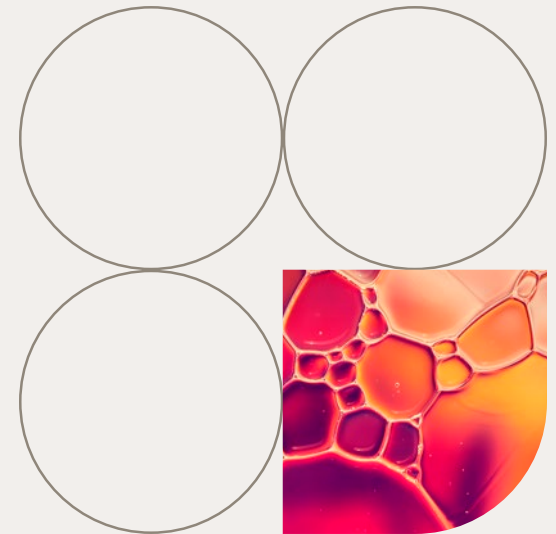


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The world is waking up to the need for a faster transition towards clean energy solutions.

For the B.C. Centre for Innovation and Clean Energy (CICE), this means full charge ahead. Technology innovation is key to reaching ambitious net-zero targets by 2030 and 2050, shifting to a prosperous green economy and positioning B.C. as a leading global exporter of low carbon solutions. Created in October 2021, CICE continues to refine its position in the B.C. innovation ecosystem, progressively funding the commercial development and scaling of the province's most promising clean energy solutions. We are proud to be fast-tracking innovation like the planet depends on it. Because it does.





DAN WOYNILLOWICZ
PRINCIPAL OF POLARIS
STRATEGY + INSIGHT

Message from our board chair

British Columbia has a clear and significant advantage in the global shift towards net zero, and the role clean energy solutions will play in getting there. We are home to innovators and entrepreneurs that punch above their weight, supported by a highly skilled and diversified workforce. Our significant clean energy potential, vast forest coverage and extensive coastlines, and diversity of sectors driving toward decarbonization make B.C. one of the best places to innovate, implement and scale-up climate solutions. Simply put, we have the potential to become one of the strongest cleantech innovation communities in the world.

The B.C. Centre for Innovation and Clean Energy (CICE) plays a pivotal role in bridging the gap between the technologies we have and the technologies we will need to meet our 2030 and 2050 emissions goals. CICE has achieved remarkable success in our first year, helping to fund the commercial development and scaling of ten innovative companies. Among these companies are industry leaders like Ekona Power Inc., making significant strides with its low-cost pyrolysis technology that converts methane into hydrogen and solid carbon for utilization or

sequestration. This ground-breaking technology has the potential to reduce greenhouse gas emissions from hydrogen production by an impressive 90%. Similarly, companies such as Corvus Energy are revolutionizing the high-speed marine vessel market with their cutting-edge battery energy storage systems. Meanwhile, Hexagon Purus is re-mapping the boundaries of innovation with its heavy-duty hydrogen fuel cell truck, which boasts a minimum range of 500 kilometres.

And we are just getting started.

By leveraging an average of \$3.57 for every dollar contributed by CICE, we are mobilizing investment and helping B.C. innovators secure the financial scale they need to advance clean energy solutions with high impact potential, create green jobs and grow the B.C. economy. With much more to come from CICE in 2023-24 and beyond, the future of clean energy innovation in British Columbia shines bolder and brighter than ever before. Working with the business community, financial sector and governments, we are setting the province on a path to a prosperous future where our innovators can compete and win in a clean, low-carbon world.



GED MCLEAN
EXECUTIVE DIRECTOR
OF CICE

Message from our executive director

When the B.C. Centre for Innovation and Clean Energy (CICE) was established in October 2021, our mandate was clear: Amplify the impact of B.C. clean energy technology through global scaling. We exist to drive bold innovation that will accelerate progress towards British Columbia's ambitious net-zero targets and create a brighter, cleaner and more prosperous future for generations to come.

Fast-forward, and we are proud to report that CICE has made notable progress in record time, having mobilized funding opportunities for the B.C. cleantech community in less than a year. We have laid the groundwork for intelligent decision making, streamlined due diligence and demonstrated swift funding deployment, enabling us to pinpoint industry decarbonization challenges, evaluate the necessary technical requirements and utilize project funding in less than 200 days. We welcomed our first open call funding recipients that included Moment Energy, Ekona Power, Hydra, HTEC, Hydron, Hexagon Purus, Corvus Energy and Parkland in June of 2022. By the end of our FY 2022-23 we welcomed Arca as an additional funding recipient to mobilize a total of \$4.8M in funding. CICE plans to catapult our investment momentum to \$25.5M in FY 2023-24.

Our province's accelerated shift towards clean energy would not be possible without the support of B.C.'s dynamic community of clean energy innovators, industry leaders, investment groups, academia, policy makers and Indigenous rights holders. By working together, we are advancing the great work already underway in our province and uniting around the common goal of advancing the world towards a net-zero carbon future. We appreciate your commitment to keeping the conversation focused on the larger climate change agenda and working with us to continuously refine our approach and maximize contributions towards 2030 and 2050 net-zero targets. Thank-you.

