

Innovation Unleashed



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INNOVATION
COMES OUT OF GREAT
HUMAN
INGENUITY
AND VERY PERSONAL
PASSIONS.

DEVELOPING

Contents

4	Message From Our Board Chair	40	GOAL 5 Be recognized globally as a leading innovation engine.
5	Message From Our CEO	44	InnoTech Alberta
6	Accountability Statement	50	Management Discussion & Analysis
7	Executive Summary	52	Management's Responsibility for Reporting
9	Annual Report at a Glance	53	Statutory Report
11	Context and Outlook	54	Audited Financial Statements
13	Results & Achievements	78	Report on Risk Management
16	GOAL 1 Making the lives of Albertans better today and for generations to come by contributing to a diversified economy, cleaner and sustainable environment, and healthier communities.	80	Appendix A Tech Comm Scorecard
23	GOAL 2 Cultivate a world-class research and innovation system that meets the needs of Alberta.	82	Appendix B Outcome Survey Results
29	GOAL 3 Drive the generation of discoveries and developments that positively impact Alberta and its industries by leveraging partnerships, collaborations and emerging technology platforms.	83	Appendix C InnoTech Alberta
34	GOAL 4 Accelerate and broaden the use of innovative products, technologies and processes.	87	Appendix D C-FER Technologies

Message from the Board Chair



Brenda Kenny PhD

Though Alberta faces difficulties, our investment in innovation continues to pay dividends.

Our corporation came through a year of change even more strategically focused, operationally aligned and organizationally resilient. Fiscal 2019–20 marked Year 3 of consolidation and Year 2 of the new strategic plan and direction. We adapted and adjusted staffing, structure and processes through the year with a clear understanding that innovation lies at the heart of Alberta's current and long-term economic interests. Implementation of our strategy was deliberate and driven to leverage the strengths and improve performance of the province's innovation system.

A very challenging financial context through the first three quarters of 2019 became even more acute as the COVID-19 pandemic gripped the province and the world in early 2020. As government shifts from pandemic response to economic re-entry, we understand that permanent changes have occurred. Jobs have been erased, capital spend has been paused and liquidity is strained. Communities are gripped by uncertainty and every aspect of global trade, markets and supply chains have been fundamentally altered.

As bleak as this business context is, the pandemic also highlighted the amazing speed and power of innovation and collaboration across borders – from tracking outbreaks to rapid research into treatment and control. New consumer preferences, retail realities, health-system practices and ecological insights are emerging. Though disruptive, the opportunities these present for Alberta are significant.

Despite financial and budget constraints and the pandemic setback, our partnerships and focus on performance impact yielded results: every dollar that Alberta Innovates has invested in small and medium enterprises (SMEs) has been leveraged through other sources, generating \$7.37 in SME net revenue growth, and \$23.50 in follow-on investment (78 per cent from private funding). SMEs supported through our vouchers and related programs have seen an increase in job growth by 11 per cent.

Through our system-level approach to innovation, we connect partners across sectors and industries. We help them identify and test solutions to improve their environmental performance and success in their markets.

Alberta Innovates holds unwavering confidence in the advantages presented in five areas that leverage Alberta's unique strengths and tap global opportunities in areas that will not be easily commoditized:

- Digital health technologies and artificial intelligence can speed up improvements in quality and long-term sustainability of health systems at home and worldwide.
- Smart agricultural technologies and expertise are leading to more sustainable and efficient production and processes, generating jobs and better food security.
- Natural materials for carbon fibre and other innovative hydrocarbon products are plentiful in Alberta and have an added economic potential of approximately \$84 billion annually – three times the revenue of our current bitumen output.
- As a leader in artificial intelligence Alberta ranks in the top three international centres for machine learning, a field estimated at up to \$16 trillion in global economic output over the next decade.
- A vigorous entrepreneurial ecosystem is gaining strength in Alberta, supported by micro-financing, business coaching and an active venture capital market. Together with leading university partners, Alberta Innovates is creating a swift and seamless pathway to enable market commercialization sooner.

Now, thanks to the demonstrated scale and speed of collaboration to contain and recover from the pandemic, the next big innovations will be within reach faster than ever. It's the transformational opportunity of a lifetime and Alberta Innovates is well-prepared, both as a technical leader and as hub and connector, to coalesce the innovation system and advance the province's ambitions on a global stage. Our drive for innovation in difficult times will lead to a strong and diverse Alberta.

Message from the CEO



Laura J. Kilcrease

Alberta Innovates is the innovation engine for thousands of researchers, entrepreneurs, industry partners and investors. We are the catalyst, convener and performance optimizer of a system that encompasses all economic sectors.

Though vitally important, the engine is often hidden from view and you don't really think about how it is getting you from one destination to another. Alberta Innovates acts in much the same way.

We put our expertise, facilities and funding to work behind the scenes so our partners and clients can achieve breakthroughs that activate Alberta's economy in the short, medium and long term. Our impact gains visibility through the successes of those we work with – from researchers in university labs to entrepreneurs who use our programs to take their ideas from start-up to scale. Their testimonials tell our story.

One illustration of the value generated through our strategic programs and services is that more than 60 per cent of early-stage technology start-ups in Calgary were supported by Alberta Innovates. Our annual survey showed that our support contributed to an 87 per cent survival rate among small-to-medium enterprises. And, this enabled nearly 2,400 jobs to be created by 631 SMEs we funded between 2015 and 2019.

Innovation is key to economic growth and diversification, and that has never been more important than it is now. Regions and countries that get this – and which bring public and private sectors, knowledge and natural resources together seamlessly and swiftly – will command advantage in the borderless marketplace of the post-pandemic world.

The effects of the economic downturn and the COVID-19 pandemic were being fully felt in Alberta at year-end. This, combined with deep budget cuts over several years, resulted in a reduced workforce and a tight operating budget, and required us to rethink our programming. Nonetheless it did not diminish our resolve to deliver high-impact results for Albertans and the details are outlined in this report.

We found new collaborators and funding sources, formed new industry partnerships and leveraged pan-Canadian networks to drive transformative innovations:

- Advanced hydrocarbons and an advanced manufacturing sector focused on non-combustion, bitumen-derived products such as carbon fibre, activated carbon and asphalt binders for global markets;
- The Canadian Agri-Food Automation and Intelligence Network focused on improved crop and food production system-wide by bringing together agriculture, manufacturing, food processing, data and analytics, and pure technology; and
- Digital health platforms for better-quality patient care and cost-savings to the health-care system, enabled by the unprecedented amounts of data in Alberta's integrated provincial health-care system and a population of sufficient size that allows us to test solutions.

These are game-changing initiatives that will bolster the economy of Alberta while creating long-term opportunities at scale for Albertans.

Let me close with a comment about our signature event – Inventures – which, in only its second year, drew some 4,000 people from 32 countries, and included 235 speakers, and 66 start-up and student pitch events, delivered across six tracks and more than 100 sessions.

A PricewaterhouseCoopers assessment estimated that between \$116 million and \$249 million of GDP footprint in Alberta could be attributed to business transactions at Inventures.

Inventures puts a spotlight on what Albertans are capable of. This report is as much their story as it is our annual performance update. Innovation has created tremendous wealth in the past for Alberta, and Alberta Innovates will continue to drive the collaboration and innovation that will create wealth in the future.

Accountability Statement

The Alberta Innovates Annual Report for the year ended March 31, 2020, was prepared under the Board's discretion in accordance with the *Alberta Research and Innovation Regulation*, and the ministerial guidelines established pursuant to the *Alberta Public Agencies Governance Act (APAGA)* and the *Fiscal Planning and Transparency Act*. All material economic, environmental or fiscal implications, of which we are aware, have been considered in preparation of this report.

Original signed by Brenda Kenny

Board Chair

June 19, 2020

Date of Approval of Financial Statements

Executive Summary

Alberta Innovates catalyzes entrepreneurship and innovation for the benefit of the province. In 2019–20, we accelerated emerging technologies and innovations toward commercialization and the marketplace through our investments and supports. We shifted more focus to the application of big data and other new technologies in health – to lead to improved patient care for Albertans, better health outcomes and more efficient, cost-effective ways of delivering care. We also embarked on initiatives and collaborations that move Alberta’s oil sands industry in a new, lower-carbon direction and change how Alberta farmers grow food by harnessing technology.

Our corporation had \$228 million in total expenditures during 2019–20. Our total revenue decreased due a reduction of \$25 million in funding in the base grant from the Government of Alberta (GOA). Other transfers from the GOA decreased by \$32 million compared to the previous year.

In response to the reduced provincial grant in October 2019, it was necessary to downsize our workforce by 21 per cent. We restructured program areas for new research and innovation (R&I) investments while maintaining ongoing funding commitments to previously announced projects.

Despite our significantly reduced budget, we reacted quickly to address the global health threat from COVID-19 when the pandemic was officially declared. By mid-March we had joined the Canadian Institutes of Health Research in providing limited co-funding to eight research projects at the universities of Alberta and Calgary to address the novel coronavirus.

Investments made through 19 programs that support entrepreneurs and small-to-medium enterprises (SMEs) generated economic benefits for Alberta. Our annual SME survey tracks the progress of companies after they received funding from us. The latest survey of 631 SME clients covers the period from the year before companies received funding up to the end of 2019. Results from this survey have shown:

- Nearly 2,400 new jobs were created in these SMEs and almost 88 per cent of these were full-time jobs.
- There was \$7.37 in net revenue growth and \$23.50 in follow-on investment (78 per cent from private funding) for every dollar we invested in them through our programs.

- There was greater diversification into other areas of Alberta’s economy; 70 per cent of the revenue generated by our SME clients, and 76 per cent of the new jobs they created, occurred outside the energy sector.

In 2019–20, our clients in other programs reported they:

- Gained proprietary rights: 55 patents were issued to researchers we fund.
- Raised \$98 million: Researchers and trainees supported by Alberta Innovates raised an additional \$98 million from other funders.
- Created new knowledge: 1,100 publications were generated by 243 projects we invested in.
- Created spinoffs: Ten companies were formed in emerging technology areas.

The projects were supported through diverse programs that advance knowledge generation and application of that knowledge. These programs also supported 4,800 highly qualified and skilled personnel – the majority at Alberta post-secondary institutions – through project investments and our trainee programs. This included direct support for nearly 500 trainees through our Graduate Studentship Scholarships and our Health Training and Early Career Development Awards.

Our clients reported more than 1,100 new innovations in 2019–20.

Our subsidiaries, InnoTech Alberta Inc. and C-FER Technologies Inc., served nearly 800 clients in 2019–20. This involved testing, de-risking and translating research for clients with the goal of accelerating commercialization and market adoption. Our subsidiaries generated \$48.4 million in external revenue.

