Pacific Institute for Climate Solutions

Climate research and project supports for B.C. communities

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Southern Interior Local Government Association

Pacific Institute
for Climate Solutions

About PICS

- Established by Province of B.C. in 2008 with the goal to support evidence-based climate research, policies, and programs.
- Multi-university governance – hosted at UVIC, the Executive Committee includes a representative from each of UNBC, UBC, SFU, UVIC, as well as provincial and federal reps.
- PICS funds solutions-oriented, innovative climate research and advice.
- PICS also offers small grants opportunities for the government, non-profit, and business sectors.

Pacific Institute for Climate Solutions

Climate Research for BC needs

Themes and Priorities

- BC Wildfires
- Sea Level Rise and Flooding
- Indigenous Collaboration
- Reducing and Removing Emissions
- Climate Risk Assessments
- Climate Foresight – anticipating future scenarios and solutions

PICS OPPORTUNITIES PROJECT

Fighting fire with food

Indigenous fire stewardship can increase biodiversity, buffer against climate change, and protect cultural values

RESEARCHERS

Lori Daniels
Kira Hoffman

PARTNERS

Gitanyow Nation
Gitanyow Lax'yip Stewardship Guardians
University of British Columbia

STATUS

Ongoing

DR. KIRA HOFFMAN
NSERC Postdoctoral Fellow, UBC

Fire is integral to healthy ecosystems in B.C. But a history of suppressing good fire — combined with climate change — has led to more frequent and disruptive wildfires.

Planting, tending, and burning fire-resistant vegetation increases the biodiversity of ecosystems, buffers against a rapidly changing climate, and protects cultural, ecological, and social values while lowering wildfire risk.

Researchers at UBC, in collaboration with the Gitanyow Lax'yip Guardians, received a PICS Opportunities grant to restore cultural fire regimes and ecosystem-based management to the territory.

In the Gitanyow Nation, areas surrounding important cultural sites were foodscapes managed with fire to support an abundance of berry patches, root gardens, and orchards. However, Indigenous fire stewardship practices were largely banned early last century, and much of the knowledges related to burning for plants and medicines has suffered lost.

The project identifies and revitalizes fire-reliant places and their interlinked cultural practices by weaving historical (photographs, tree rings, and fire scars) and contemporary fire data (remote sensing) together with Indigenous science and expertise recorded through oral histories and ecological legacies.

The project aims to:

- establish a network of plots before and after cultural fires and in control areas;
- work with Elders to record their knowledge of propagating and harvesting traditional foods and their connection to cultural burning; and
- facilitating community discussions about the importance of food and medicine harvesting, and documenting knowledge of historically fire-managed areas for restoration prioritization.

For the Gitanyow Lax'yip Stewardship Guardians, one of the project's partners, this research supports their work to build up more food and medicinal plant knowledge, learn more about adaptive ecosystem management, conduct wildlife surveys and monitoring, and practise applied fire stewardship.

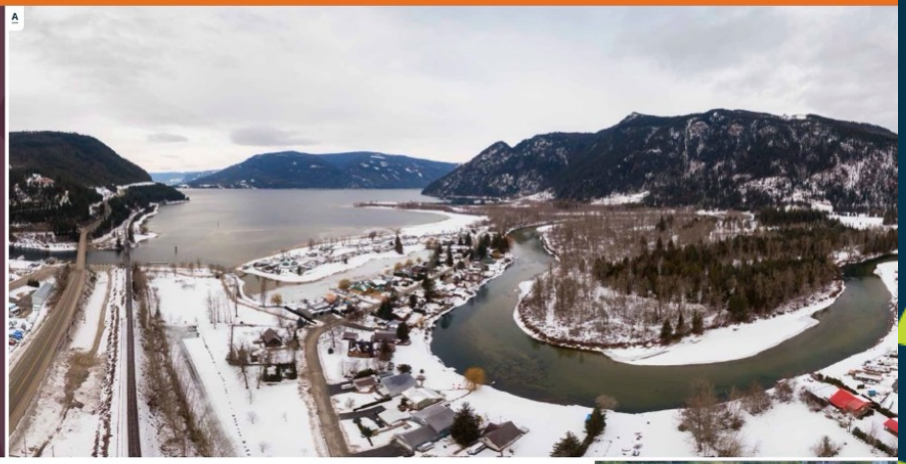
A. – E. Kira Hoffman, Gitanyow Elder Darlene Vegh, and members of the B.C. Wildfire Service perform a Gitanyow-led cultural burn at Xsit'ax (Kitwanga River) on Wilp Gwaas Hlaam lands in northwest B.C. Credit: Marty Clemens

THE PROJECT IDENTIFIES AND REVITALIZES FIRE-RELIANT PLACES AND THEIR INTERLINKED CULTURAL PRACTICES BY WEAVING HISTORICAL AND CONTEMPORARY FIRE DATA, TOGETHER WITH INDIGENOUS SCIENCE AND EXPERTISE.