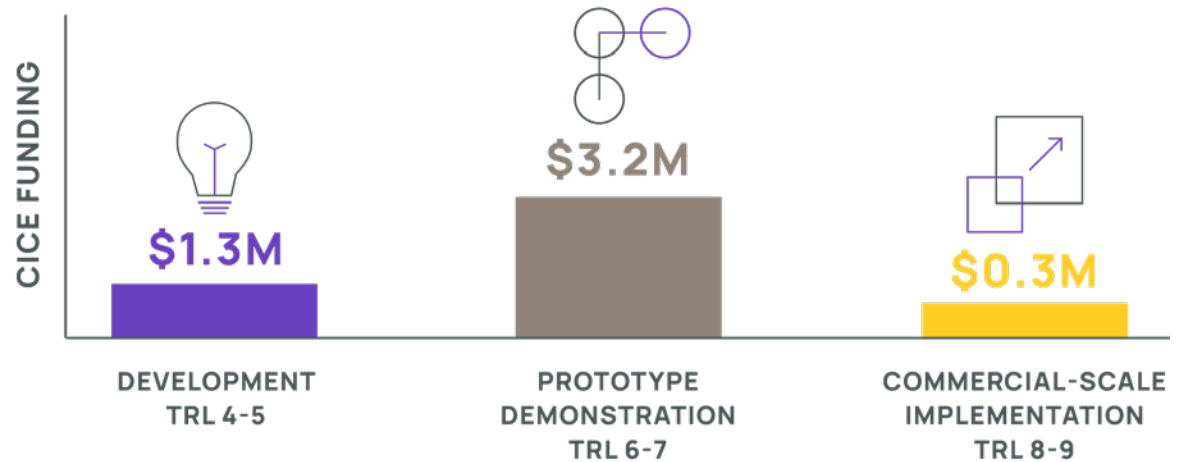
CICE is also deeply indebted to our exceptional team whose unwavering dedication has been crucial to the success of our organization. We are also incredibly grateful to our esteemed board members and advisors, as well as our founding members: the Government of British Columbia, Shell Canada and Natural Resources Canada. Your support has been essential in making CICE possible.

Going forward, CICE remains steadfastly committed to charting new waters and helping innovators push the boundaries of innovation. We will continue leading the charge towards a cleaner, more sustainable future and a green economy. Full potential ahead!

Who we are

The B.C. Centre for Innovation and Clean Energy (CICE) is an independent, not-for-profit corporation that helps fund the commercial development and scaling of made-in-B.C. clean energy solutions – from Canada to the world. We provide non-dilutive funding to advance high-impact technologies and solutions that are at a Technology Readiness Level (TRL) between 4-9.

CICE FUNDING BY INNOVATION STAGE



“We wish to thank CICE for their support to develop and demonstrate a class 6 fuel cell electric truck in British Columbia. This truck will showcase new zero emission technology to local truck operators. Our mandate is to support the commercial vehicle industry in their transition to zero-emission applications that will contribute to the reduction of GHG emissions in the province and benefit the local economy with significant job growth.”

BO DHALIWAL, VP BUSINESS DEVELOPMENT SYSTEMS AT [HEXAGON PURUS](#).

What we do

CICE's mission is to advance the world towards a net-zero carbon future. We achieve this by granting non-dilutive funding to support the commercial development and global scaling of made-in-B.C. clean energy innovation. CICE works closely with its members and a dynamic community of B.C. innovators, leading corporations, academic institutions, policy makers, investment groups and Indigenous communities to identify the smartest and most impactful ways to accelerate decarbonization.

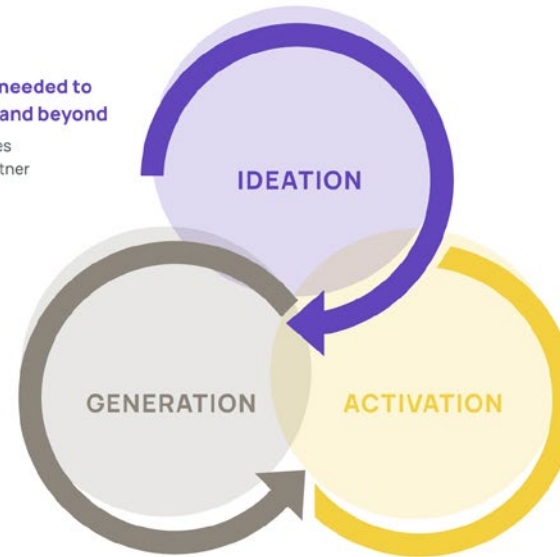
CREATING VALUE THROUGH A STRUCTURED INNOVATION FRAMEWORK

Identify innovations that are needed to drive decarbonization in B.C. and beyond

Identify industry and sector challenges through ideation panels, member/partner needs, sector intelligence.

Translate needs into a clear business case with an action plan

Analyze technical and business requirements and create a comprehensive plan for uncovering solutions



Mobilize B.C.'s industry leaders, inventors, investors, academia, government, communities and Indigenous rights holders to create and test solutions.

Leverage project funding/equity investment and clear a path to widespread adoption and global export.

“Ekona is developing a novel methane pyrolysis solution that builds on our existing natural gas infrastructure to deliver clean and low-cost hydrogen, and funding from the B.C. Centre for Innovation and Clean Energy is helping to pave the way.”


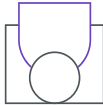

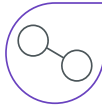








CHRIS REID, CEO OF EKONA POWER

Where we focus

CICE funds world-class innovation that addresses 'hard to decarbonize' challenges in high-emitting industries such as:

- » Mining
- » Forestry
- » Marine
- » Oil and gas
- » Aviation
- » Transportation
- » Industrial manufacturing

We focus on fast-tracking the development, testing, demonstration and commercialization of hard tech, soft tech, emissions measurement and business model innovation with high impact potential in the following clean energy sectors:

			
BATTERY & ENERGY STORAGE	CARBON MANAGEMENT	LOW CARBON BIO & SYNTHETIC FUELS	LOW CARBON HYDROGEN
 			  
			

Our members

CICE was founded in October 2021 with \$105M raised through member-based partnership commitments from the Government of British Columbia (\$35M) and Shell Canada Ltd. (\$35M).

The Government of Canada has also granted up to \$35M through Natural Resources Canada's Energy Innovation Program. In the future, CICE will also leverage additional public and private sector investments.



CICE operates independent from government and private entities. We are a non-profit corporation run by its own staff and governed by an independent Board of Directors that are elected by its voting members. We currently have two voting members which are the Government of British Columbia and Shell Canada Ltd.

“CICE has been great to work with and their team showed commitment, flexibility and sufficient expertise to understand the value of our technical problem in sourcing additional tall oil as biofuel feedstock. Because of the technical risk of the project, it would have been hard to fund this initiative without CICE's support.”