We launched new program initiatives in 2019–20 to drive transformative innovations in several areas, including:

- The \$15-million international Carbon Fibre Grand Challenge to accelerate the development of carbon fibre from bitumen in Alberta and shift the oil sands industry toward value creation and significantly enhance sustainability in a low-carbon emission economy.
- The xR Head program, in collaboration with the Alberta Chapter of the Virtual Reality/Augmented Reality Association, to co-ordinate and advance virtual, mixed and augmented-reality innovations in the health field to enhance patient care or support the training of health professionals.
- The Digital Innovation in Clean Energy (DICE) program, to support the accelerated development of the digital economy in Alberta in priority areas.

In addition, Alberta Innovates played a key role in the creation of the Canadian Agri-Food Automation and Intelligence Network (CAAIN), a national, not-for-profit organization based in Alberta to enable the accelerated application of digital and automated technologies in the agri-food industry.

In our role as convener and connector, we hosted the second Inventures from June 5–7, 2019, in Calgary – a high-energy forum that brought together some 4,000 innovators, investors, industry leaders, thought leaders and service providers from 32 countries on six continents. Inventures 2019 generated \$3.2 million in economic (GDP) impact from tourism and event production spending. The long-term value of bringing together innovators and investors is the potential for new collaborations and deal flow. An independent assessment estimated that between \$116 million and \$249 million of GDP footprint in Alberta could be attributed to business transactions at Inventures.

We invite you to browse through our Annual Report for more details about the success we achieved during what was a turbulent year. We are pleased to highlight research that is advancing health, environmental sustainability, the resource sector and agriculture, and feature dynamic tech start-ups that are changing the way we work.

Learn how albertainnovates.ca.

Annual Report 2019–20

At a Glance

About us

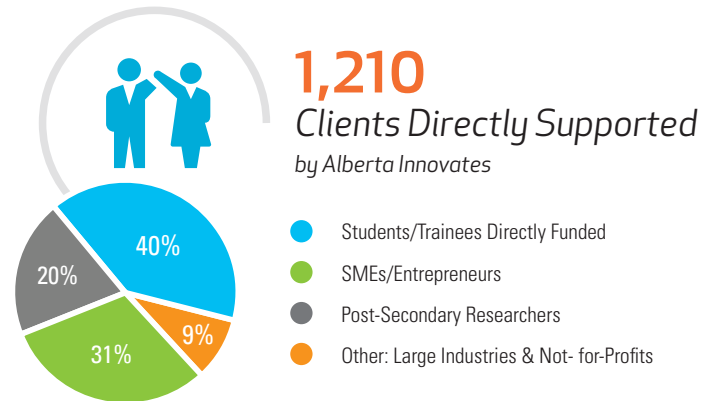
Alberta Innovates supports R&I aligned with Government of Alberta priorities outlined in the Alberta Research and Innovation Framework (ARIF). Our activities and impacts contribute to work in many areas of government and by our partners.



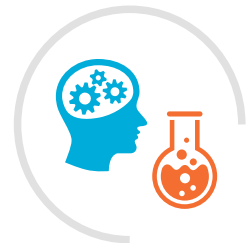
2
Subsidiaries
C-FER Technologies
InnoTech Alberta



\$228 million
Total Expenditures
in 2019–20



1,140
New Innovations
Reported by Alberta
Innovates Clients



\$48.4 million
Generated
in external revenue
(InnoTech and C-FER)



Annual Report 2019–20 *At a Glance (continued)*



2,389

Net new jobs created by SMEs funded by Alberta Innovates 87.5% full time (Cumulative, from year prior to funding to 2019)

Revenue

\$1 → \$7.37

\$1 from Alberta Innovates > \$7.37 in SME revenue growth generated between year prior to funding and 2019

Exports

3.2% vs 47.7%

3.2% of AB establishments exported goods* vs. 47.7% of SMEs funded by Alberta Innovates

*Key Small Business Statistics, November 2019. Benchmark statistic is for 2018 due to unavailability of more recent data.

Diversification

70%

of revenue generated by SMEs funded by Alberta Innovates was outside the energy sector

76%

of jobs created by SMEs funded by Alberta Innovates were outside the energy sector

\$1.00



Alberta Innovates Funding



\$23.50



Follow-on Investment

78%
Private Funding
22%
Public Funding



4,800

HQSP Directly and Indirectly Supported

Highly qualified and skilled personnel include students & trainees, research staff and other personnel

\$98 M

Additional funding raised by researchers and trainees supported by Alberta Innovates in 130 projects

444

Policy innovations reported by clients who received funding in 370 projects

527

Partnerships reported by more than 180 of our non-SME projects

55

Patents issued to researchers in 35 of our projects

“

A key reason we ended up establishing in Alberta was because of Alberta Innovates.

Vladimir Mravacak, President & CEO, Atlantis Research Labs Inc.

“

Alberta Innovates programs have been instrumental in taking our business from an idea to an internationally recognized fintech company that is poised to lead our sector. Their support has truly accelerated our growth and has proven the Alberta advantage for technology companies.

Blaine Bertsch, co-founder & CEO, Dryrun

Context & Outlook



Conversations the world over are increasingly centred on the ability of jurisdictions to innovate in the face of global megatrend challenges. Long-term economic success in Alberta requires us to face global megatrend challenges and develop the newest technologies, most talented people and fastest growing companies.¹

The need has never been greater than now for growth and diversification through new ways of doing things. A collapse of world oil prices and the pandemic shutdown has led to the worst economic conditions in Alberta during our lifetime.

Even before the COVID-19 pandemic, Alberta's economy was already weak. We now know that Alberta dipped into recession in 2019. Citing Statistics Canada, RBC Economics reported that Alberta (-0.6 per cent) and Saskatchewan (-0.8 per cent) were the only two provinces to contract last year.

In 2020, the pandemic had people fearful for their health and exacerbated an already fragile economic situation. Statistics Canada and the Canadian Chamber of Commerce reported that at least a quarter of Alberta's businesses laid off 50 per cent of their workforce while 9.1 per cent of businesses in the province laid off 100 per cent of their workforce in the first quarter of 2020. At the national level, more than half of all businesses saw a decline of 20 per cent or more in revenue.

- The number of employed people in Alberta fell by 360,900 (-15.5 per cent between February and April 2020. At the national level, employment declined by over three million (-15.7 per cent during the same time period).
- Canada's real GDP dropped 7.2 per cent to \$1.85 trillion in March this year (-\$143.6 billion) compared to the previous month.

Alberta Innovates received a 16 per cent reduction in its operating grant in the October 2019 provincial budget, compared to the previous year. This had significant operational implications for our organization. Programming was delayed and/or reduced, and our workforce was reduced by 113 employees – 21 per cent of our total workforce at Alberta Innovates and InnoTech Alberta.

We funded 119 fewer new grants in 2019–20 compared to the previous fiscal year (a 16 per cent reduction) as our programming was scaled back. We had a 49 per cent reduction in the number of continuous intake programs we operated last year compared to the year before, and a 35 per cent decrease in the number of competitions accepting applications.

The overall effect of a reduced budget is that we have less money available to initiate or drive the breadth and depth of change necessary in the R&I system to address new or emerging needs in the province. Of Alberta Innovates' overall grant spending in 2019–20, 58 per cent went toward fulfilling commitments to grants that had been awarded in previous years. This has been the case for the last three fiscal years – roughly 60 per cent of our grant spending has gone toward honouring our ongoing commitments.

With COVID-19 restrictions slowly being lifted and businesses taking advantage of federal and provincial programs, the Canadian economy is expected to perform better in 2020. However, the economy is not expected to fully recover from the impact of COVID-19 any time soon. As we refocus the organization, as outlined in our 2020–23 Business Plan, we will remain flexible in our other, ongoing programming and adapt as needed.

Alberta Innovates remains committed to stimulating Alberta's economy through research and innovation. We work with researchers and businesses to catalyze, convene and optimize outcomes that drive Alberta's economy. From supporting the next generation of innovation in medicine, clean resources and agriculture to launching world-class technology platforms, Alberta Innovates powers up the new Alberta advantage. Where others see crises, we focus on opportunities.

¹ Government of Canada (2019). Innovation for a Better Canada: What we Heard. https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00102.html



Results & Achievements



InnoTech
Alberta

We unleash the power of innovation to solve today’s challenges, create new opportunities and forge a healthy, sustainable and prosperous future for Albertans.

We are where innovation happens, and we touch every corner of the province for the benefit of all Albertans.

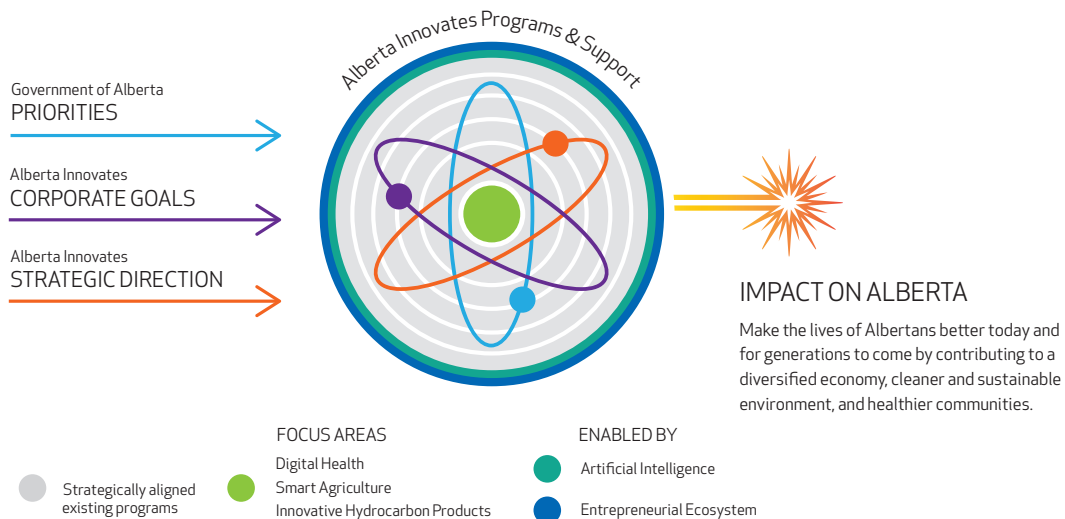
Alberta Innovates is committed to capitalizing on opportunities to diversify our economy by helping move innovations through the R&I system at an accelerated rate. As the largest R&I agency in the province, we work with a range of sectors and industries. This scope gives us a unique role in the R&I system and provides us with a wide-angle lens to identify opportunities, challenges and gaps where R&I is of value.

Our investments, connections, platforms and expertise are leveraged to stimulate effective ways of solving the challenges of today and tomorrow. We guide our clients through the innovation system and use our existing cross-sectoral R&I partnerships and collaborations to connect our clients with the right resources at the right time – helping to propel great ideas forward, faster while gathering important market-driven evidence along the way. As a convener, we bring together R&I system players to reduce barriers and increase the adoption and spread of innovations.