PICS THEME PARTNERSHIP

Planning climate resilient solutions for rural and remote B.C.

Rural, remote, and Indigenous communities co-develop innovative solutions for better housing and safer equipment in changing climates



RESEARCHERS

Nancy Olewiler
David Bristow

PARTNERS

First Nations Housing and Infrastructure Council
B.C. Housing and Technical Safety B.C.
Simon Fraser University
University of Victoria
University of Waterloo
University of Washington
University of Calgary

STATUS

Ongoing

Communities across B.C. experience climate change differently. Floods, storms, extreme heat, fire, and drought are just a few of the events that communities are increasingly likely to face.

These events intersect with how communities are built, organized, and supported, shaping different experiences. Rural, remote, and Indigenous communities are especially sensitive to climate change.

A multi-institutional research team led out of SFU has received a PICS Theme Partnership grant to address the confluence of climate change, housing, infrastructure safety, and community resilience for rural and remote communities. The project aims to weave place-based and Indigenous Knowledges with academic research to co-develop solutions that lead to greater community health, safety, and resiliency.

In its first year, the project expanded its team, started research on key themes, and took a community-centred approach to host workshops and build trust and respectful relationships with First Nations communities. Severe weather and wildfires affected the team's ability to meet with partner organizations and communities throughout the province.

A major outcome of the project is a Fire Resilience Handbook co-created with First Nations communities. The team hosted a Wildfire Resilience workshop, showcasing the handbook and gathering valuable feedback from communities and practitioners, which has since been integrated into their work. The team has planned additional workshops with community partners emerging in 2025.

The project's work is already influencing initiatives, such as Technical Safety B.C.'s (TSBC) inventory of infrastructure risks. Through a collaborative process, the team has helped to develop a more detailed and organized database for these risks. By contributing valuable research and insights, the project is helping to shape TSBC's approach to managing technical risks across the province.

THE PROJECT AIMS TO WEAVE PLACE-BASED AND INDIGENOUS KNOWLEDGES WITH ACADEMIC RESEARCH TO HELP COMMUNITIES CO-DEVELOP SOLUTIONS THAT LEAD TO GREATER HEALTH, SAFETY, AND RESILIENCY.

A. *Aerial panoramic view of Sicamous, a small town in the interior of B.C. Credit: iStock*

B. *Bearskin Bay, Haida Gwaii Islands. Credit: iStock*

DR. NANCY OLEWILER
Director and Professor, School of Public Policy, SFU

DR. DAVID BRISTOW
Professor, Civil Engineering, UVic

Enhancing climate risk assessment

As B.C. recovers from consecutive climate change events, PICS has gathered experts to map future risks and impacts

RESEARCHERS

Dylan Clark
Caroline Merner
Alyssa Hill
Emily MacNair
Ian Mauro

PARTNERS

B.C. Ministry of Emergency Management and Climate Readiness (EMCR)

STATUS

Ongoing

Effective risk assessments are crucial for protecting communities and ecosystems from climate-related emergencies like floods, droughts, heatwaves, and wildfires. Those assessments, however, must be based on current evidence and diverse perspectives.

As climate-related risks continue to evolve, so too should the tools used to measure and evaluate the risks. It is especially important that new research and knowledge support communities in planning for long-term resilience.

In 2023, the Pacific Institute for Climate Solutions (PICS) began providing guidance to the Ministry of Emergency Management and Climate Readiness (EMCR), specifically regarding incorporating evidence-based climate change research into provincial risk assessments. PICS, guided by an academic advisory group with members from across B.C., is identifying research gaps and priorities, and uncovering the best ways to integrate research into climate risk assessments.

The Climate Risk and Resilience Academic Advisory group's 14 members are experts in wide-ranging subjects, including wildfire, drought, flooding, extreme heat, health, climate justice, knowledge systems, cascading risks, hydrological sciences, forestry, engineering, and emergency management. Many of the members are from PICS universities.