SERGIOS KARATZOS, PROGRAM MANAGER, LOW CARBON FEEDSTOCK DEVELOPMENT AT [PARKLAND REFINING B.C. LTD.](#)

Our values



CLIMATE OBSESSED



PEOPLE MATTER



SPEED AND SIMPLICITY



RESULTS ORIENTED



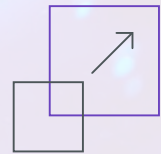
OPEN COLLABORATION



RADICAL TRANSPARENCY



FAILURE IS AN OPTION

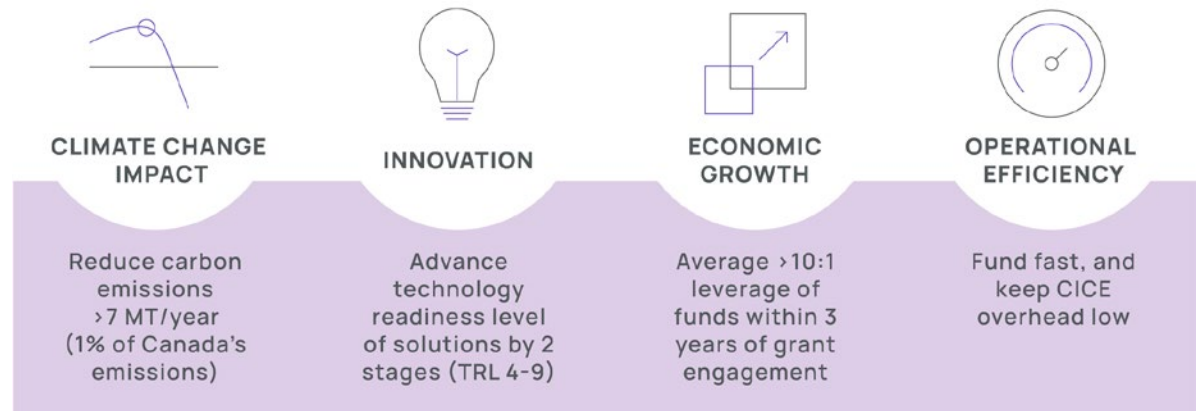


THINK BIG

Our strategic priorities

CICE is working towards achieving net-negative emissions in British Columbia and beyond by funding the province's most promising breakthrough clean energy innovation – in the most efficient and effective way possible.

The following strategic priorities framed our FY 2022-23 goals and activities:



“The funding Hydra received from CICE has been instrumental in our ability to scale up our business. With the funding and in partnership with First Truck, we could address a missing component of training mechanics so that Hydra can get our kits onto more trucks as well as offer maintenance. We now have the first version of a training manual for conversions enabling a conventional mechanic to become a Hydra installer.”

JESSICA VERHAGEN, CEO OF [HYDRA ENERGY CANADA CORPORATION](#)

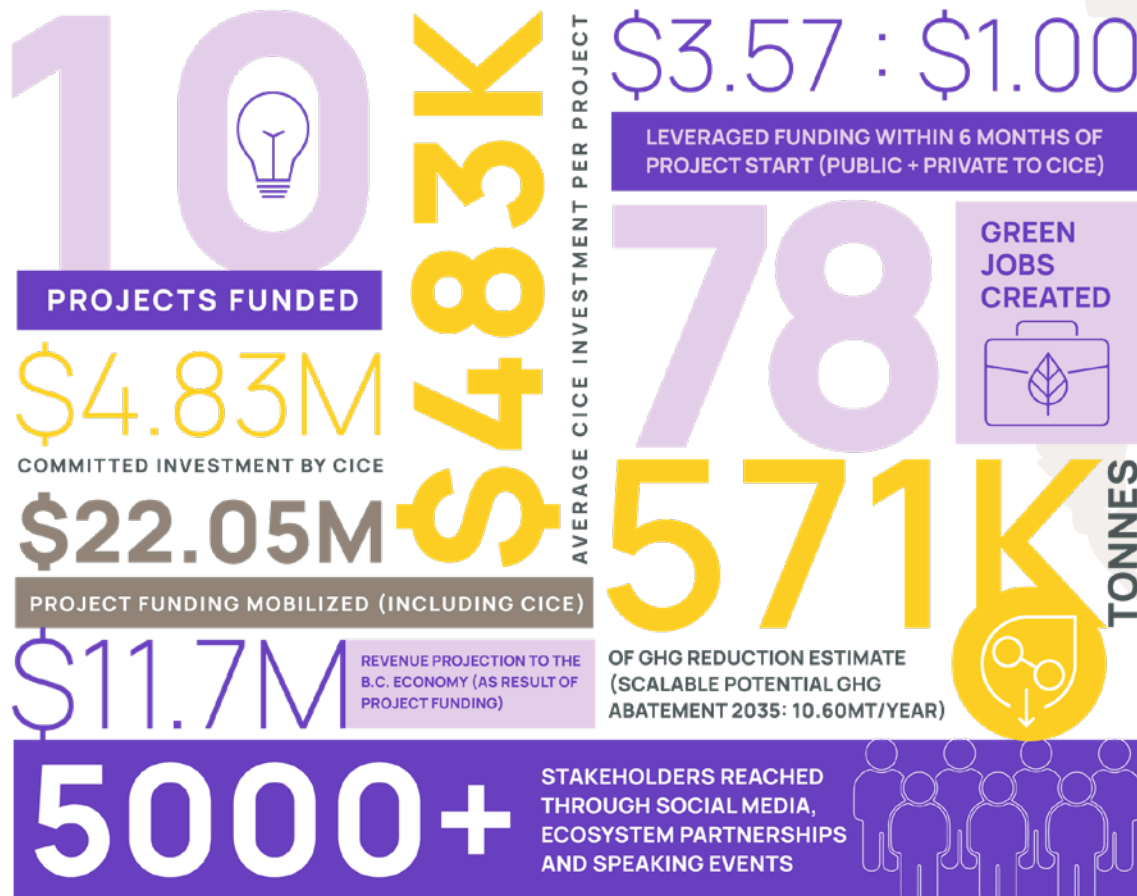
Accomplishments FY 2022-23

COMMITTED OVER
\$4.83M FOR
10 **CLEAN ENERGY INNOVATION PROJECTS** 
VALUED AT
\$22.05M
DEVELOPED A
STRATEGIC INVESTMENT FRAMEWORK, EVALUATION CRITERIA AND APPLICATION PROCESS 
THAT ACCELERATE THE FUNDING OF
 **INNOVATIVE B.C. COMPANIES**

