Energy Integration in Alaska's Remote Islanded Microgrids: Economic Drivers, Technical Strategies, Technological Niche Development, and Policy Implications" by. DOI: 10.1109/JPROC.2019.2932755
- Robb, K., Fitzpatrick, P., & Desorcy, G. (2020, July). Re- Envisioning an Energy Strategy for Manitoba: Planning for 2030 and Beyond. Conference Proceedings: International Conference on Sustainable Development. <https://ic-sd.org/wp-content/uploads/2020/11/Kate-Robb.pdf>
- Sigurdson, P., Ibrahim, O., Fernandes, L. and Balicki, B. 2020. Community Energy Profile: Preliminary Assessment. PBCN Communities of Deschambault Lake, Pelican Narrows, Southend, and Kinoosao. Saskatoon, SK: CASES.



Publications

Student Thesis

- Brinley K., 2021 Bio-energy advances: a comparative analysis. Undergraduate Honors thesis. Department of Geography & Planning, University of Saskatchewan.
- Dutta N., 2021. Off-ramping strategic issues from project EA in the renewable energy sector. MSc thesis. Department of Geography & Planning, University of Saskatchewan.
- Fernandes de Sousa Moura L.. Renewable energy and energy efficient toolkit. MSEM Project Report. School of Environment & Sustainability, University of Saskatchewan.
- Gebre-Mehdin, A. 2020. Swedish FES-related policy: integration of national objectives and factors affecting local actors' policy response, Master's Thesis in Forest policy, Swedish University of Agricultural Sciences in collaboration with Luleå University of Technology. This thesis addresses the intersection of forest-, energy, climate- and nature conservation policies, particularly synergies and conflicts related to increased production of forest-based bioenergy.
- Godinho Martins. 2022. Understanding the impacts of, and mitigation actions for, renewable energy projects: case study of wind energy in western Canada. MSc thesis. Department of Geography & Planning, University of Saskatchewan.
- Häggbom, G. 2020. Aktörskoalitioner och strategier i policyprocessen: En fallstudie av Jokkmokks energipolitik (Actor coalitions and energy policy strategies: A case study of energy policy in Jokkmokk municipality), Bachelor's Thesis in Political Science, Luleå University of Technology. FULLTEXT02.pdf (diva-portal.org)
- Kvern, M. 2020. Strengthening Energy Security through Community Energy Planning in Churchill, Manitoba [Unpublished undergraduate honours thesis]. University of Winnipeg.
- Leonhardt, R. 2022. Advancing Energy Transitions: A Review of Government Instrument Supporting Community Energy. MSc thesis. Department of Geography & Planning, University of Saskatchewan.
- Nordlund, L. 2020. Att ta tempen på klimatpolitiska ramverk: Ett fall av påverkansfaktorer för klimatpolicyintegrering på lokal nivå (Assessing climate policy instruments: factors affecting local level climate policy integration), Master's Thesis in Political Science, Luleå University of Technology.
- Robb, K. 2021. MSc thesis. Nation-to-Nation Engagement and Meaningful Public Participation in Canadian Water Power Licensing. Development Practice in Indigenous Development, University of Winnipeg.
- Ronnerfors, R., and Svensson, E. 2020. Viljan att investera i en bostadsnära solcellsanläggning: Undersökning av investeringsviljan (The willingness to invest in solar power in residential areas), Master's Thesis in Economics, Luleå University of Technology.