Throughout 2024, the project team continues to gather insights from a wide range of experts through interviews, workshops, advisory group guidance, and a comprehensive literature review that will be shared with EMCR. Workshops have focused on wildfire, extreme heat, drought, and flood and sea level rise. A research and knowledge mobilization agenda and recommendations are being developed for the province on how to strengthen climate risk and resilience assessments. This work supports informed decision-making and increased community resilience.

THROUGHOUT 2024, THE PROJECT TEAM CONTINUES TO GATHER INSIGHTS FROM A WIDE RANGE OF EXPERTS THROUGH INTERVIEWS, WORKSHOPS, ADVISORY GROUP GUIDANCE, AND A COMPREHENSIVE LITERATURE REVIEW WILL BE SHARED WITH EMCR.

A – C. *The Integrated Research into Risk and Resilience Assessments Wildfire Hazards Workshop on Syilx territory (Kelowna). June 3, 2024*

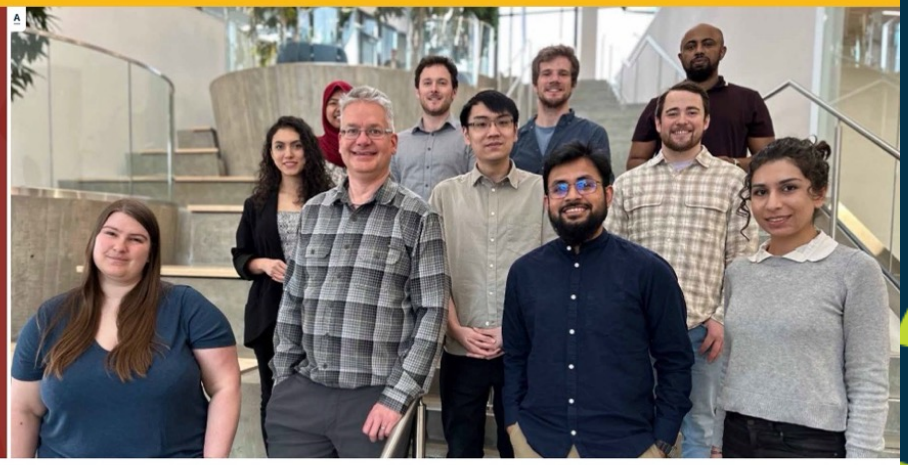
D. *PICS Climate Risk and Resilience Academic Advisory Group meeting, March 26, 2024 Credit: Jason Guille*

E. *Caroline Merner of the Integrated Research into Risk and Resilience Assessments project at the wildfire hazards workshop on Syilx territory (Kelowna) on June 3, 2024.*

PICS OPPORTUNITIES PROJECT

Building pathways to a future powered by low-carbon electricity

Research develops tools to explore resilient, green power sources in B.C.



A

RESEARCHERS

Taco Niet

PARTNERS

Renewable Hydrogen Canada Corp.
B.C. Hydro
B.C. Ministry of Energy, Mines and Low Carbon Innovation
Simon Fraser University

STATUS

Ongoing

B.C.'s ambitious emission reduction targets rely heavily on increasing electrification.

However, shifting to technologies like electric vehicles and heat pumps increase demand on the electrical system, which necessitates a substantial expansion of the low-carbon electricity supply and system. Strategies to reliably integrate power sources like wind, solar, and expanded hydro must be considered. Power sources also need to be resilient to droughts, severe weather, and wildfires.

Researchers at SFU received a PICS Opportunities grant to imagine pathways for resilient, low-carbon, and carbon-free electricity in B.C. The pathways comprise different generating infrastructure options, backed by analyses of their advantages and trade-offs — including impacts to water, food, and land use — to support policy and investment decisions.

The project team, led by the ΔE+ Research Group, brings together policymakers, public infrastructure, and industry participants to co-develop these models. Key questions partners are exploring include optimal generation and storage mixes, the sequencing of system expansion, and the implications of expanding cross-border transmission.

Research is ongoing and the project has made substantial progress. B.C. Nexus is an energy expansion model created through the project with results published in Renewable and Sustainable Energy Transitions. Other modelling completed in 2023 has been applied to a preliminary study of electric vehicle (EV) integration using varying charging strategies and EV use levels.

In its final year, the project will focus on extending modelling to explore trade and coordination with neighbouring provinces. Ultimately, the project aims to design comprehensive decision-making tools for an electrified B.C., addressing electricity generation, policy incentives for electrified use-cases, and integrated planning of energy, water, land, and climate systems to support a holistic and sustainable path to decarbonization.