CONDUCTED COMPREHENSIVE STUDIES **5**
 **PROVIDING VALUABLE INSIGHTS**
INTO THE CARBON MANAGEMENT AND LOW CARBON HYDROGEN SECTORS
 These insights are helping to direct clean energy innovation and investment towards areas with the greatest potential for impact and scalability.
SUCCESSFULLY RAMPED UP
CICE **TO A FULLY OPERATIONAL ORGANIZATION IN LESS THAN**
1 YEAR


KEPT OPERATING COSTS BELOW
2.75%
OF THE TOTAL FUNDS COMMITTED TO PROJECTS 
ESTABLISHED CICE AS A PROMINENT VOICE
IN THE B.C. INNOVATION COMMUNITY ON MATTERS RELATED TO CLEAN ENERGY ADVANCEMENT, REACHING
5000+ **STAKEHOLDERS**
THROUGH SOCIAL MEDIA, SPEAKING ENGAGEMENTS AT EVENTS SUCH AS CASCADIA CORRIDOR AND THE FIRST NATIONS ENERGY SUMMIT, AND ECOSYSTEM PARTNERSHIPS WITH FORESIGHT, GEOSCIENCE BC, CLEAN ENERGY BC, CANADIAN HYDROGEN FUEL CELL ASSOCIATION AND BC TECH

B.C. impact



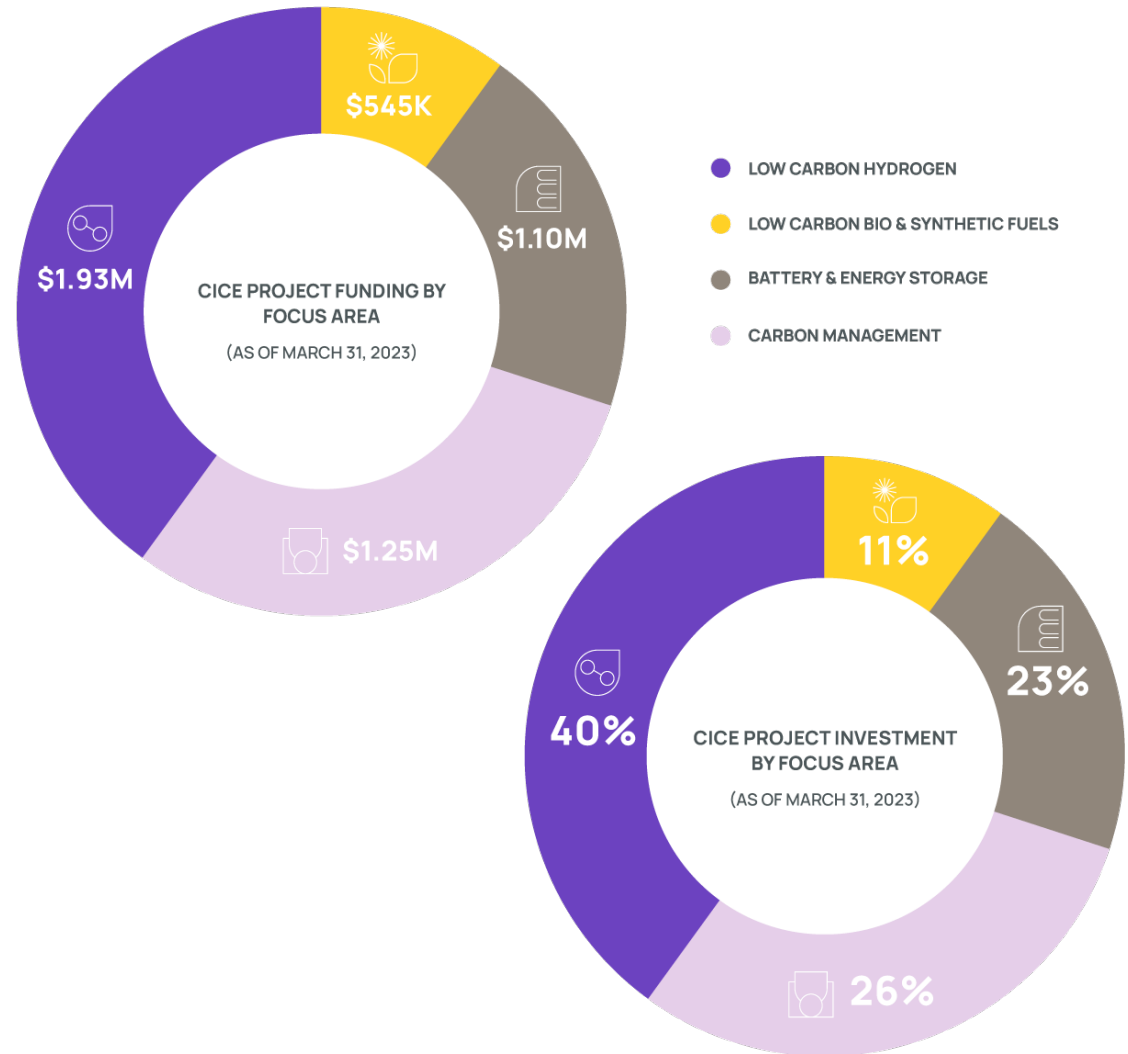
Funding portfolio at a glance

\$9.4M
TARGET

\$4.8M
COMMITTED

\$482,735
AVERAGE INVESTMENT PER PROJECT

CICE ENTERED FY 2023-24 WITH \$4.49M IN THE FINAL STAGE OF OUR INVESTMENT PROCESS



CICE reporting

[Financial Statements FY 2022-23 \(PDF\)](#)

[CICE Funded Projects FY 2022-23 \(PDF\)](#)

Investment driven by intelligence

CICE is systematically studying each of its focus areas, gathering intelligence and examining a diverse range of emerging ideas, approaches and technologies in British Columbia. These emerging blueprints help CICE pinpoint gaps in clean energy solutions, assess the market readiness of current technologies and identify opportunities to invest in high-potential innovations that will help us achieve global net-zero emissions goals.