This Annual Report highlights our results and achievements related to our 2019–22 Business Plan. The report demonstrates our transparency as a publicly funded agency and accountability to our largest shareholder, namely the Government of Alberta, our stakeholders and Albertans at large.

In 2019–20, we continued to align our programs and activities to our corporate goals, strategic priorities and areas of focus as well as the priorities of the Government of Alberta (see Figure 1). Our multi-pronged approach – investments, connections, technical expertise and applied research services – supports the innovation agenda and creates pathways that help accelerate R&I to market and into the everyday lives of Albertans.

Figure 1 *Priorities, goals, strategic direction, focus areas and resulting impact on Alberta*



IMPACT ON ALBERTA

Make the lives of Albertans better today and for generations to come by contributing to a diversified economy, cleaner and sustainable environment, and healthier communities.

Research & Innovation Framework

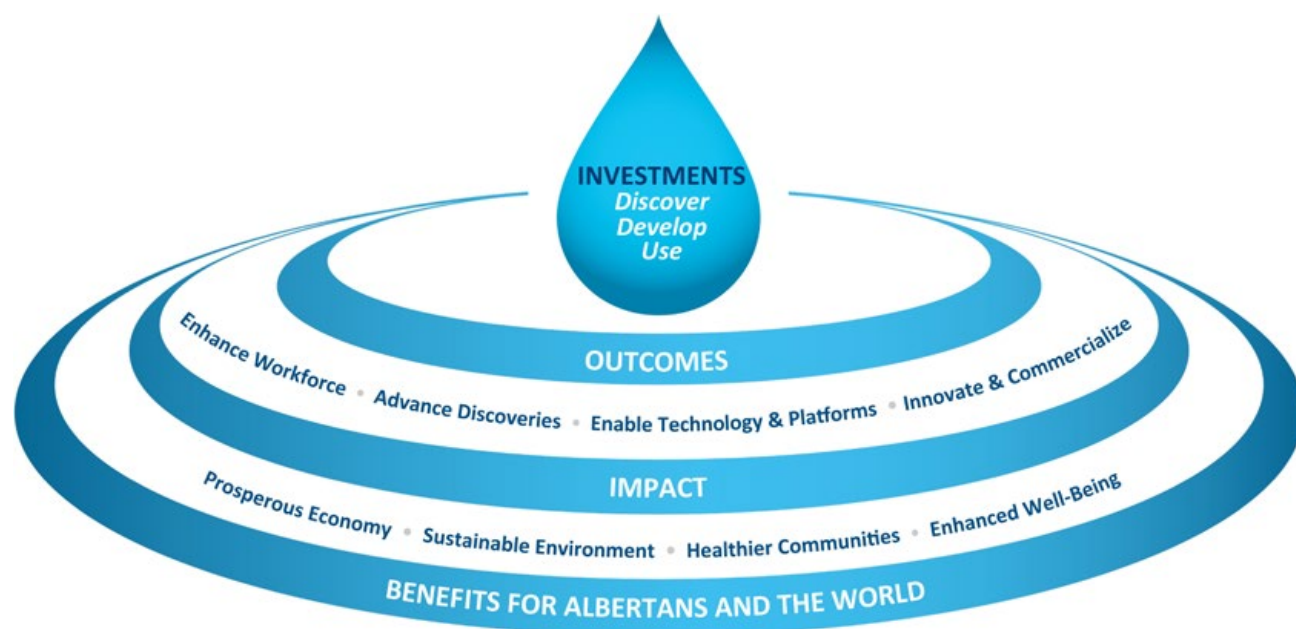
We are committed to demonstrating the impact and value of our investments. Reflecting international best practices, Alberta Innovates is guided by an impact framework (see Figure 2) that helps us plan, measure, evaluate and communicate our progress. The framework guides our investments and activities to achieve our intended outcomes and impact. As a learning organization, Alberta Innovates uses evidence to better understand what works and shares these insights with the broader R&I community to encourage continuous improvement that benefits us all.

We base our results on key performance indicators that were established for each of our corporate goals and which reflect input from the Ministry of Economic Development, Trade and Tourism (EDTT) and our Board of Directors. The indicators maintain a line of sight to our corporate and strategic plan and consider the priorities of the Government of Alberta.

**We are
Alberta Innovates.
Solving problems,
creating possibilities.**

Figure 2 Alberta Innovates Research & Innovation Impact Framework

Measuring and communicating our impact: Alberta Innovates has a robust impact measurement system to track our progress to achieving our goals.



GOAL 1

Make the lives of Albertans better today and for generations to come by contributing to a diversified economy, cleaner and sustainable environment, and healthier communities.



Creating opportunity and growth for our economy

At Alberta Innovates, we invest at stages all along the innovation journey, from early stage through to end use and commercialization. Our support at the early stages is critical, since more traditional investors (angel investors, venture capitalists, investment banks, etc.) are unwilling to take on the risk of early-stage innovations at terms acceptable to entrepreneurs.

Small and medium enterprises (SMEs) are the foundation of Alberta's private sector – accounting for more than 91 per cent of employment in 2018. Alberta Innovates supports entrepreneurs and SMEs in sectors such as agriculture, energy, emerging technology and health through our diverse set of programs and services. These supports aim to reduce the time it takes to commercialize innovations and scale businesses.

Our Technology Development Advisors (TDAs) are senior business advisors who support entrepreneurs and SMEs in technology or knowledge-based industries with one-on-one coaching and community connections. They also assist these clients with identifying non-dilutive capital. In 2019–20, our TDA program held more than 750 new client meetings and had an active client list of nearly 1,000 clients from all corners of the province and across a variety of sectors.

Investments made through 19 of our programs that fund entrepreneurs and SMEs generated economic benefits for Alberta. In addition to having a nearly 25 per cent higher survival rate than Canadian SMEs, the SMEs we funded experienced \$7.37 in net revenue growth for every dollar we invested in them through these programs. Since the year prior to their Alberta Innovates funding, nearly 2,400 new jobs have been created in these SMEs and almost 88 per cent of them are full-time jobs.

The investments we make in SMEs is diversifying Alberta's economy. Seventy per cent of the revenue generated by our SME clients and 76 per cent of the new jobs they created occurred outside the energy sector.

Support provided across Alberta Innovates also resulted in the creation of 10 new companies in Alberta in 2019–20. These companies operate in several emerging technology areas including health, biotechnology, nanotechnology, cybersecurity and clean technology.



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3.2% of AB establishments exported goods* vs. 47.7% of SMEs funded by Alberta Innovates

*Key Small Business Statistics, November 2019. Benchmark statistic is for 2018 due to unavailability of more recent data.



Diversification

70%

of revenue generated by SMEs funded by Alberta Innovates was outside the energy sector

76%

of jobs created by SMEs funded by Alberta Innovates were outside the energy sector

SME survival rates

(six years post-incorporation)



“

The help that we got from Alberta Innovates and our TDA was fundamental to us developing our new technology, allowing us to expand into new verticals, which is the necessary future of our organization. Alberta Innovates has been great to us and we'd love to see your organization help others like you helped us.

Alberio Bathory-Frota, CEO, Launchcode

A cleaner, more sustainable environment

Investments we made in our applied R&I programs aim to sustain, grow and diversify the energy and resource industries, develop clean technology, reduce greenhouse gas (GHG) emissions and protect Alberta’s environment. We are also improving water management, developing more sustainable agricultural processes and land use, and transforming biomass into useable products.

Projects supported in 2019–20 through our Clean Energy portfolio are projected to deliver significant GHG reductions and environmental benefits, particularly with respect to land and water (see Figures 3 & 4). Figure 3 highlights the current and future GHG reduction (by 2030) of projects we are supporting. The number of supported projects with beneficial impact on land and water are shown in Figure 4.

Beneficial land impacts include items such as footprint reduction, land restoration and improved biodiversity conservation.

Beneficial water impacts include improved watershed management, healthier aquatic ecosystems, improved efficiency and productivity of water use, and technologies that ensure safe drinking water and treatment of wastewater.

Figure 3 Reduction in GHG

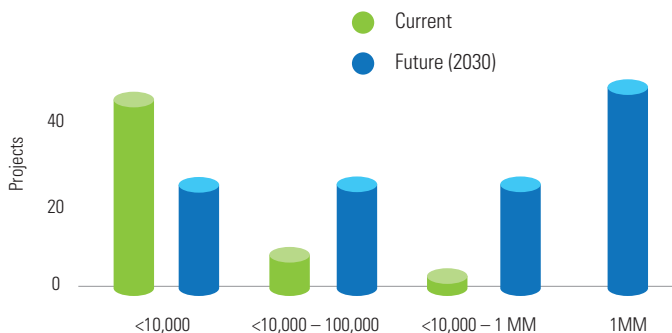
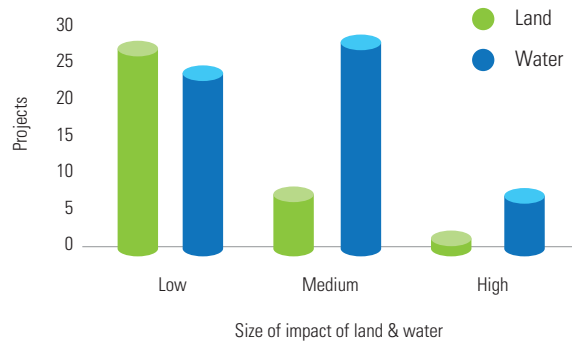


Figure 4 Beneficial impacts on land & water



Building a healthier Alberta

Our support for health innovation in Alberta focuses on a comprehensive view of health and health care – including the social determinants of health – and a continued shift towards enhanced care in the community.

Keeping Albertans safe and healthy in the face of a rapidly spreading worldwide pandemic required a swift response. Alberta Innovates immediately joined the global effort by co-funding eight Alberta research projects with the Canadian Institutes of Health Research, into the prevention and treatment of COVID-19. We also supported projects that leveraged emerging technologies such as artificial intelligence (AI) to enhance the health of Albertans and improve delivery of health care.

Diversity is strength

At Alberta Innovates, we believe Alberta's R&I system is stronger and more sustainable when it broadly reflects the overall diversity of our communities. A recent survey of Equity, Diversity and Inclusion (EDI) metrics among a portion of our clients found 23 per cent identified as a visible minority, two per cent identified as a person with a disability, and 49 and 41 per cent said their age range was 25–44 and 45–64, respectively. Of respondents, 20 per cent were female and five per cent preferred not to respond.

Our Climate Change Innovation and Technology Framework (CCITF) portfolio continues to achieve impacts for Albertans and drive forward EDI opportunities. One of the EDI-targeted groups in the portfolio was remote, rural and Indigenous communities. These communities traditionally have not participated in the research and innovation system due of lack of expertise, resources and capacity to apply for and obtain innovation grants. Now more than ever, these communities are facing increasing pressures to be sustainable and economically prosperous.