THE PROJECT BRINGS TOGETHER POLICYMAKERS, PUBLIC INFRASTRUCTURE, AND INDUSTRY PARTICIPANTS TO CO-DEVELOP THESE MODELS.

B

A. *The ΔE+ Research Group at SFU. Provided by: Taco Niet*

B. *High tension electricity power transmission lines high above Shuswap lake in the interior of B.C. Credit: iStock*

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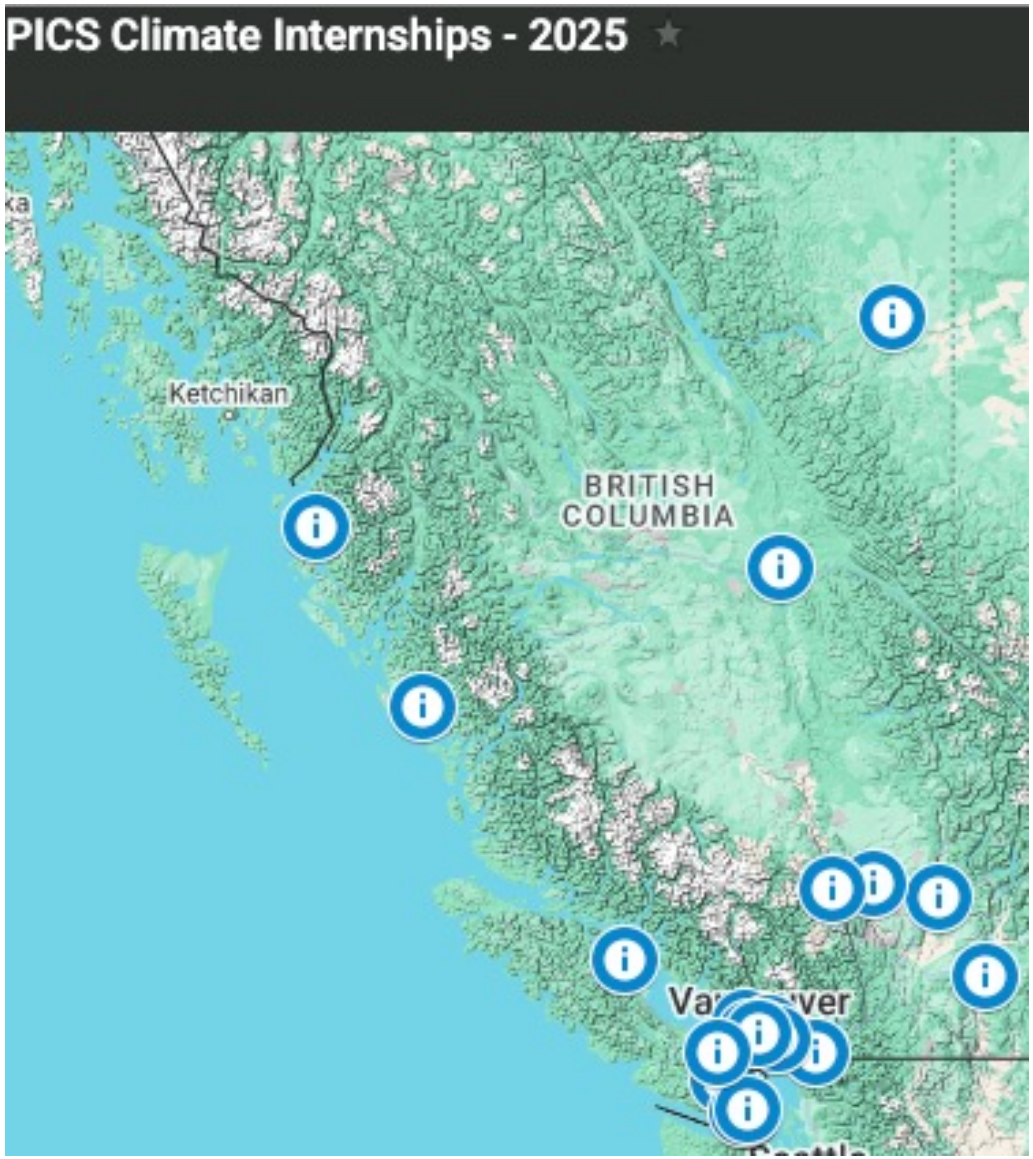
for Climate Solutions

Project supports for B.C. communities

PICS has developed small grant programs to directly support local government, First Nation, non-profits, businesses, and even provincial agencies across BC:

- Climate Internship Program
- Community Climate Action Events Program
- Uplifting Reciprocal Research Scholarship Pilot Program



PICS-SUPPORTED COLLABORATION / 06 / **BUILDING CAPACITY IN B.C.**

EVENTS

Fostering climate action through impactful events

PICS Events Program offers structured funding to support climate resilience, knowledge mobilization, and community-led solutions

The PICS Events Program has been a critical avenue for supporting climate-related events across B.C. Between 2019 and 2023, program parameters and intakes were flexible with most PICS-funded events originating from the network universities.