B.C. CARBON MANAGEMENT BLUEPRINT

The first focus area report, The [B.C. Carbon Management Blueprint](#), was completed in partnership with Deloitte Canada in March 2023. This study provides an understanding of current carbon management approaches, the value chain and the market participants that presently drive the supply and demand of these solutions.

The B.C. Carbon Management Blueprint highlights key drivers and barriers to carbon management adoption within high-emitting sectors, helping CICE to align direct calls for innovation advancement with unmet industry needs. It reveals a gap in the continuous monitoring and reporting of carbon emissions and emphasizes the necessity of improved

measurement and verification tools to track progress towards meeting net-zero goals. This blueprint also serves as a springboard into carbon management innovation areas that show great promise in B.C., such as sequestration of carbon dioxide in the ocean, but are currently underexplored.



INVESTING IN TOMORROW: HARNESSING THE POWER OF INTELLIGENCE

“For the Haisla Nation, nature-based carbon management activities are important for carbon removal potential – but they also play a critical role in improving social outcomes for our communities. One example of this would be addressing riparian restoration that brings salmon back to streams thereby strengthening connections to family, culture and traditions. This also creates economic opportunities to generate carbon credit revenues that feed into more restoration activities. We believe that the co-benefits of these projects are equally if not more valuable in building sustainable and resilient communities. The B.C. Carbon Management Blueprint is foundational towards recognizing opportunities for Indigenous climate leadership, ownership and partnerships in carbon management initiatives.”

CANDICE WILSON, ENVIRONMENTAL MANAGER FOR [HAISLA NATION COUNCIL](#)

MANAGING RESEARCH ON BEHALF OF THE B.C. HYDROGEN OFFICE AND THE MINISTRY OF ENERGY, MINES AND LOW CARBON INNOVATION

While hydrogen holds significant promise as a clean and versatile energy, it's time to move beyond the hype of a hydrogen economy in 2050 and focus on pragmatic steps to advance its adoption. In 2022-23, CICE worked with the B.C. Hydrogen Office and the Ministry of Energy, Mines and Low Carbon Innovation (EMLI) to produce highly impactful reports which improve the ability of innovators to move their hydrogen technologies forward. These reports included:

RESEARCH PLANS FOR 2023-24

CICE's intention is to publicly share intelligence reports when we believe there is significant industry value, while refraining from publishing in areas where our knowledge is still in infancy. Blueprints for Low Carbon Hydrogen, Low Carbon Bio and Synthetic Fuels and Battery and Energy Storage are planned for Q1 of FY 2023-24. These studies, in combination with in-depth industry consultation, will serve as a launchpad to future ideation, targeted innovation calls and focused co-funding programs.

NORTHEAST B.C. GEOLOGICAL CARBON CAPTURE AND STORAGE ATLAS

Providing an understanding of the geological carbon dioxide sites and storage potential for carbon capture and storage in northeast British Columbia – no matter where it comes from. This first of its kind report was released January 2023 in partnership with Geoscience B.C. and Canadian Discovery.



CARBON INTENSITY OF HYDROGEN PRODUCTION METHODS

Moving away from the misleading 'colours' of hydrogen and quantifying the carbon intensity of possible low-carbon hydrogen production pathways for a baseline comparison. This report was released March 2023 in partnership with Deloitte Canada and (S&T)² Consultants Inc.



B.C. HYDROGEN REGULATORY MAPPING STUDY

Examining how hydrogen production projects are currently regulated and permitted in B.C. and presenting all requirements into one document. This report was released in May 2023 in partnership with Stantec.

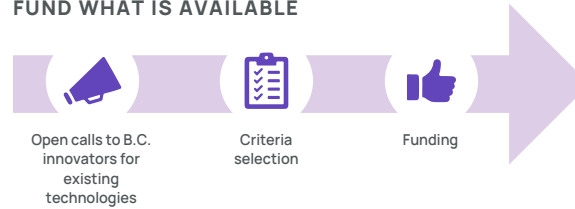


CICE non-dilutive grant funding programs

CICE grants non-dilutive funding for clean energy technology, business model and solutions development through a combination of open and directed innovation calls.

Open innovation calls

FUND WHAT IS AVAILABLE



NON-DILUTIVE FUNDING OF BC-BASED COMPANIES

	2023	2024	2025	2026
FUNDING	\$3.4M	\$6M	\$6M	\$6M
# OF PROJECTS	8	10	6-12	6-12

Directed innovation calls

FUND WHAT IS NEEDED



FUNDING	\$1.4M	\$19.5M	\$23M	\$21M
# OF PROJECTS	2	15-20	15-20	15-20

**OPEN INNOVATION CALLS:
FUNDING WHAT IS AVAILABLE**

Some of the best new ideas come from the least expected places. CICE's open innovation calls welcome game-changing ideas and project proposals from B.C. companies across all focus areas. These calls happen annually and are intended to help build a province-wide funnel of available solutions and emerging technologies ready for commercial development and scaling.