Presentations

- Beland Lindahl, K. 2020. Clash or concert in European forests? Integration and coherence of Forest Ecosystem Service-related national policy. Governing and managing forests for multiple ecosystem services across the globe conference. Research centre CAESAR, Bonn.
- Beland Lindahl, K. 2020. Integration of European forest related policies, including that of energy and climate policy. Presented at the Governing and Managing Forests for Multiple Ecosystem Services Across the Globe, Research Centre CAESAR, Bonn.
- Dutta, N., Noble, B.F., Hanna, K. & Poelzer, G. 2019. Off-ramping strategic issues from project EA in the renewable energy sector. 43rd Annual Meeting of the Prairie Division of the Canadian Association of Geographers (PCAG)
- Holdmann, G. 2019 . Finding the Critical Pathways to Renewable Energy Development in Remote Communities: A Qualitative Comparative Analysis (QCA) Using Rural Alaska as a Case Study. Arizona State University's 2nd International Conference on Energy Research and Social Science.
- Kvern, M. 2019. Planning for Energy Security and Resilience in Churchill, Manitoba. Presented at the 2019 Annual Conference of Canadian Association of Geographers, Research prospectus, Winnipeg MB.
- Kvern, M. 2019. Building an Energy Profile: Opportunities and Challenges in Churchill, Manitoba. 43rd Annual Meeting of the Prairie Division of the Canadian Association of Geographers (PCAG)
- Kvern, M. 2020. "Watt" does energy security mean in the North? The need for local agency and efficiency. Presented at the Randy Kobes Poster Competition, Winnipeg MB.
- Kvern, M. 2020. Strengthening Energy Security through Community Energy Planning in Churchill, Manitoba. Thesis Presentation to the 2020-2021 Geography Department Speaker Series, Winnipeg, MB.
- Kvern, M., Durand, M., Robb, K., Sewell, K., Fitzpatrick, P. 2021. Power to be Green: Mapping Renewable Energy in Manitoba. Poster at the Sustainable Building Manitoba Building Resilience Gathering, Winnipeg, MB.
- Leonhardt, R. 2021. Advancing Energy Transitions: A Review of Government Instrument Supporting Community Energy. 44th Annual Meeting of the Prairie Division of the Canadian Association of Geographers (PCAG)
- Martins, Godinho C., Noble, BF., Hanna, K. & Poelzer, G. 2019. Understanding impacts and mitigation actions from renewable energy projects: a case study of wind energy in western Canada. 43rd Annual Meeting of the Prairie Division of the Canadian Association of Geographers (PCAG)
- McMaster, R., Noble, B.F., Poelzer, G. & Hanna, K. 2019. Analysis of wind energy development guidelines and regulatory processes across Canadian jurisdictions. 43rd Annual Meeting of the Prairie Division of the Canadian Association of Geographers (PCAG)
- McMaster, R. 2021. Socio-Technical Baseline Capacities: Energy Transition Opportunities. 44th Annual Meeting of the Prairie Division of the Canadian Association of Geographers (PCAG)
- McMaster, R. 2021. Socio-Technical Baseline Capacities: Energy Transition Opportunities. OIA Conference, Invited Panelist <https://oia.on.ca/2021-conference/>



Presentations

Continued...

- Noble, B., Poelzer, G., Hanna, K., Fitzpatrick, P., Beatty, B., Lovcraft, A., Holdmann, G., Soderholm, P., Krook-Riekkola, A., Hernes, HK. & Broderstad, EG. 2019. Role of IA in community appropriate sustainable energy security. 2019 Ontario Association for Impact Assessment (OAIA) Conference, Toronto, ON
- Nwanekezie, K. & Noble, BF. 2019. Transitions-based strategic environmental assessment. 2019 Ontario Association for Impact Assessment (OAIA) Conference, Toronto, ON.
- Poelzer, G. & Noble, BF. 2019. Community appropriate sustainable energy security. Arctic Winter Field School, UiT Norway.
- Poelzer, G. 2021. COP26: Reimagining Energy Leadership: Achieving our SDGs through a human-centric energy transition, Panel Discussion.
- Robb, K., & Fitzpatrick, P. 2020. Re-Envisioning an Energy Strategy for Manitoba: Planning for 2030 and Beyond. A workshop held by the Consumers' Association of Canada, Manitoba Branch, the Public Interest Law Centre, and the University of Winnipeg.
- Robb, K., Fitzpatrick, P., Desorcy, G. 2020. Re-envisioning an energy strategy for Manitoba: Planning for 2030 and Beyond. Presented at the International Conference on Sustainable Development, Columbia University (virtual)
- Robb, K. 2021. Who has the Power? Meaningful Public Participation in Canadian Water Power Licensing. 3-Minute Thesis Competition, The University of Winnipeg.
- Robb, K. 2021. Planning for 2030 and Beyond: Public Perceptions of Energy Strategy Development in Manitoba. Presented at the Manitoba Sustainable Energy Association Annual Conference: Towards a Sustainable Energy Future, Winnipeg, MB.
- Robb, K. & Fitzpatrick, P. 2021. Key Principles in Canadian Energy Strategies: Exploring Current Trends. Poster at the Sustainable Building Manitoba Building Resilience Gathering, Winnipeg, MB.
- Söderberg, C., and Nordlund, L. 2021. Climate Policy Integration Across Levels: Municipal Policy Implementation in Response to the Swedish Climate Act, paper presented at the Political Science Research Seminar.
- Söderberg, C. and Warell, L. 2020. Resource efficient cities - successful local energy solutions. Political Science Research Seminar, LTU.
- Söderholm, P. 2019. Can Technology-specific Policies be Cost-effective? The Case of Renewable Energy Support Schemes. Economics Research Seminar, LTU.