These events spanned a range of topics, from human health to the built environment to climate policy, and kept climate content and (virtual) conversations going throughout the pandemic.

In 2023, the program underwent significant changes to enhance its reach, aiming to increase participation beyond PICS campuses and emphasizing community benefit, alignment with climate justice and reconciliation principles, and climate action. Two application intakes engaged a wide range of groups, including nongovernmental organizations, Indigenous organizations, educational institutions, and community groups.

With the 2023 relaunch, almost $80,000 was granted to 17 successful applicants for their community climate action events. These events addressed critical climate issues such as community energy transitions, wildfire resilience, and Indigenous Knowledges related to climate change. During the period of November 2022 to August 2024, the program funded more than 30 climate events.

Based on lessons learned during the 2023 pilot phase, in 2024 PICS introduced two new funding streams to continue supporting climate-focused events in British Columbia:

1. **The University Climate Knowledge Mobilization Events Program** offers up to $2,500 to groups, organizations, departments, and institutes at PICS network universities (UBC, SFU, UNBC, UVic) to host events that promote climate change research, education, and knowledge sharing.
2. **The Community Climate Action Events Program** provides between $2,500 to $5,000 to non-profit organizations, Indigenous organizations, and First Nations hosting events that drive tangible climate action.

Both streams can fund diverse topics, such as energy transition, ecosystem health, sustainable food systems, and wildfire resilience. The program also prioritizes events that emphasize climate justice and reconciliation.

PICS Events

PICS also hosted four events throughout this report's timeframe:

- **November 2022:** PICS offered a series of public and private briefings on the PICS Report *Survive and Thrive: Why B.C. Needs a CO_2 Removal Strategy Now*, which reached more than 100 policymakers and decision makers, including provincial deputy ministers in the climate space.
- **December 2022:** the institute co-hosted a sold-out post-COP 27 panel discussion with SFU and UBC's Sustainability offices. *COP27 and the politics of power, people, and place* featured opening remarks by PICS Executive Director Ian Mauro, keynote by UBC faculty delegate Pasang Sherpa, and a panel discussion with UBC and SFU students who had attended COP 27.
- **May 2023:** PICS hosted a talk by Allen, "the physicist behind net z UVic, where an enthusiastic crow from Allen on the concept of Ge Net Zero.
- **November 2023:** Jonathan Foley Drawdown joined PICS and UVic's Climate Solutions Leaders, along several UVic co-sponsors, for a pu event to discuss *The Drawdown Re a science-based strategy to accelera climate action.*