One of the EDI targeted groups in the portfolio was remote, rural and Indigenous communities. These communities traditionally have not participated in the research and innovation system due of lack of expertise, resources and capacity to apply for and obtain innovation grants. Now more than ever, these communities are facing increasing pressures as they work toward being sustainable and economically prosperous.

Through CCITF, Alberta Innovates partnered with the Municipal Climate Change Action Centre (MCCAC) to develop the Municipal Community Generation Challenge, a funding program to develop and install replicable, low-carbon power generation projects led by municipalities at the local level. The challenge will see the development of new renewable community power generation projects that reduce greenhouse gas emissions, diversify the local economy and produce data and knowledge that can be shared with other municipalities in Alberta. Forty-three municipalities submitted letters of interest from across Alberta, the majority from remote, rural and indigenous communities. The MCCAC will announce the successful projects that will receive funding in the summer of 2020.

“

Working together to integrate the multi-disciplined talents of our teams, MCCAC and Alberta Innovates framed an engaging application process that has already helped municipalities envision a more energy-resilient future. The process required applicants to pool resources and work together through local engagement, local leadership and local businesses. We are very excited about building the confidence and capabilities in municipalities so that these local energy infrastructure solutions can scale up across Alberta, to generate a diversity of environmental, economic and social benefits for years to come.

Trina Innes, Director, Municipal Climate Change Action Centre

Community generation in Alberta includes renewable and alternative energy sources derived from but not limited to:

- Solar photovoltaics
- Fuel cells
- Wind
- Small-scale hydro
- Biomass
- Geothermal

Our Success Stories

Using emerging digital tech for better customer relations



Symend co-founders Hanif Joshaghani and Tiffany Kaminsky.

A unique digital tech start-up supported by Alberta Innovates has vaulted to the next level. Symend recently announced it has raised \$73 million CAD (\$52 million USD) from investors to develop its “customer engagement platform” and expand its team and operations.

The Calgary company has combined advanced artificial intelligence, machine learning, behavioural science and empathy to develop software that helps companies collect money owed by “financially at-risk” customers.

“We created Symend (in 2016) to help individuals who have fallen behind on payments and treat them with understanding at a time when they need it most. Our solution transforms how companies think about and interact with at-risk customers,” Hanif Joshaghani, co-founder and CEO of Symend, said in the company’s news release.

“Symend is not collections; we are in the business of helping consumers. Not only are we developing a world-class platform, but I’m proud to say that we are applying the sciences to support our mission of creating positive social change,” added Tiffany Kaminsky, co-founder and chief strategy officer.

Alberta Innovates’ Entrepreneurial Investment (EI) programs are intended to grow and diversify the provincial economy by growing small and medium tech companies, private investment and jobs.

Alberta Innovates provided EI funding to help Symend develop and commercialize its innovative platform. The company currently has about 90 employees.

Funding the next generation of telemedicine



Dr. Raj Padwal

The blood pressure cuff has been a staple of doctors’ offices for decades. But for many people managing hypertension, getting a reading during an appointment is not the best approach.

“Clinical guidelines across the world have emphasized the importance of home measurement. It’s the most accurate way, it’s the most effective way,” said Dr. Raj Padwal, CEO of mmHg Inc., an Edmonton start-up making it easier for patients and doctors to keep a closer eye on blood pressure while cutting down on office visits.

The company has developed a phone app called Sphygmo Home. It allows patients to key in their results, either manually or automatically from certain monitoring devices, and send them right to their physician. They can also link to other care providers, even family members.

Sphygmo can do much of the calculation currently shouldered by doctors as they develop a treatment plan. It also offers ways of communicating with patients remotely and a dashboard so care providers can easily track patient progress.

Much of the funding for these telemonitoring innovations has come from Alberta Innovates, through the Accelerating Innovations into CarE (AICE) program and the Alberta Small Business Innovation and Research Initiative (ASBIRI), as well as the federal government. The advantages of telemonitoring include reduced health system costs, continuity of care if more than one health professional is involved, and “care in place” for the patient, from the comfort of home.

Telemonitoring can be applied to other conditions, like tracking glucose levels in diabetics. It can even help with COVID-19. Patients can still receive care if doctors’ offices are closed due to worries of coronavirus infection spread. mmHg is providing a free platform for physicians and caregivers to keep an eye on patients suspected of having COVID-19, allowing them to track things like respiration rate, oxygen saturation and fever.

Optimizing water safety after wildfires



Loss of life, decimated forests and property left in charred ruins are the easily seen, devastating effects of a wildfire. Not so easily seen is the ruinous effect a major wildfire has on a community's water supply.

The Southern Rockies Watershed Project, funded by Alberta Innovates and several partners, has uncovered important findings about the significant, long-term impact that wildfire has on water "from source to tap."

The research has shown that wildfires cause increased runoff and contaminants like debris, soot, metals and nutrients ending up in the watershed, and major swings in water quantity and quality that put downstream strain on municipal water-treatment plants.

Alberta Innovates' investment in this ongoing project through the Water Innovation Program has supported the development of one of the best data sets anywhere in the world for source water protection. The other partners are Alberta Agriculture and Forestry, Alberta Environment and Parks, City of Calgary, Spray Lakes Sawmill, Canadian Forest Products Ltd. and the National Science and Engineering Research Council.

This internationally recognized research, led by professors Uldis Silins of the University of Alberta and Monica Emelko of the University of Waterloo, has informed the operation and economics of water treatment systems in communities affected by wildfire – including the major Fort McMurray wildfire of 2016 and the Waterton fire of 2018.

Alberta Innovates recently provided an additional three years of funding to the Southern Rockies Watershed Project to acquire more knowledge that will have practical applications for managing wildfire, timber harvesting and municipal water treatment systems.

Keeping drinking water safe



Alberta is faced with water quality and scarcity issues driven by population growth, aging infrastructure and climate change. Stormwater, rainwater and wastewater are alternative water sources that can supplement growing water demands.

But there are many health and infrastructure challenges to reusing water from these sources. Of particular concern are waterborne pathogens that represent an acute health risk.

Data was lacking on the concentration of pathogens and contaminants to be able to estimate health risks, and no criteria were available for safe use of wastewater, stormwater or rainwater.

So, Alberta Innovates played a key role in funding a large research project with federal funding agencies (Canada Foundation for Innovation, National Science and Engineering Research Council, Canadian Institutes for Public Health), to assess the risk and develop a framework to guide safe use of these alternative water sources.

The project, led by Prof. Norman Neumann of the University of Alberta and his team, involved provincial and municipal partners. The knowledge gained has informed two provincial government policy/guidance documents (Public Health Guidance for Water Reuse and Stormwater Use [Alberta Health/Alberta Health Services] and the Alberta Water Reuse and Stormwater Use Guidebook [Alberta Environment and Parks]).

In addition, the team discovered "naturalized" populations of E. coli in wastewater that have higher resistance to typical water treatment processes. A new research project has been started, with Alberta Innovates support, to follow up on these findings. The project will address whether microbial pathogens have evolved resistance against our most fundamental disease prevention barrier in modern society – drinking water treatment and sanitation.

Enabling start-ups to survive and grow



Bioindustrial companies don't spin straw into gold – but they can turn it into products that can be sold for a wide variety of uses.

One such company is BioComposites Group (BCG) of Drayton Valley. BCG manufactures natural “fibre mats” from processed hemp stalks. Alberta Innovates and InnoTech Alberta supported BCG on its multi-year journey through product development and commercialization.

Today, BCG is selling its Terrafibre brand products to customers in Canada, the United States and Europe to be used as a compostable and biodegradable growing medium for edible microgreens and other plants. BCG has also partnered with companies to use its fibre mats for erosion control.

The start-up has had sales for the last couple of years. With revenue up 250 per cent year over year, company president Dan Madlung is pleased with the progress so far and thinks the future looks bright for hemp-fibre manufacturing in Alberta.

“We are commercialized and growing quickly,” Madlung says. Even though their retail sales ground to a halt due to COVID-19, he says their online sales have been going up by 15 per cent every month.

“I always say that without Alberta Innovates’ contribution, time and partnership, we would not exist.”

Alberta Innovates more recently invested in a new BCG commercialization first – the prototyping and testing of a green insulation material made in Alberta from 100 per cent hemp. Utilizing hemp as a building material further supports the development of a greener economy.

With Alberta farmers growing more industrial hemp than anywhere else in North America, Madlung thinks there is enough feedstock and market interest in hemp-fibre products to support several primary and secondary manufacturing facilities like his in rural Alberta.

This would be a real boon for farmers and rural development, he says. One barrier to growing this new industry is the lack of commercial decortication facilities in Alberta to produce enough high-quality hemp fibre needed to produce bioproducts. So, a great deal of hemp stalk in Alberta is going to waste, Madlung adds.

GOAL 2

Cultivate a world-class research and innovation system that meets the needs of Alberta.



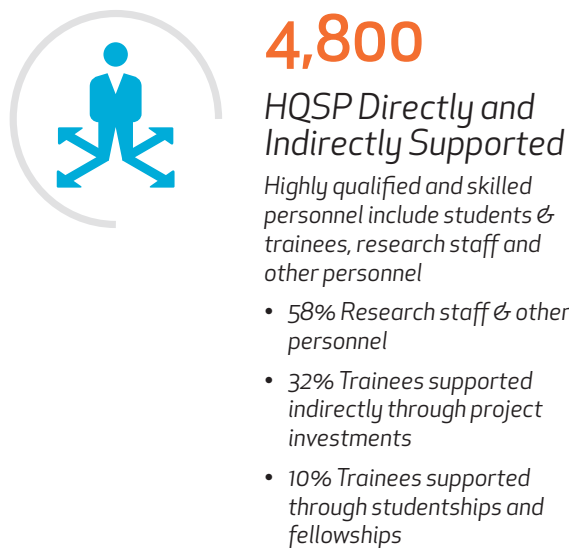
Our province’s ability to respond to challenges is grounded in the infrastructure and supports in the R&I system. Innovation is typically driven by a highly skilled workforce with diverse backgrounds in science, engineering, technology, health and business. These citizens mobilize the innovation system and technology to drive change in our province and beyond.

In 2019–20, Alberta Innovates worked with more than 1,210 clients in the R&I system in Alberta.

Developing R&I leaders for tomorrow

We collaborate with our partners to develop, attract and retain highly qualified and skilled personnel (HQSP) in priority areas for Alberta. As we solve problems together, our clients deepen their expertise and we grow the crucial cadre of HQSP for our R&I system. These individuals are an essential resource for enhancing and accelerating the province’s ability to address the needs of today and tomorrow.

Our investments with post-secondary institutions and our trainee programs help support and expand HQSP and infrastructure in areas of importance to Alberta. In 2019–20, we directly and indirectly supported 4,800 HQSP in post-secondary institutions in Alberta through project investments and our trainee programs. Of those, nearly 500 trainees we directly supported – through our Graduate Studentship Scholarships and our Health Training and Early Career Development Awards – gain exposure to R&I opportunities and financial support in their career development.