POST DOCS & PHD STUDENTS



Dr. Vikas Menghwani
Post Doc (UofS)



Dr. Chad Walker
Post Doc (UofS)



Bo Hu, PhD Candidate
Engineering (UofS)
Safe Reinforcement Learning-Based
Real-Time Energy Management in
Combined Heat and Power
Microgrids



Arwa Jaradat,
PhD Candidate
GEPL (UofS)
Social dimension of energy security
and youth in Indigenous
communities



Rich Stromberg,
PhD Candidate (UAF)
Study of Failure Modes and
Degradation Rates for Reuse Solar
Photovoltaic Modules



Laura Lynes,
PhD Candidate
SENS (UofS)
Weaving Indigenous Values into
Research Design to Advance Energy
Security in the North



Daniel Yupanqui,
PhD Candidate (UofS)
Resource Economics
Costs and benefits of renewable
energy and their dependency on
geography



Tim Kalke,
PhD Candidate
SENS (UofS)
Costs and benefits of renewable
energy and their dependency on
geography



CURRENT MASTERS STUDENTS



Cost Benefit
Framework for Cold
Climate Microgrids

Bobbie Balicki
Resource Economics,
UofS



Increasing Indigenous
Ownership in the
Energy Transition:
Comparative Lessons
for Northern Canada
from Norway and
Alaska

Dakota Norris
SENS, UofS



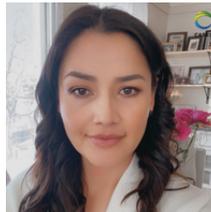
IBuilding a Northern
Creative Class: Using
Community Energy
Projects to Develop
Talent, Tech and Trust
in the Circumpolar
North

Josie Ward
SENS, UofS



Socio-Technical
Baseline Capacities:
Community Energy
Transition Opportunities

Rhys McMaster
GEPL, UofS



Melissa Beatty
SENS, UofS



Norway's Energy
Transition: A Historical
Institutional
Perspective

Minika Ekanem
GEPL, UofS



Understanding
Community-Based
Perspectives on Energy
Security: A Partnership
with
Gwich'in Tribal Council,
NWT

Sara Thompson
GEPL, UofS



Energy modeling in
northern remote
communities

Hakan Armagan
SENS, UofS



Building a
measurement
framework for
comparing Energy
related Carbon
Dependency across
remote communities

Femi Abraham
SENS, UofS



Distribution system
resiliency against
extreme weather
events and microgrid
capability in northern
communities

Avishek Sapkot
Engineering, UofS



Sage Broomfield
UofW



Methods to determine
the aggregated value
of community energy
projects for Indigenous
communities

Daniela Alava
SENS, UofS



CURRENT MASTERS STUDENTS

Continued...