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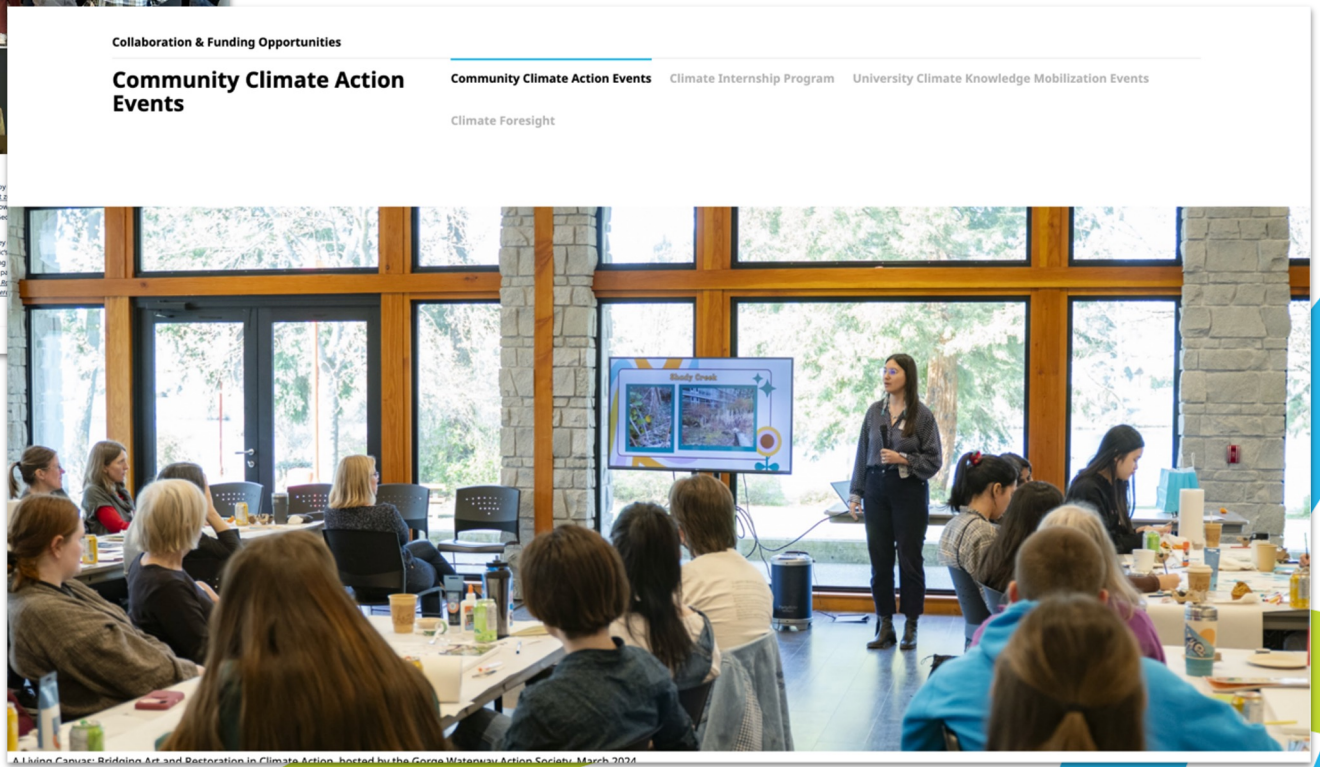
The **PICS Community Climate Action Events** program supports community events that aim to advance climate action that makes tangible impacts. Events could include a range of activities that inspire and contribute towards community climate action (e.g., planning and problem solving, building relationships and skills, and fostering meaningful conversations).



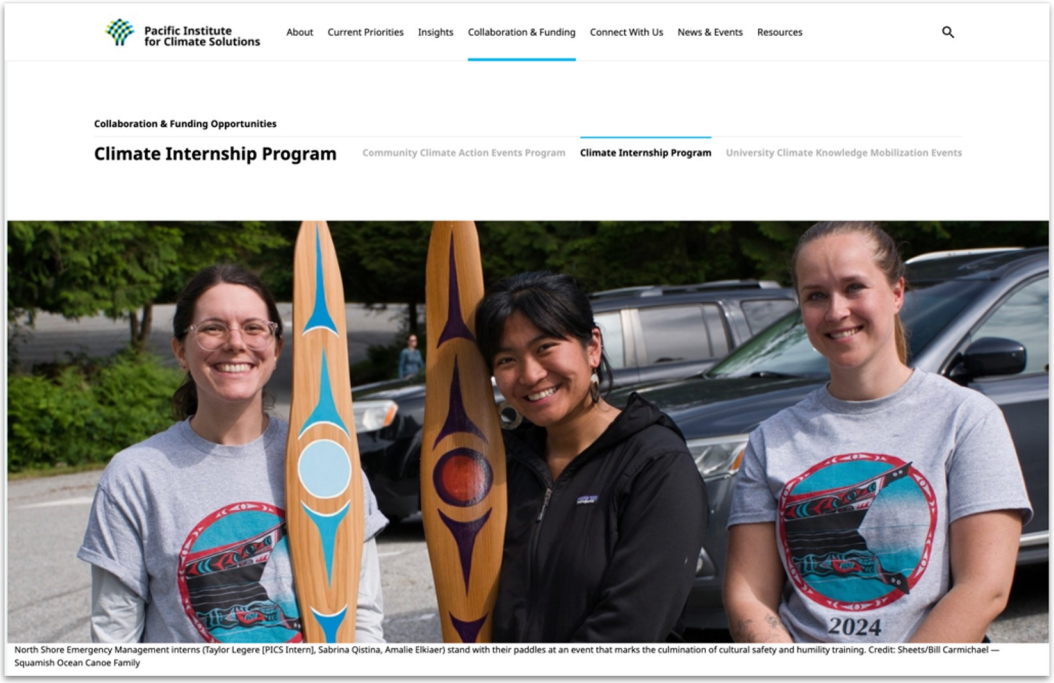
A Living Canvas: Bridging Art and Restoration in Climate Action, hosted by the Gorge Waterway Action Society, March 2024

The program offers $2,500 to $5,000 for eligible events.