Supporting **physical & virtual** infrastructure

In 2019–20, Alberta Innovates contributed to strengthening the province’s R&I system through direct investments in key physical and virtual infrastructure and innovation platforms. These investments enable research to be initiated and completed within our province, better ensuring a “fit for purpose” approach that takes into account Alberta’s unique context and priority needs.

A key platform for health research is the Health Research Ethics Board of Alberta (HREBA), hosted by Alberta Innovates. Managing 1,747 active research projects in 2019–20 alone, HREBA safeguards the rights and welfare of individuals who volunteer to participate in research by ensuring researchers apply ethical principles throughout the project. This helps ensure health research maximizes benefit while minimizing harms.

Through our partnership with the Canadian Institutes for Health Research around the Strategy for Patient-Oriented Research (SPOR), we are integrating research into care via seven platforms we fund across the province. The Alberta SPOR SUPPORT Unit (AbSPORU) is responding to the growing demand for digitally skilled talent in Alberta by building capacity in the next generation of data scientists who have skills and competencies in advanced data analytics – one of the fastest growing careers across all sectors in Alberta. In 2019–2020, AbSPORU launched its Patient Oriented Research (POR) Data Certificate pilot program with 12 graduates, and plans to offer two additional rounds of the certificate program annually in response to significant demand from the community.



AbSPORU is a specialized, virtual, multidisciplinary research service centre that helps researchers who conduct patient-oriented research. It provides access to data platforms and services, tools, methods, training and connections.

“

The importance of digitally skilled talent as a catalyst to drive economic growth for the province cannot be understated.

A Digital Future for Alberta, Information and Communications Technology Council.

Accelerating R&I

Our support of R&I infrastructure and platforms benefits clients by reducing barriers, creating connections, providing expertise and ensuring clients' timely access to necessary resources. In 2019-20, this support included, but was not limited to:

- Our Campus Alberta Small Business Engagement (CASBE) program approved 20 projects, whereby academics are using their world-class knowledge, facilities and students at Campus Alberta institutions to assist Alberta SMEs solve industry challenges and accelerate innovation.
- Our funding of Regional Innovation Networks (RINs) enabled the RINs to support nearly 3,000 entrepreneurs and small technology and knowledge-based businesses with services and expertise to help them innovate and grow.
- Our subsidiaries (InnoTech Alberta and C-FER Technologies Inc.) provided a critical bridge for nearly 800 clients in the R&I system by linking basic research with industry needs. This involves testing, de-risking and translating research for clients with the goal of accelerating commercialization and market adoption. In 2019-20, our subsidiaries generated \$48.4 million in external revenue. Of that, more than \$10 million came from international sources.



3,000

Entrepreneurs and SMEs were supported by our Regional Innovation Networks (RINs)



600+ InnoTech Alberta Clients

170+ C-FER Clients

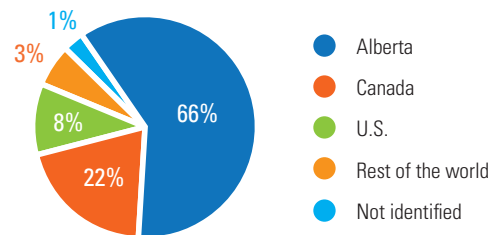
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Alberta Innovates has played a crucial role in my entire academic and professional career. They sponsored my PhD research through both a personal nanotechnology scholarship, and by funding my PhD project with a nanoWorks grant. This funding allowed me to work with an amazing team and have significant resources to work on very exciting sensor development projects.

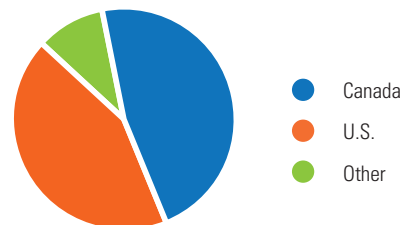
[Alberta Innovates] helped me start my company when I received the MNTorship grant. Then helped me hire my first employee who ended up securing multiple contracts for our company in data monitoring development. Without Alberta Innovates support, Phase Sensors would not exist.

Chris Holt, founder & CEO, Phase Sensors

InnoTech external revenue by geography



C-FER external revenue by geography



Our Success Stories

Helping companies with innovative micro-sensors for mega impact



Laser welder at Phase Sensors.

Phase Sensors is an Edmonton-based company that develops and builds custom micro-sensors for industrial monitoring in hostile, high-temperature and high-pressure environments.

This includes downhole oil well pressure sensors, sensors for refinery heat exchangers, water monitoring sensors for cooling towers and sensors for monitoring equipment on large marine vessels. And most recently, a pressure sensor that can be used in geothermal well monitoring, tsunami detection, and oil well characterization.

Alberta Innovates has been there in various ways since inception, supporting company founder Chris Holt through its post-secondary programs (including the Campus Alberta Small Business Engagement program) and by providing coaching and capital through its (Technology Development Advisor and Product Demonstration) entrepreneurial programs.

This support has spanned the time since Holt was an undergraduate student, the completion of his postgraduate studies, formation of his company, and the development and commercialization of its sensor products.

The Phase Sensors team was in Europe in fall 2019 conducting a pilot test in a major oil company's laboratory. "We are currently following up with them for a second visit and continued testing and development," says Holt.

The activity continued as the team members found themselves in Dubai over Christmas 2019 piloting a marine vessel monitoring project, and spring 2020 saw them land two major customers for their quartz pressure sensor; one of the customers is a multi-billion-dollar company and world leader in pressure sensor technology.

"We have been exceeding our targets from our last year's business plan and we plan to continue executing on it towards 20 employees and \$20 million in revenue in three years," Holt says.

Developing students into R&I leaders



Alberta Innovates has a suite of programs to enhance the recruitment, development and retention of the province's next generation of research and innovation leaders. Meet two of them:

Jordan Engbers received scholarships and training opportunities through several of Alberta Innovates student training and early career development programs in the health field, from the time he was a high-school student in the Heritage Youth Researcher Summer (HYRS) Program through to his postgraduate studies. Engbers went on to co-found and lead a health-data analytics company called Cohesic. He is growing Alberta's footprint in digital health and is actively engaged in the start-up scene.

Cohesic uses an advanced artificial intelligence approach called natural language processing to enhance and streamline cardiovascular care. The platform automates some of the process involved in diagnostic testing, analysis, communicating results and tracking patients' progress. This increases the efficiency of reporting, reduces medical errors and provides clinicians greater insight into their patients' health. The platform also allows large amounts of health data to be compiled for research.

Another is Robert Mayall, who travelled the road from undergrad research student supported by Alberta Innovates Post-Secondary Investments to PhD holder to entrepreneur.

Alberta Innovates helped Mayall and his team of fellow students access support for an undergrad research project and learn important skills. The project was so successful that the team went on to start a company called FREDsense Technologies.

Today, FREDsense is marketing a portable biosensor device that detects water-borne chemicals and contaminants.

Disrupting industries and growing Alberta's economy through artificial intelligence



Edmonton-based tech start-up AltaML works with companies to apply artificial intelligence/machine learning (AI/ML) in their operations.

AltaML partners with the businesses to build software applications, with a focus on the financial services, oil and gas, health, smart cities, logistics and manufacturing. It's a custom approach that Alberta Innovates supports to help accelerate the adoption of AI/ML across multiple industries.

AltaML, a growth-stage company, says it is built around the world-class talent pool in artificial intelligence and machine learning at the University of Alberta. "AI/ML talent is a scarce resource concentrated in certain jurisdictions (including Edmonton) and this is the foundation of AltaML's competitive advantage," says Cory Janssen, AltaML founder and CEO.

Alberta Innovates has long played a key role in supporting and growing this AI/ML talent pool at the U of A. It has also invested funding in AltaML directly, to bring these enabling technologies out of the university and into business use across the provincial economy.

In 2019, AltaML and Williams Engineering Canada, also based in Edmonton, announced a partnership to build machine learning applications for architecture, engineering and construction. AltaML announced numerous other business partnerships in 2019 as well.

AltaML has expanded its service to Calgary. Alberta Innovates is helping the company scale and grow by supporting a leadership position in Calgary.

"Alberta would not have the opportunities in artificial intelligence it does today if it weren't for investments made by Alberta Innovates 15 to 20 years ago," says Janssen. "The opportunity my company has today is because of those long-term investments that Alberta Innovates made back in the early 2000s; we've now got this amazing potential. For Alberta to be strong, we need a strong Alberta Innovates that can make long-term bets on fundamental research."

Drive the generation of discoveries and developments that positively impact Alberta and its industries by leveraging partnerships, collaborations and emerging technology platforms.

GOAL 3



A successful response to Alberta's biggest challenges and opportunities requires a collision of creative thinking and shared effort.

That is why we leverage and build collaborations with many stakeholders:

- Alberta's world-class academic community
- Our globally recognized artificial intelligence community
- Industry
- Public and not-for profit organizations
- Consortia
- Entrepreneurs, SMEs and multinational enterprises (MNEs)

Guided by our can-do spirit, these collaborations drive the discovery, development and use of innovations in Alberta and beyond.

Partnerships reported by 186 of our funded research projects

We recognize no single technology or industry will sufficiently transform and diversify our economy – instead, a convergence of emerging technologies, platforms and applications must be applied to solving problems.

1,100

Shared new knowledge: 1,100 publications were published as a result of our investments in 243 projects

\$98 M

Raised additional funding: Researchers and trainees supported by Alberta Innovates in 130 projects raised a combined total of \$98 million from other funders

55

Gained Proprietary Rights: 55 patents were issued to researchers in 35 of our projects



New **innovation** initiatives for Alberta

Canadian Agri-Food Automation and Intelligence Network

In 2019–20, Alberta Innovates – along with industry, academic and non-profit partners – announced the formation of a new national organization based in Alberta. The Canadian Agri-Food Automation and Intelligence Network (CAAIN) was awarded \$49.5 million from the federal ministry Innovation, Science and Industry Canada. CAAIN is a not-for-profit organization created to enable the accelerated application of digital and automated technologies in the agri-food industry. CAAIN will support network participants to leverage their skills, capabilities, and resources as they build connections and impactful research and innovation projects. Their goal is to drive productivity, cost efficiency, employment and value chain premiums for Canada's agri-food sector by converting data into intelligence, shaping automated ecosystems, and creating smart farm platforms which generate economic, social, and environmental benefits for Canadians.

New Alberta Innovates Initiatives

Alberta Innovates launched a number of new initiatives in 2019–20 supporting R&I that also relate to emerging technology platforms.