JANUARY-JUNE 2022 OPEN INNOVATION CALL



JANUARY-JUNE 2023 OPEN INNOVATION CALL



**DIRECTED INNOVATION CALLS:
FUNDING WHAT IS NEEDED**

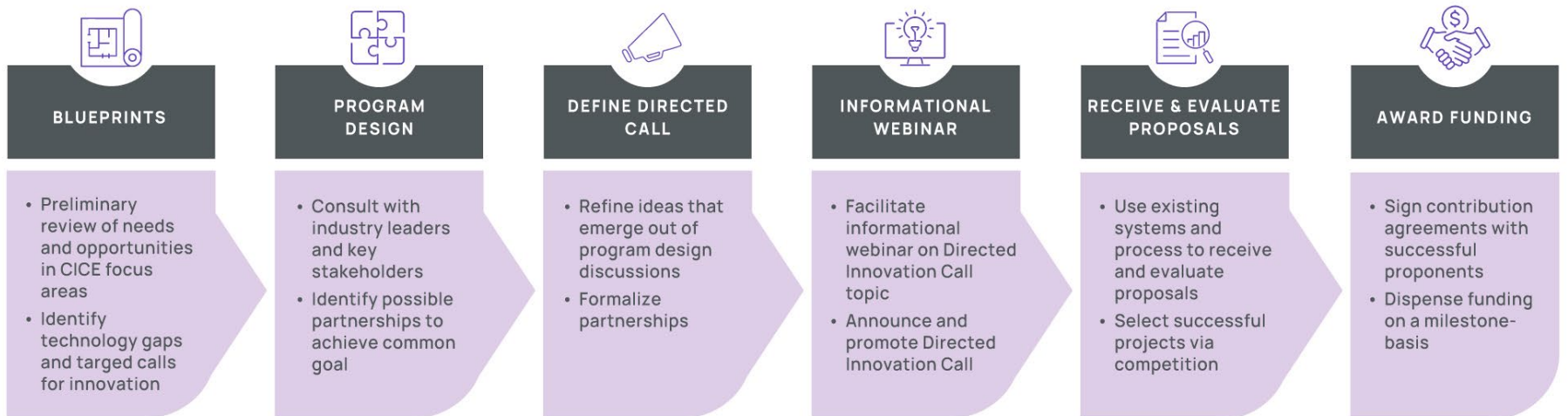
A critical component of CICE's directed calls is sector centrivity to support emissions reduction, economic growth and the creation of a green economy. Directed calls for innovation are structured around a specific 'hard to decarbonize' challenge, sectoral demand driver, or clean technology innovation gap.

The scope of these targeted funding efforts is defined through focus area blueprints and other segway reports, broad industry consultation and ideation workshops. They involve identifying and mobilizing innovators and new "outlier" participants who have potential solutions to resolve critical unmet needs. They also involve identifying adjacent enabling technologies that connect and support the evolving decarbonization ecosystem.

FY 2022-23 DIRECTED INNOVATION CALLS



FY 2023-24 will see a stronger emphasis on directed calls that meet real needs identified through the structured innovation process.



Partnerships within the B.C. innovation community

Diversity plays a critical role in driving innovation in British Columbia. By bringing together individuals with different perspectives, experiences and ideas, CICE taps into a wealth of knowledge and skills that accelerate the transition to clean energy across various sectors including mining, forestry, marine, oil and gas, aviation, transportation and industrial manufacturing.

B.C. is fortunate to be part of a vibrant and integrated clean energy community that bridges the expertise of innovators, industry leaders, investors, academia, policy makers and Indigenous rights holders. CICE is building relationships across these segments to strengthen the innovation chain and promote equitable and diverse participation in the low carbon economy.

B.C. INNOVATORS – Fund and support inventors and entrepreneurs in realizing their vision for clean energy solutions, accelerating go-to-market strategies and scaling globally

INDUSTRY LEADERS – Collaborate with large corporations to identify sector demand drivers, adopt new technologies and invest in world-changing innovation

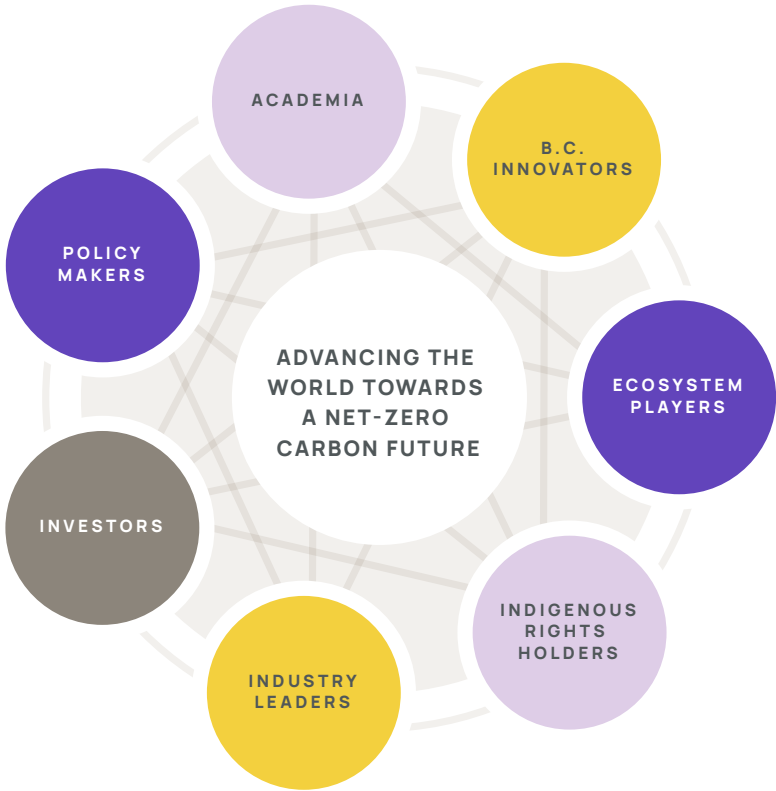
POLICY MAKERS – Partner with government and agencies to leverage each other’s strengths, improve regulation and amplify our impact

INVESTORS – Work with private equity and venture capital firms to provide B.C. companies with access to the financial resources, expertise and networks needed to drive innovation and succeed in an increasingly competitive global marketplace

ACADEMIA – Team with universities and other academic institutions to conduct targeted research and development, move innovation from the lab to the field and educate the next generation of innovators

INDIGENOUS RIGHTS HOLDERS – Strategize with First Nations communities and organizations on innovation that impacts their rights or interests - learn from their deep connection to the land and long history of sustainable resource management practices

ECOSYSTEM PLAYERS – Join forces with other ecosystem organizations and key players that are focused on accelerating cleantech innovation through mentorship, training, collaboration and funding



FY 2023-24 Goals and Objectives

PROJECT FUNDING

Commit \$25.5M in new grant funding to companies engaged in pioneering clean energy solutions