The program accepts applications from:

- Community organizations (registered non-profits)
- Indigenous organizations and First Nations

PICS aims to approve six to ten events per intake.



North Shore Emergency Management interns (Taylor Legere [PICS Intern], Sabrina Qistina, Amalie Elkiaer) stand with their paddles at an event that marks the culmination of cultural safety and humility training. Credit: Sheets/Bill Carmichael — Squamish Ocean Canoe Family

B.C. organizations that can apply for internship funding:

- Non-government organizations (registered non-profits)
- First Nations and Indigenous organizations
- Provincial government agencies and Crown corporations
- Local governments
- Cooperatives & social enterprises
- Private companies

PICS 2025 Climate Internship cohort

Community Energy Association	Enhance the B.C. Local Government Community Climate Action Dashboard tool by performing evaluations, user engagement surveys and more.
Bowen Island Municipality	Update climate action strategy, and develop climate communication strategy.
Clean Energy and Major Projects Office	Evaluate various green energy solutions in British Columbia's mining industry.
Interior Health Authority	Evaluate a rural health authority's public health response in the face of extreme temperature events.
Emergency Planning Secretariat	Understand risk, enhance preparedness, and improve capacity in drought planning.
City of Prince Rupert	Develop a nature-based solution strategy for Prince Rupert to promote revitalization.
Ministry of Energy and Climate Solutions; Clean Transportation	Conduct policy review for accessibility and reliability of EV charging infrastructure.
British Columbia Centre for Disease Control (BCCDC)	Monitor, survey, and document cyanobacteria in B.C. lakes using satellite imagery. Develop a dashboard that includes early detection of blooms across B.C.
West Coast Climate Action Network	Train WE-CAN members on social media best practices to increase climate engagement.
Quw'utsun Cultural Connections Society & Social Planning Cowichan	Take action to protect and restore Quw'utsun cultural values on private land in the Cowichan Valley.
Engineers and Geoscientists BC	Assist with the development of a voluntary sustainability program that will help prepare member firms to meet growing climate and regulatory demands, and climate risk reporting.
BC Council for International Cooperation	Develop a framework to assess the environmental and climate impacts of travel for B.C.-based international development organizations to other countries.
Canadian Parks and Wilderness Society	Evaluate environmental and social benefits of existing carbon offsetting projects in B.C.
BC Lung Foundation	Assist in delivering BREATHE workshops to rural and urban communities in Northern B.C. that are impacted by wildfire smoke events.
Coast Capital Federal Credit Union	Develop guidelines to support the financial industry towards a low-carbon transition.
Citxw Nlaka'pamux Assembly	Assess the impact of climate change on harvest productivity for the 8 Nations who are part of the Assembly.
Habitat Acquisition Trust	Review climate impacts on conservation sites in the Southern Gulf Islands to identify adaptation solutions, and engage with Songhees Nation on ecological restoration and mapping.
Generation Squeeze	Research anti-carbon tax narrative, and assess and deploy communication strategies that dismantle this narrative.
Xwísten (Bridge River Indian Band)	Revitalize ancestral food systems.
BC Parks Foundation	Conduct geospatial data analysis and visualization to identify the most impactful projects proposals to the Conservation Fund.
Pacific Institute for Climate Solutions	Support the development of the PICS Indigenous program stream.
Kamloops Food Policy Council	Assess the Food Policy Council's impact on food access, and ensure resilience against climate-related disruptions to local supply chains.
Northern Health	Create a climate and health communication strategy for Northern communities in B.C.
Ministry of Energy and Climate Solutions	Enhance meaningful opportunities for First Nations in the clean energy sector.
Producing for the Planet	Assist in improving the sustainability and climate impacts of the movie production industry.
Ministry of Water, Lands & Resource Stewardship	Develop a spatial tool to identify hazard and water source protection for small water systems across B.C.
BC Nature	Survey member organizations to identify current practices and gaps linking biodiversity and climate change impacts.
Forager Hill Consulting	Assist in designing and facilitating the climate adaptation planning process for Indigenous communities.
Peak HydroMet Solutions	Analyze and manage agricultural data and tools. Create a network of weather and climate monitoring data for rural B.C.