- The Digital Innovation in Clean Energy (DICE) program, launched in the fall of 2019, supports the accelerated development of the digital economy in Alberta in areas of priority to Alberta Innovates and the government. DICE funded 17 projects by SMEs and academia in the clean energy sector which accelerate use of emerging tech such as machine learning, drones, enhanced visualization and smart grid technologies.
- In 2019, Alberta Innovates partnered with the Alberta Chapter of the Virtual Reality/Augmented Reality Association to launch the xR Head program. This is a first-of-its-kind opportunity for Alberta stakeholders working in the virtual, mixed and augmented-reality innovation space (collectively known as xR innovation). The xR Head program co-ordinates and advances xR innovations in the health field to enhance patient care or support the training of health professionals. The program funded seven projects with a total award value of \$1.6 million.
- Introduced in December 2019 in collaboration with Campus Alberta Neuroscience, the Exploring Cannabis-Based Medicines and Tools (mCannabis) Program is an opportunity for stakeholders in Alberta's cannabis ecosystem to collaborate to advance cannabis research and innovations. This program aims to enhance patient care, improve patient outcomes, support training of health professionals, and responsibly grow Canada's cannabis industry. A total of \$1.5 million was awarded to five projects in the mCannabis program.
- With the creation of the Alberta Data Institute's (ADI) Data Innovation Platform, Alberta entrepreneurs and researchers now have the opportunity to overcome significant barriers in developing artificial intelligence and machine learning (AI/ML) solutions. The platform facilitates secure sharing of fit-for-purpose data necessary for creating intelligent tools that can automate business, empower customers and add value across supply chains in sectors including smart agriculture, clean energy and digital health. ADI will now look to onboard projects. Some examples are helping to predict frailty in elderly patients, optimizing wellsite cleanup, and adding value for farmers as they manage data regarding their livestock and crops.

Our **success** stories

Knowledge is power! Shared knowledge is powerful!

Collaborating to fight COVID-19



Alberta Data Institute (ADI) co-led a collaborative, data-driven response to health and economic challenges currently facing Alberta due to COVID-19 pandemic. When the pandemic hit, ADI was quick to partner with Cybera and the Pacific Institute for Mathematical Sciences to launch a virtual open-data hackathon.

The Flatten the Curve hackathon brought together data scientists, economists, students and everyday citizens to collaborate on a data-science project that will provide understanding and context useful for Alberta or Canada.

The intent was to examine the scale and spread of COVID-19 by comparing data from different communities. Participants collected and curated worldwide open data, and then refined, transformed and linked that data to create visualizations. They utilized the ADI's data analytics platform: Dataxch.ai.

These visualizations provided an understanding of how our efforts are working to flatten the curve and provide leaders with context and comparisons for economic recovery for Alberta and Canada.

"We want teams to look beyond this pandemic," said ADI Director Mark Diner. "The Alberta Data Institute is well-positioned to support the province as it moves from health system response to community economic recovery."

Alberta Innovates and Cybera partnered with agencies including Elevate Consulting, Edmonton Health City, ThinkDataWorks, and Callysto to provide prizes for the best ideas.

Matching novel data expertise from Alberta with international business needs



Calgary-based Chata Technologies has developed a cloud-based service allowing users to access, search and analyze their stored business data. Chata's "human-to-database interface" can take human language and convert it to a database query language a machine will understand.

Chata describes its artificial intelligence service as "conversational AI for database access," which allows individuals "to simply ask questions and have relevant data returned to them in real time."

Chata CEO Kelly Cherniwchan and his team determined there would be more value in packaging their technology as a "cognitive service" that can be integrated in other people's software. Chata received help to do this from Alberta Innovates technology development advisors and other Entrepreneurial Investments (EI) programs. These programs are designed to grow the tech sector by helping high-risk, high-tech companies advance their innovative ideas into commercialization, to the point where private investors become willing to invest.

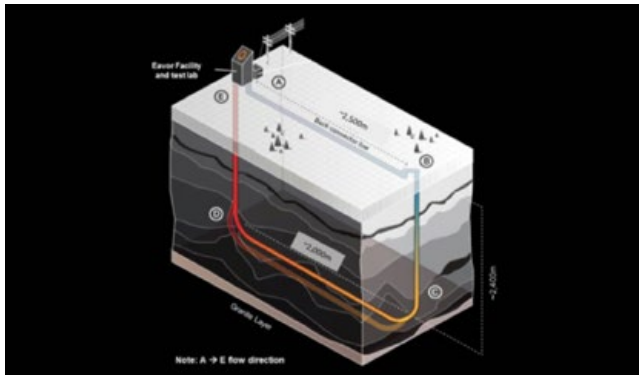
The company also participated in EI's Global Partnership Program to find a viable partner to move its product forward. Chata attended a matchmaking event in Guadalajara, Mexico, in 2019 through the Global Partnerships – Alberta-Jalisco Program.

Cherniwchan says the matchmaking event in Mexico helped Chata create valuable business connections that resulted in deal-making. "Getting face-to-face time with all the different groups [was] really great, because you're pitching and everyone has the mindset that you're not there to beat around the bush, you're there to look for a real partner to drive real business."

Chata partnered with Lefort Fintech Labs, a company in Guadalajara. Chata built a Spanish-language interface that communicates with Lefort Fintech's database. This allows Lefort users to access their data in Spanish; thus, increasing workflow efficiency and enabling people to work more effectively. Ultimately, the partnership between Chata and Lefort Fintech will reduce costs, increase productivity and make technology more accessible to those using it.

Also in 2019, Chata was able to raise \$4.5 million CAD in seed-round financing from angel investors. Altogether, the company has raised nearly \$10.3 million from private investors since Alberta Innovates began supporting the company in 2016.

Transforming renewables by harnessing geothermal energy



The Eavor-Loop™ system.

In 2019 Alberta company Eavor Technologies Inc. demonstrated made-in-Alberta geothermal technology that could transform the way we think about renewable energy.

The demonstration project used and enhanced existing Alberta oil and gas drilling technology and expertise to facilitate a revolutionary and unique energy system known as the Eavor-Loop™.

The Eavor-Loop™ system harnesses the Earth's natural heat kilometres underground, to use at the surface for heating or to generate electricity. While generating geothermal energy is not new, Eavor's closed-loop technology makes it highly scalable, with the promise of being a significant global renewable energy source.

The heat produced can feed into district heating networks to support residential heating, industrial needs like timber drying, or commercial needs like greenhouse heating. The heat can also be converted to electricity and provide renewable, baseload power to the grid or directly to an end user to support off-grid power supply.

Alberta Innovates funded \$1 million of the \$12-million Eavor-Loop™ project with multiple government and industry partners, including Natural Resources Canada, Sustainable Development Technology Canada, Emissions Reduction Alberta, Precision Drilling, Certus Oil and Gas, and Shell New Energies.

The demonstration project was designed to prove and showcase Eavor's unique technology, at a near-commercial scale. It was commissioned in December 2019 with operation testing and optimization expected to be completed in the summer of 2020. The facility will continue to serve as a test site and proxy for commercial Eavor-Loop™ implementations globally.

"Alberta is truly the 'Silicon Valley' of energy services," said John Redfern, president and CEO of Eavor Technologies. "The Eavor-Loop™ system incorporates the best of our province's energy technology capabilities and prowess, to provide a new and sustainable opportunity for our world-renowned drilling industry. The net result is a uniquely scalable source of emissions-free baseload power."

Growing hardier corn crops and economic opportunities in rural Alberta



In Alberta, the requirement for hot and long growing seasons has limited grain corn production for livestock consumption to the southern irrigation districts. This is the only region that typically receives enough heat to support corn hybrids.

To address this challenge, Alberta Innovates partnered with the Alberta Crop Industry Development Fund, a producer-driven research and development investment organization, to fund a corn research program in Lethbridge operated by Corteva Agriscience.

The establishment of an intensive corn breeding program to overcome environmental limitations has provided Alberta producers with the ability for further crop diversification and economic opportunity.

Alberta Innovates invested \$1 million while Corteva contributed \$6.5 million. The five-year project, completed in 2019, resulted in the commercialization of 19 new hybrids through local breeding and characterization efforts, and is expected to continue generating two new hybrids each year beyond the project close.

The commercial offerings resulting from this effort now serve a diverse market and fit a broad range of adaptation within Alberta. The project also resulted in the establishment of this research facility with a high-performance team of plant scientists, research equipment and multiple plot testing sites.

This project is significantly responsible for the increase in corn acres in Alberta. By the end of the project, the number of corn acres planted in the province had gone from 175,000 to 290,000.

Continuing to expand the growing adaptation area makes grain corn a viable crop option across a broader geography in Alberta. This adds a new, high-margin crop to rotations, enhancing both grower financials and agronomics.

For the Alberta livestock industry, this provides more locally produced grain corn with premium feed value, reduces imports and improves the economics of Alberta hog and beef cattle farming.

Other end-users are expected to benefit from more local corn, such as the ethanol industry, dry and wet milling, farm equipment suppliers and fertilizer suppliers.

The Lethbridge Research Centre provides knowledge intensive employment for university graduates as well as seasonal employment for students and others. Well over 100 university and casual staff were hired over the course of five summers to help execute the research program.

GOAL 4

Accelerate and broaden the use of innovative products, technologies and processes.



Alberta Innovates supports innovation from the generation of new ideas through to commercialization or end use. This multi-pronged investment approach creates pathways and helps bridge gaps to accelerate R&I to market for the benefit of Alberta and beyond.

The accelerating speed of technological change and the capabilities it brings is altering the world we live in faster and more dramatically than any other time in history.

Vaulting a great idea to commercialization or end use is one of the most challenging aspects of innovation the world over. It is also essential if the value from R&I is to be realized. We use our expertise and leading-edge facilities to accelerate this progression.

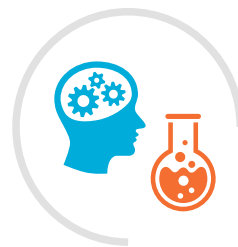
Projects we support reported producing 1,137 new innovations and 444 policy innovations in 2019–20. Our investments have led many innovations to successful commercialization or end use, ultimately impacting Albertans and others in positive ways. The following programs from 2019–20 are a snapshot of our support for the acceleration of R&I to end use.

- Most entrepreneurs start as inventors or creators, not as experienced business leaders with the knowledge and skills to prepare their companies for investment and growth. A unique Alberta Innovates service, the Executive Business Advisor (EBA) program, provides coaching for later-stage SMEs in Alberta in need of executive-level support and guidance. This differs from many of AI's other entrepreneurial and SME investments, which largely focus on supporting early-stage technology development and commercialization.

- SMEs are a key component of Alberta's health innovation system. Companies have the potential to improve patient outcomes, quality of care and efficiency within the health system through the development and implementation of new technologies.

Our Accelerating Innovations into CarE (AICE) program provides funding support, system connections and business development expertise for SMEs and health system partners who require market access, clinical validation or technology assessment to facilitate adoption and diffusion of a novel technology. In 2019–20, there were six active projects for a total value just over \$900,000.