The social value of energy in rural communities in Canada

Brigitte Lim
SENS, UofS



Role of Municipalities in achieving the National Climate Target - A case study of northern Sweden

Parvathy Sobha
LTU



Interdisciplinary approaches and the Smart Senja project

Odin Foldvik
UiT



The Onsite Real-time Collection and Acquisition (ORCA) Device: Microgrid Powerhouse Data Collection and Storage

Henry Toal
UAA, ACEP



CURRENT MSs IN ENERGY SECURITY & UNDERGRADUATE STUDENTS



Rosa Brown
MSs, SENS, UofS



Danielle Poulin
MSs, SENS, UofS



Jordan Koe
MSs, SENS, UofS



Darby Desrosiers
MSs, SENS, UofS



Natasha Tinis,
MSs, SENS, UofS



Stephanie Lukowski
Undergrad, GEPL, UofS



PAST STUDENTS



Renata Leonhardt
Masters, GEPL, UofS

Renata is a geologist enthusiastic about the energy sector. Her career in the energy sector started in 2015 while working on research projects with leading petroleum companies in Brazil. She transitioned her career to focus on renewable energy in 2019 when she began her studies at the University of Saskatchewan. There she received a master's degree from the Department of Geography and Planning and worked as a research group leader in the Canadian Centre for the Study of Co-operatives. Her research focused on the relationships and connections between energy policy and local renewable energy projects. Currently, she is a PhD student at the University of Victoria studying regional energy transitions and renewable energy clusters.



Michael Kvern
B.A. Honours, UofW

Michael recently graduated from the University of Winnipeg with a B.A. Honours in Geography. He is interested in the nexus between energy, land use, and resilience. His undergraduate thesis developed the foundations of a community energy plan for Churchill, Manitoba by providing energy consumption data and facilitating a vision and priorities to guide future energy planning. It also served to inform a new regional scale definition of energy security. Working with Dr. Patricia Fitzpatrick, Michael has researched small-scale renewable energy in Manitoba and how local agency can lead to a diverse energy system. Michael is currently pursuing a master's in planning at the University of Guelph, where he is focusing on how provincial land use policies can contribute to a low carbon energy transition.



Kate Robb
Masters, UofW

Kate completed both a BA in Environmental Studies and a Master's in Development Practice in Indigenous Development at the University of Winnipeg. Through the CASES project, her graduate research focused on public participation in state-level energy strategies as well as the licensing processes for hydroelectric development in Canada. Following an internship with the Alaska Center for Energy and Power (ACEP) in the summer of 2021, Kate began a research fellowship with ACEP and CASES where she continues to expand her knowledge of energy policy and renewable energy in the north.



Camila Martins Godinho
Masters, GEPL, UofS

Camila was a Master's student in the Department of Geography and Planning at the University of Saskatchewan. Her project focused on environmental impact assessment, more specifically on identifying environmental and socio-economic impacts and their mitigation actions from wind energy projects in western Canada. Camila defended her thesis in early 2022 entitled: Understanding the Impacts of, and Mitigation Actions for, Renewable Energy Projects: A Case Study of Wind Energy in Western Canada.



Layane Fernandes de Sousa Moura
MSEM, SENS, UofS

Layane received a professional master's degree in Environmental and Sustainable Management at the University of Saskatchewan. Layane contributed to the CASES Partnership by developing a project for First Nations Power Authority (FNPA) where she created an education hub on their website. This project aimed to develop tools and resources for renewable energy and energy efficiency education with Indigenous communities.

UPCOMING EVENTS

CASES International Forum

May 9th, 10th & 11th, 2022



This event will combine both virtual group sessions and local in-person events. The forum will allow for the sharing of preliminary research results from the CASES Partnership project, presentations from experts, and opportunities for partners from Alaska, Canada, Sweden, and Norway to connect and build relationships for future collaboration.

Events will follow three themes:

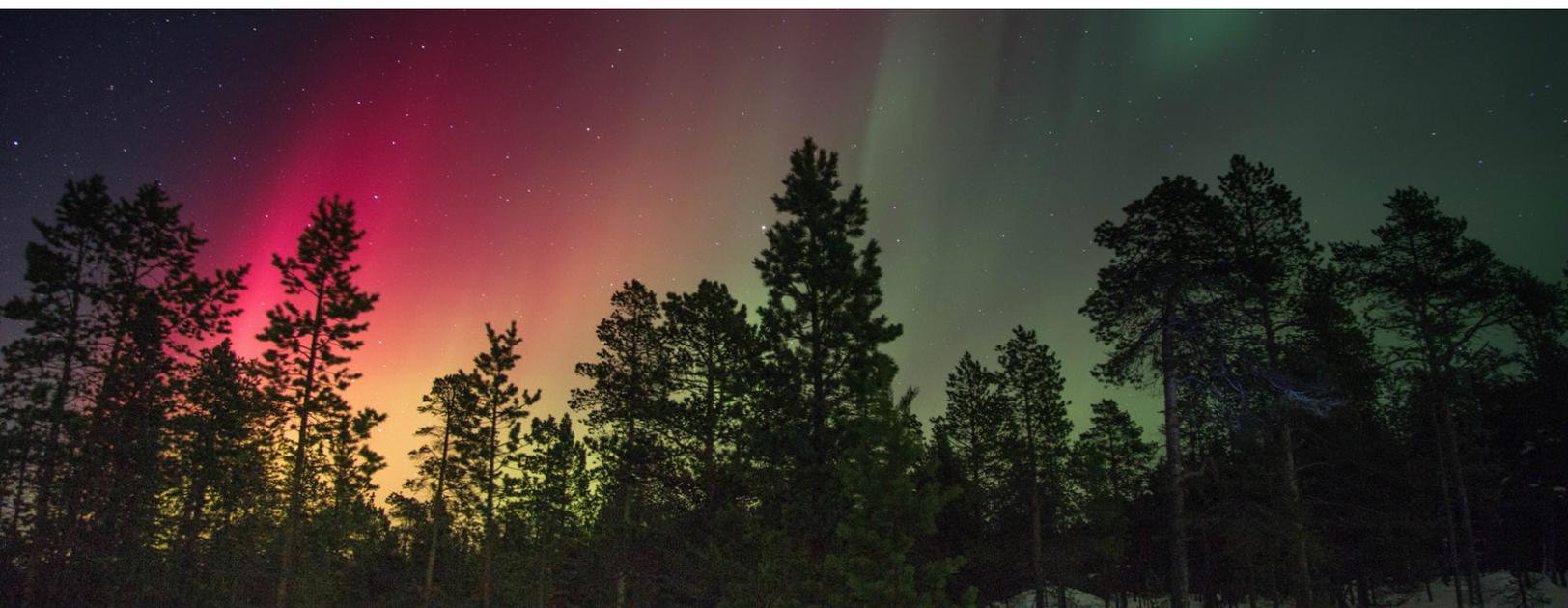
Day 1: Energy Security

Day 2: Energy Futures

Day 3: Policy Context



SSHRC  CRSH



CASES Partners

QUEST

SSHRC  CRSH

 Mitacs

Gwich'in Council 
INTERNATIONAL

 SaskPower
Powering the future

 Valard | Connecting People.
Powering Communities.



 ACEP
Alaska Center for Energy and Power

 ONEC

 Finnmark Kraft



 First Nations
Power Authority™



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WINNIPEG

 UArctic

 UiT / THE ARCTIC UNIVERSITY
OF NORWAY

 UAF

 AVEC
ALASKA VILLAGE ELECTRIC COOPERATIVE

 Gwich'inat Eenjit Gádatr'igwijiłchei Gáditli
Gwich'in Tribal Council



 PETER BALLANTYNE
GROUP OF COMPANIES

 SASKATCHEWAN
POLYTECHNIC

 CANADIAN MUSEUM FOR HUMAN RIGHTS
MUSÉE CANADIEN POUR LES DROITS DE LA PERSONNE

 LULEÅ
UNIVERSITY
OF TECHNOLOGY

 UNIVERSITY OF
SASKATCHEWAN

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VISIT OUR WEBSITE: [HTTPS://RENEWABLEENERGY.USASK.CA](https://renewableenergy.usask.ca)



**For more information,
please contact:**



Dr. Greg Poelzer
CASES Co-Director
greg.poelzer@usask.ca



Dr. Bram Noble
CASES Co-Director
b.noble@usask.ca



Jackie Martin
CASES Project Manager
jackie.martin@usask.ca

WWW.RENEWABLEENERGY.USASK.CA



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