- » Announce recipients of the 2023 Open Innovation Call by June 2023, with the goal of funding 6-12 companies for a total of \$6M.
- » Ramp up Directed Innovation Calls that are scoped through a combination of focus area intelligence gathering, ongoing industry consultation and ideation workshops.
- » Direct CICE funding where innovation is needed the most, with the goal of funding 15-20 companies for a total of \$19.5M:
 - Target funding to address key needs in focus areas
 - Target funding for projects lead by specific demographic groups
 - Make further investment in funded companies demonstrating significant advancement towards net-zero

POTENTIAL THEMES FOR FY 2023-24 DIRECTED INNOVATION CALLS

FOCUS AREAS	 BATTERY TECHNOLOGY & ENERGY STORAGE	Mining decarbonization for critical minerals or battery recycling	
	 CARBON MANAGEMENT	Measurement, monitoring and verification	Ocean carbon capture
	 LOW CARBON BIO & SYNTHETIC FUELS	Forest residue management	Sustainable aviation fuel pathways
	 LOW CARBON HYDROGEN	Hydrogen as a feedstock for low carbon fuels	
	 DEMOGRAPHICALLY-FOCUSED	First Nations entrepreneurs and communities	University students
	 CROSS FOCUS AREAS	Open Call for Innovation	

FY 2023-24 Goals and Objectives

INSIGHT-DRIVEN INNOVATION

Strengthen intelligence gathering and consultation efforts to pinpoint critical decarbonization requirements and support B.C. companies in pioneering clean energy solutions

COMMUNITY PARTNERSHIPS & MEMBERS

Nurture the growth of the clean energy innovation community in British Columbia

- » Complete internal blueprints for Low Carbon Bio and Synthetic Fuels (April 2023), Low Carbon Hydrogen (May 2023) and Battery and Energy Storage (May 2023) sectors.
- » Build out the intelligence gathering framework to mobilize innovators by:
 - Leveraging internal intelligence
 - Consulting with intelligence partners to inform structured innovation
 - Engaging with our clean energy community through focused ideation, generation and activation forums
- » Align and partner with focus area thought leaders to identify game changing opportunities

- » Collaborate with Indigenous entrepreneurs and communities to establish an innovation strategy that promotes inclusive engagement and utilizes the Nations' distinctive insights, knowledge and perspectives on climate change, natural resources and the environment.
- » Establish strong partnerships with grant, investment and equity providers to enhance funding accessibility for B.C. companies within Canada and accelerate the scaling of "made-in-B.C." solutions globally.
- » Secure membership or co-funding commitments from new strategic partners who recognize the potential of leveraging further public and private investments to expedite clean innovation that aligns with their business practices or solutions.
- » Develop a communications strategy that amplifies British Columbia's competitive advantage in clean energy solutions

Our board



DAN WOYNILLOWICZ
CICE BOARD CHAIR &
PRINCIPAL OF POLARIS
STRATEGY + INSIGHT



ANDREA BRECKA
VP OF FLEET SOLUTIONS
AMERICAS –
SHELL CANADA LTD.



ALAN WINTER
FORMER B.C. INNOVATION
COMMISSIONER AT B.C.
PROVINCIAL GOVERNMENT

Our advisors



SHARLEEN GALE
CHIEF OF FORT NELSON
FIRST NATION



PAUL AUSTIN
PARTNER, INDUSTRIAL AND
CLIMATE TECHNOLOGY -
FORT CAPITAL PARTNERS



PATRICK MICHELL
ADVISOR



MARK ZACHARIAS
EXECUTIVE DIRECTOR,
CLEAN ENERGY CANADA



LORI ACKERMAN
CHIEF EXECUTIVE OFFICER,
BLUEBERRY RIVER
RESOURCES LTD.



KATYA RHODES
ASSISTANT PROFESSOR,
SCHOOL OF PUBLIC
ADMINISTRATION -
UNIVERSITY OF VICTORIA



HEATHER CAMPBELL
EXECUTIVE DIRECTOR,
CLEAN TECHNOLOGY -
ALBERTA INNOVATES



STEVEN MACDONALD
PRINCIPAL AT +SM

Our team



GED MCLEAN
EXECUTIVE DIRECTOR



TODD SAYERS
DEPUTY EXECUTIVE
DIRECTOR



BRENDAN HANCE
DIRECTOR OF FINANCE



STACY GORKOFF
HEAD OF MARKETING AND
COMMUNICATIONS



RAYMOND TANG
PROJECT MANAGER - LOW
CARBON HYDROGEN



OMAR MAWJI
VENTURE PARTNER



ASHLEY CALLISTER
VENTURE ASSOCIATE -
LOW CARBON BIO AND
SYNTHETIC FUELS



CHANTELLE CARDEN
VENTURE ASSOCIATE -
CARBON MANAGEMENT



JASMINE KWADE
ADMINISTRATIVE LEAD



Creating the world’s first commercial-scale facility for air-to-rock carbon mineralization

PROJECT: Tailings storage CO₂

The clean energy transition will require up to 20x more critical metals by 2040. But mining is carbon intensive, and the last thing we need is more emissions.

Vancouver-based [Arca](#), is one of the first companies commercializing mineralization for the capture and permanent storage of atmospheric CO₂. Using rovers, surface manipulation technology and machine learning algorithms, Arca manipulates mine tailings to significantly speed up the rate of carbon mineralization and measure critical carbon capture. Funding from CICE is supporting a large-scale pilot project for air-to-rock carbon mineralization using the mine tailings of a nickel mine.

Arca is already collaborating with 12 mining companies in assessing the carbon sequestration potential of their operations. The company’s technology has been recognized with a US \$1M XPRIZE Milestone Award for Carbon Removal, a Foresight50 award and an SDTC Seed Fund grant. Arca has pre-sold over CDN\$1M worth of carbon dioxide removal credits, including hundreds of tonnes of carbon dioxide removal (CDR) credits to Shopify and Frontier.