- The Partnership for Research & Innovation in the Health System (PRIHS) program – through our ongoing collaboration with Alberta Health Services (AHS) – scales innovations across the health system. The fifth PRIHS competition was launched in 2019–20, with seven projects being funded for a total investment of \$6.9 million.



1,137

New innovations

Were reported by our clients in 2019–20.



444

Policy innovations

Were reported by clients who received funding in 370 projects.



\$47 million

Seven Alberta-based companies supported by our Executive Business Advisors raised nearly \$47 million in total.

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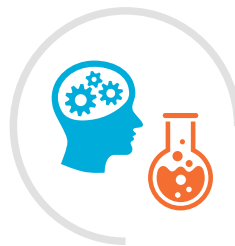
Alberta Innovates has been supporting Interface since the very beginning. We received support through the Micro-Voucher program to help us understand our market, connections and support for fundraising, and co-funding for projects to develop new hardware that will change the way we work. Alberta Innovates is one of the first places I tell new entrepreneurs to look when they don't know where to turn for help in the tech ecosystem in Alberta.

Stuart Kinnear, Interface Fluidics Ltd.

“

Alberta Innovates programs have been instrumental in taking our business from an idea to an internationally recognized fintech company that is poised to lead our sector. Their support has truly accelerated our growth and has proven out the Alberta advantage for technology companies. From supporting an industry-leading Commercialization Associate that is driving our growth, through to an Executive Business Advisor that was essential to raising our most recent round of financing, Alberta Innovates has been paramount to our success.

Blaine Bertsch, co-founder & CEO, Dryru



Accelerating Impacts

Commercialization of novel health technology has the potential to significantly enhance patient care while simultaneously creating health, social and economic impact for Alberta.

Our Success Stories

Applying artificial intelligence to improve clinical care



Members of the Mikata Health team.

Calgary-based start-up Mikata Health is using advanced artificial intelligence to help a growing number of clinics and doctors in Alberta transform how medical care is delivered to Albertans.

Mikata Health's technology uses AI to automate tasks, freeing up doctors and clinic staff to focus on care. Clinics can send customized text messages for appointment reminders, instructions and pre-visit conversations, helping patients get the most out of their medical appointments. At the same time, using predictive modeling and information collected from patients, the tool enables clinics to reduce visit no-shows and reach out to patients to provide personalized care.

In 2017 Alberta Innovates helped the first-time entrepreneurs develop their technology and business model. Then they started working with an Alberta Innovates Executive Business Advisor who helped them find investors.

In November 2019, Mikata Health closed \$1.16 million in late seed financing with an Alberta syndicate of physicians and other investors.

Today, Mikata Health has grown their team from two to nine people. So far, the technology has been introduced at more than 50 clinic locations in Alberta, with more than 250 doctors on its platform and interacting with over 300,000 patients.

Responding to COVID-19

Mikata Health has adapted its technology to enable clinics to proactively pre-screen patients for COVID-19 and introduce protocols to protect the safety of patients and staff.

"We're working with clinics to adapt our technology so we can provide even further value in these changed circumstances," says Kyle Nishiyama, Mikata Health's CEO. "Everyone in this province's innovation network — especially Alberta Innovates — has been extremely supportive of our technology. That's been critical," Nishiyama says.

Coaching, capital and nanotechnology tap into export growth market



Summit Nanotech CEO Amanda Hall (left) with Alberta Innovates CEO Laura Kilcrease.

Calgary start-up Summit Nanotech is deploying nanotechnology in the energy sector. Instead of extracting oil and gas, however, this company is extracting lithium from brine.

Brine, which naturally exists in underground reservoirs, is a byproduct of oil and gas exploration and other mining. By developing an improved method to extract the lithium from the brine, Summit Nanotech is helping to develop a new export commodity for the growing electric car battery and mobile phone markets – global markets worth billions of dollars.

"The lithium market is hot," says Summit Nanotech CEO Amanda Hall.

Her company's green process uses no fresh water and less energy, which drives down operation costs and aligns better with regulatory requirements. It also takes advantage of oil and gas infrastructure already existing in Alberta.

Hall is among a new breed of innovators adopting emerging tech in the resource sector. Strategic coaching and capital through Alberta Innovates Entrepreneurial Investments programs provided her and her company the right support at the right time.

“

We've had multiple advisors through Alberta Innovates who each brought their own expertise to help shape and develop our business. This included business model planning, technical development, as well as attracting private investment. Alberta Innovates funding programs also were a major contributor to our success to date. The direct funding helped support our research and development and also provided validation and initial customers which then lead to private investment from Alberta investors.

Kyle Nishiyama, CEO Mikata Health

Stimulating cross-sector innovation in rehab medicine



Demonstrating the FEPSim™ device.

Impaired function of the hands, wrists or arms can make tasks such as zipping up a coat, opening a door, turning a key or turning a wrench difficult or impossible. Each year, roughly 500,000 Canadians suffer workplace injuries to their hands, and others lose function after suffering from acute medical events such as stroke, or chronic conditions like osteoarthritis.

Addressing a need for better hand and wrist therapy at an affordable cost, the Glenrose Rehabilitation Research Innovation & Technology (GRRIT) Hub partnered with Karma Machining & Manufacturing Ltd., an Alberta company that has been serving the oil and gas industry for many years.

In partnership with the Glenrose team, Karma expanded on their usual work in the oilpatch and used their expertise to develop the FEPSim™ (flexion, extension, pronation and supination) device to aid patients in building strength and measuring progression. The company has since created a medical devices division called Karma Medical Products, and recently acquired their Medical Device Establishment Licence from Health Canada.

Medical devices face a high bar to be adopted into everyday clinical practice. Companies must demonstrate their device is safe and effective, and provide economic evidence showing it is cost-effective for the health system by reducing the amount of time needed to treat patients. Real-world implementation trials are a vital part of the evidence-generating process, but are expensive, time-consuming and require research expertise.

The University of Alberta and Karma applied to the Alberta Innovates Accelerating Innovations into Care (AICE) program to help get the device into use sooner.

In November 2019, the project team was awarded \$150,000 in matching funding for an 18-month implementation project at the Glenrose Rehabilitation Hospital and Royal Alexandra Hospital in Edmonton.

The project is being led by Dr. Antonio Miguel-Cruz and his team at the University of Alberta Faculty of Rehabilitation Medicine. Over the course of the project, the team will conduct a randomized control trial of 62 patients to determine the effectiveness of the FEPSim™ device for hand therapy in a real-world setting. In addition, they will analyze the usability, feasibility and economics of implementing the device to inform adoption into the health system.

Shining light on global markets by advancing the science of simulated sunlight



G2V Optics solar simulator in use.

G2V Optics artificial grow lights and solar simulators are two technologies at the forefront of the science of simulated sunlight.

The Alberta company's high-precision solar simulators have provided researchers in areas like photovoltaics, solar fuels, satellites, and more, with increased data accuracy thus improving the reliability of their research.

And its advanced commercial horticulture lights allow growers to fine-tune the light in the ultraviolet and infrared ranges that plants need to grow and flourish.

"It was clear that the technology we'd invented had much broader applications than solar cells, and that it was also possible to impact food production – and that really spoke to me at a mission level," says company founder Michael Taschuk.

Alberta Innovates has invested support in G2V in various ways. In the earlier developmental stages, it was through the Campus Alberta Small Business Engagement program designed to encourage collaboration between universities and SMEs. Later, it was by providing coaching and capital through Entrepreneurial Investments programs to move the company into commercialization.

With advice from their Alberta Innovates Executive Business Advisor, the company recently raised nearly \$1.9 million in seed financing. G2V Optics is now looking to shine a light on global markets.

From forest to natural gas furnace: Fuelling change through collaboration



The G4 renewable natural gas unit.

In 2019 clean energy start-up G4 Insights Inc. successfully demonstrated that forestry industry residues can be turned into renewable natural gas (RNG).

For the first time in Alberta, the RNG produced during that period was tested and injected into the natural gas distribution grid owned and operated by industry partner ATCO, the demonstration project host.

This unique RNG technology project was supported by a federal-provincial-industry partnership. The consortium included Alberta Innovates, Natural Resources Canada, the Natural Gas Innovation Fund, ATCO and FPInnovations, who collectively invested a total of \$2.8 million in grants and in-kind, for the testing and demonstration of G4 Insights' PyroCatalytic Hydrogenation (PCH) technology.

Renewable natural gas produced from sustainably managed forest residue can emit up to 85 per cent fewer greenhouse gas (GHG) emissions than traditional fuels.

Forest residues include every part of the tree. G4's technology can also be used to convert agricultural crop wastes into RNG.

By investing in the development of clean technology for the production of RNG, there is an opportunity to diversify Canada's energy mix, reduce GHG emissions, improve industrial efficiency and create new economic opportunities for Canadian companies in both rural and urban communities.

GOAL 5

Be recognized globally as a leading innovation engine.



Over the last year, we continued to build on our strengths to meet the needs of our citizens, and to respond to challenges and opportunities we are facing as province, country and world. In 2019–20 Alberta Innovates and our subsidiaries had total expenditures of \$228.4 million to support the discovery, development and use of innovation.

Alberta Innovates is increasingly being recognized as Alberta's innovation engine. Our annual awareness survey commissioned in October 2019 showed that 59 per cent of Albertans surveyed were aware of our organization, a slight increase over the previous year. The public's positive opinion of Alberta Innovates also increased slightly, from 21 per cent to 23 per cent. In Canada, Alberta Innovates ranked second only to the National Research Council in terms of reputation.

Clients engage with us at any point along the client journey where they feel we can help. Not only do we assist at the early stages of an idea or concept, but also when validating and scaling is required or to help them explore global markets and partnerships as their innovations mature. In 2019–20, 87 per cent of clients rated their overall experience with Alberta Innovates as good to excellent, and 93 per cent would like to work with Alberta Innovates in the future.

Alberta is where innovation happens. We touch every corner of the province for the benefit of all Albertans.

71 per cent of respondents to our 2019 awareness survey felt it was important for the Government of Alberta to invest in research and development in the province's agriculture, energy, environment, forest and health sectors – a significant increase from 2017 and 2018 survey results. 72 per cent of respondents agreed it's important for the government to invest in new technologies to diversify the economy and create jobs.

\$228.4 million

In total expenditures

4,000

Innovators attended Inventures from 32 countries on six continents

\$57.4 million

External revenue attracted by Alberta Innovates and its subsidiaries

59%

Albertans aware of Alberta Innovates

87%

Clients had good to excellent experience with Alberta Innovates

“

There were other provinces and jurisdictions in the U.S. that were looking at Atlantis Research Labs and its subsidiaries to move to those locations. Our Alberta Innovates Technology Development Advisor was key and instrumental in telling us that Alberta had a serious interest in young businesses that were growing and focusing in technology, specifically, (and) that this technology we were producing was really pertinent and that it belonged in Alberta. A key reason we ended up establishing in Alberta was because of Alberta Innovates.