coastcapital

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Example of Internship projects

- City of Kelowna – Heat pumps myth busting
- Kamloops FPC – Food security planning
- Citxw nlaka'pamux assembly – Indigenous food revitalization in a changing climate
- City of Prince Rupert – Nature-based solutions
- Interior Health – Heat waves response planning
- Kitasoo – Community climate adaptation plan

Example of Climate Events projects

- Xaxli’p– Green hydrogen advisory committee
- Synergy Foundation – SME climate programs
- Cowichan Regional District – Climate gathering
- Clayoquot region – Regionalizing climate action
- Glenayre– Fire planning in suburban interface
- Zero Waste BC – carbon in waste chains

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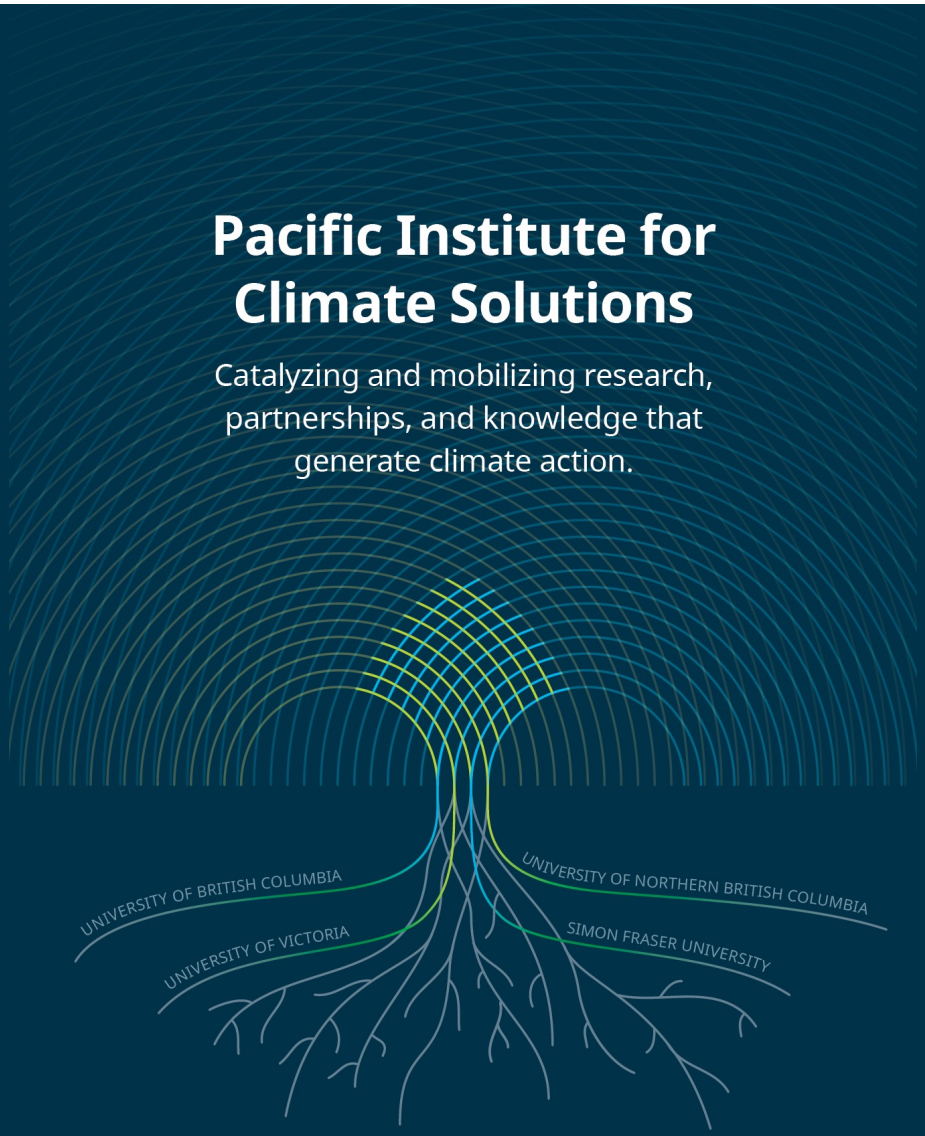
Catalyzing and mobilizing research, partnerships, and knowledge that generate climate action.



Questions?

For more information, come visit our booth at SILGA!

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www.pics.uvic.ca