CICE FUNDING	TOTAL PROJECT FUNDING	REDUCED GHG EMISSIONS ESTIMATE:
\$1.25M	\$4.1M	Project: 800 t/yr

“This first-of-a-kind project will be closely watched by the mining industry and by the emerging CDR industry. The CICE partnership has been fundamentally important, enabling Arca to establish and operate the demonstration project over the first year. This has de-risked the project for our mining partner, and will enable us to deliver the highest-quality carbon dioxide removals to our purchase partners on schedule. Based on these results, mining companies in Canada and around the world will know how to partner with Arca to use their tailings in the fight against climate change. We expect Arca’s pathway to scaling this CDR technology to be well-established, thanks to CICE”.

GREG DIPPLE, HEAD OF SCIENCE AND CO-FOUNDER OF ARCA



Enabling hydrogen use at ports

PROJECT: Hydrogen-based energy for the port logistics in B.C.

HTEC works across the clean hydrogen value chain, developing, integrating and operating clean hydrogen energy solutions in strategic North American markets to enable the transportation sector’s transition to a low-carbon future. HTEC is building multiple clean hydrogen production facilities while expanding the current station network and facilitating fleets transition to zero-emissions powered transportation in Canada and the U.S. These engineered solutions and packaged products, along with strategic support, are also provided.

With help from CICE, HTEC’s project will enable the use of hydrogen for port operations, allowing for similar projects to be replicated across the country and generate important environmental benefits.

CICE is also funding the development phase of the British Columbia portion of HTEC’s Heavy-Duty Hydrogen Infrastructure Project. This project provides the hydrogen fuel supply needed to accelerate the transition towards zero-emission vehicles in the heavy-duty transportation sector - a crucial step in achieving Canada’s climate targets.

CICE FUNDING	TOTAL PROJECT FUNDING
\$285K	\$900K

“We are fortunate to be in a province that is actively participating in the clean energy transition, enabling the industry to fuel the drive towards hydrogen. CICE support has been helping HTEC continue the work on several exciting hydrogen projects that will help the province meet its decarbonization targets.”

COLIN ARMSTRONG, PRESIDENT & CEO OF HTEC



Creating RNG fuels out of biomass feedstock

PROJECT: INTRUPTor™ Mobile RNG Solutions Centre

The agricultural sector generates significant amounts of organic waste materials, such as animal manure, food waste and crop residues. While this waste provides a reliable and abundant feedstock for renewable natural gas (RNG) production, the capital costs and operational challenges of building biogas facilities, processing small feedstock flows and abating methane emissions from animal agriculture has left this renewable energy source largely under-utilized. The Canadian biogas industry is only utilizing 13% of the available biogas resources, leaving our biogas industry room to grow 8x.

Hydron Energy Inc., a North Vancouver-based company, addresses these issues by building technology to improve the economics and scalability of upgrading biogas to RNG. With CICE funding support, Hydron is developing and field testing a small-scale gas separation system. Modeled after their proven platform technology, the INTRUPTor™ Mobile unit unlocks smaller, on-site biomass feedstocks and enables RNG production and utilization in areas without direct access to natural gas pipelines. The resulting RNG has negative carbon intensity and zero methane emissions. This technology is a critical step in bridging feedstock producers with RNG companies and bringing costs closer to those of natural gas production.

CICE FUNDING	TOTAL PROJECT FUNDING	REDUCED GHG EMISSIONS ESTIMATE:
\$345K	\$690K	Project: 1,600 t/yr

Thanks to funding from CICE, Hydron has accelerated its pilot testing and commercialization program to deliver INTRUPTor™ to the market this year. Hydron's patented system significantly lowers the cost of RNG and enables the deployment of mobile plants for small-scale biogas producers - with the best-in-class carbon intensity score.

“CICE’s growing influence in the clean energy market gave Hydron access to commercial relationships that have helped us and other supported companies collaborate on related commercialization opportunities across the country. This incredible program enabled us to be noticed by other interested parties. Modern Niagara’s equity investment in Hydron was after the CICE announcement.”

SOHEIL KHIAMI, PRESIDENT AND CEO OF HYDRON ENERGY INC.



Enhancing the affordability of second-life energy storage systems

PROJECT: Commercializing proprietary battery management system (BMS) to reduce the cost and scalability of 2nd life Energy Storage Systems (ESS)

Growing electric vehicle (EV) battery waste, a global lithium material shortage and increased demand for energy storage present significant challenges for the world to address. As EV adoption accelerates, the number of end-of-life batteries is growing exponentially, leading to concern about how to effectively recycle or dispose of these batteries without causing harm to the environment or human health.

Coquitlam-based **Moment Energy** is on a mission to repurpose all EV batteries for second-life use by 2030. The company creates sustainable and affordable energy storage systems by repurposing retired EV batteries. Their solutions help commercial and industrial (C&I) islanded microgrids and on-grid customers reduce diesel consumption and peak demand charges. Additionally, their solutions ease the transition to renewables and provide backup power for on-grid C&I customers. With CICE funding, Moment is scaling the storage potential of its proprietary second-life energy storage system so C&I organizations can easily transition to cleaner energy solutions and reduce battery management system costs. For every MWh of energy storage deployed by Moment Energy, 1.68 tonnes of CO₂ emissions will be avoided.

Moment Energy has recently entered a supply agreement with Mercedes-Benz Energy for second-life electric vehicle batteries. Additionally, its leadership team was

CICE FUNDING	TOTAL PROJECT FUNDING	REDUCED GHG EMISSIONS ESTIMATE:
\$600K	\$1.18M	Project: 91t CO ₂ e/year

recognized on the 2023 Forbes 30 under 30 list. Moment was also named the Grand Prize Winner of the 2021 National Impact Investor Challenge held by Spring Activator, and holds a Top Ten Finalist standing in the 2021 New Ventures B.C. Competition. In addition, Moment Energy earned Early-Stage Company of the Year 2023 and is acknowledged as one of the Top 100 Global Cleantech Companies of 2023.

“Our collaboration with CICE has been transformative for Moment Energy. Their support enabled us to advance our battery management system and develop cost-effective second-life energy storage solutions. This partnership has catalyzed further investment, strategic alliances, and market expansion across North America. Together with CICE, we’re determined to create a more sustainable future.”

GURMESH SIDHU, CO-FOUNDER AND CPO OF MOMENT ENERGY