*Vladimir Mravacak, President & CEO,
Atlantis Research Labs Inc.*

Bringing the world to Alberta

INVENTURE\$ 2019

Inventures 2019 continued the tectonic shift in Alberta's innovation landscape – looking beyond the horizon for economic growth opportunities benefiting Albertans now and in future. From June 5–7, 2019, Inventures transformed the TELUS Convention Centre in Calgary into a high-energy forum of conversations, convergence and positive collisions.

Inventures 2019 featured 220 speakers, 100 program tracks and six themes, live pitch events, and 20 “Connect” events associated with the main event.

It brought together some 4,000 innovators, investors, industry leaders, thought leaders and service providers from 32 countries on six continents. The vast majority of attendees were from Canada and the United States.

Inventures 2019 generated \$3.2 million in economic (GDP) impact from tourism and event production spending. The long-term value of bringing together innovators and investors is the potential for new collaborations and deal flow. Between \$116 million and \$249 million in GDP impact is estimated to have resulted from deal flow transactions negotiated during Inventures, according to a study conducted by PricewaterhouseCoopers for Alberta Innovates.

Accelerating low-carbon transformation of Alberta bitumen through R&D



In January 2020, Alberta Innovates launched the Carbon Fibre Grand Challenge, a \$15-million international competition to accelerate the development of carbon fibre from bitumen in Alberta. The competition is part of our broader Bitumen Beyond Combustion program.

Both aim to produce large-volume, high-value, non-combustion products from bitumen. This has the potential to shift the oil sands industry toward value creation and significantly enhance sustainability in a low-carbon emission economy.

The Carbon Fibre Grand Challenge consists of three phases which will wrap up at the end of 2024. Three grand prizes of \$3 million will be awarded to the winners who will be required to produce more than 10 kg of carbon fibre per day, with a line of sight to scale production to more than 250 tonnes per day.

Eventually, this production process could result in more than 100,000 barrels of Alberta bitumen being used daily to produce carbon fibre. In 2018, Alberta's oil sands produced roughly \$61 billion in revenues. Carbon fibre production could potentially double or triple that revenue in the next 15 years.

Our Success Stories

Partnering globally to improve agricultural performance



Wheat is an important food source planted on almost a third of all of Alberta's cropland – also making it economically important to Alberta's agriculture industry and its farmers.

Plants convert sunlight into food to grow and flourish. This process is known as photosynthesis. Wheat is efficient at converting Alberta's sunny summers into increased grains, but this system can be tweaked to make wheat yields higher – providing greater economic benefit to farmers and producing more calories from the same amount of land and inputs.

Research supported by Alberta Innovates was able to demonstrate that targeting certain genes in the wheat plant resulted in higher photosynthetic efficiency, increased biomass, faster growth and improved performance compared to conventional wheat plants.

Alberta Innovates partnered with multiple funders including the Global Institute for Food Security and the Saskatchewan Wheat Development Commission (a farmer organization) to support this work.

The research team included researchers from the National Research Council of Canada, and global partners such as the International Maize and Wheat Improvement Center in Mexico and Rothamsted Research in the United Kingdom.

Innovating for improved food safety through international collaboration



Dry food products contaminated with bacterial pathogens have caused product recalls and outbreaks of foodborne diseases.

But decontaminating dry foods – such as almonds, peanut pastes, dried fruits and vegetables, dried meat, powdered milk, teas and spices – remains an unsolved problem in food processing, because current technologies compromise food quality and consumer acceptance.

Alberta Innovates supported research that provides a new decontamination method for the food industry. The technology uses a non-flammable, non-toxic, inexpensive and recyclable material – CO₂.

The research led by Dr. Michael Gänzle at the University of Alberta demonstrated that bacterial pathogens can be eliminated by high-pressure carbon dioxide with only minimal effects on product quality.

Alberta Innovates' support was critical in allowing this novel technology to be tested for food safety and public health. The Fraunhofer Institute – UMSICHT in Germany provided complementary expertise on experimental design and analysis of research results.

Gänzle is in discussions with two Alberta-based companies regarding follow-up initiatives that would lead to commercial applications for the food industry in Alberta and beyond. Along with minimally affecting food quality, this new decontamination method also has potential to reduce capital investment and operating costs.

Plus, the long-term collaboration between Fraunhofer Institute – UMSICHT and the University of Alberta continues to strengthen the research landscape for Alberta.

InnoTech Alberta

InnoTech Alberta (InnoTech) is a leading research and technology organization serving the needs of industry, entrepreneurs and the public sector, as a subsidiary of Alberta Innovates.



InnoTech Alberta

Our leading-edge expertise and industrial-scale research and demonstration facilities accelerate and de-risk technology development and deployment with a focus on industrial solutions and commercial application. We are Alberta's innovation engine with 100 years of bold ideas that feed, grow, fuel and build Alberta's agriculture, energy, environment and forestry sectors.

At a glance: 2019–2020

2019–20 marked a year of transition and change for InnoTech as it focused on developing and implementing frameworks, structures and strategies relevant to Alberta's industries, the public sector and the provincial innovation system. These changes will enable InnoTech to better support Alberta Innovates as a convener and co-ordinator across the entire pathway to innovation. Key accomplishments include:

- Implemented a new business model to enable InnoTech to focus on value to our clients and return on investment to our stakeholders while filling a unique need in the innovation system to advance technologies when others lack the capability and capacity, cannot take on the associated risk or require impartial third-party validation.
- Implemented a new corporate structure to strengthen our alignment to industry sectors and synergies with external stakeholders, maximize internal collaboration in the provision of solutions to our clients, better manage organizational swings in utilization and demand, and promote better cross-training and development opportunities for our staff.
- Created corporate planning, reporting and client engagement functions to refine the organization's strategic focus, effectively evolve its service offerings, diversify its revenue streams, and quantify the value it creates in the innovation system.

During this transition, the Government of Alberta's budget resulted in InnoTech experiencing a reduction of 79 staff or 26 per cent of its workforce in the late fall of 2019. In March 2020, the global economy came to a standstill as a result of COVID-19 and a price war between oil-producing nations erupted which had immediate impacts on Alberta's already struggling energy sector. But despite these challenges, InnoTech remained highly focused on efficient and effective delivery of value to our private- and public-sector clients, and on building greater resiliency into the organization by creating and implementing the frameworks and functionalities needed for the organization to be globally competitive.

Return on Investment

The Government of Alberta set up InnoTech Alberta to enable industry groups, corporations and government organizations to execute on their research and development and innovation investments. By providing services to both private and public markets, we deliver value to Alberta's industries and a return on investment to the citizens of Alberta as an integral contributor to our stakeholder, Alberta Innovates, across the path of innovation.

InnoTech is largely supported by client revenue. Our unique public-private funding model and ability to serve as a neutral and independent third party enables us to fill critical gaps in Alberta's innovation system – we assist clients where they lack our specific capabilities and capacities such as expertise, facilities and scale, and we are designed and equipped to undertake higher-risk initiatives.

This value proposition makes InnoTech unique, but its uniqueness also comes with greater business model complexity. As a provincial agency, InnoTech is subject to regulations that limit its ability to sell its services beyond a government-mandated expense cap. This cap limits the costs InnoTech can incur to deliver services to its clients. This revenue neutrality inhibits InnoTech's ability to become more self-reliant and ensure its long-term viability.

InnoTech's total revenue in 2019–20 was \$45.4 million. The provincial government invested \$9.2 million in 2019–20. Leveraging its expertise, facilities and support from the government, InnoTech was able to attract \$34.7 million in external revenue and also provided \$1.5 million in services back to the Alberta government.

More than two-thirds of InnoTech's external revenue was generated from companies and organizations located within Alberta and more than 88 per cent from Canadian organizations overall. More than 75 per cent of InnoTech's external revenue comes from clients seeking to solve problems in the energy or environment sectors, while 12 per cent is related to agriculture and forestry within the bioindustrial sector.

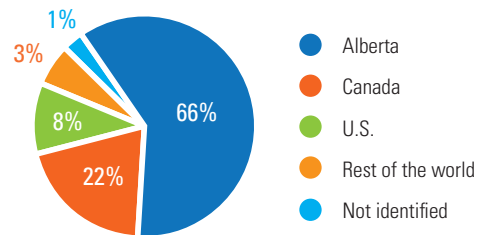
The high levels of external contract revenue relative to the Alberta government's investment, coupled with the sectors that are seeking InnoTech's assistance, are a measure of the relevance of InnoTech's services to these sectors. While the size of the Alberta government's investment into InnoTech experienced a marked decrease last year and also decreased in prior years, InnoTech's external revenue continued to increase.

Investment by the Government of Alberta was tied to program initiatives that support Alberta's Applied Research and Innovation Framework (ARIF). The majority of this investment was directed to Energy and GHG Mitigation, Cross-Sectoral Emerging Technology Areas, and Environment and Climate Adaptation.

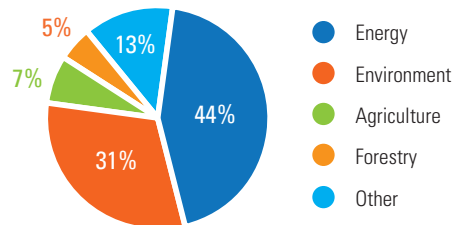
Examples of leveraged investments include the Alberta Research Council Core Industry Research Initiative (ACI) and Materials Reliability in Oil Sands (MARIOS) programs, where the Alberta government's investment into these programs can be doubled by private industry. Government investment enables these consortia by providing the support needed for participating companies to co-ordinate collaborative advancement of solutions to industry challenges in areas of jurisdictional advantage for the province.

External revenue from InnoTech Alberta's clients comes from the major industrial sectors of the Alberta economy.

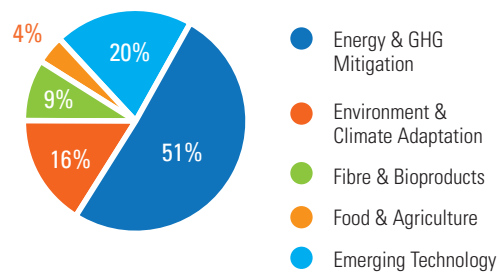
Revenue by Geography



External revenue from industrial sectors of the Alberta economy



Alignment to ARIF



Our Success Stories

MARIOS Program



InnoTech has unique facilities that are used to provide solutions for the oil sands industry

- The Materials Reliability in Oil Sands program links oil sands producers, materials and equipment suppliers, fabricators and technology providers to collaboratively solve industry-wide problems.
- Government investment is leveraged (approximately 1:2) to induce investment from the four major producer and supplier members (which increased from 24 to 33 companies).
- Economic impact for 2019–20 projects is estimated at >\$80 million.
- Thirteen initiatives are underway, including application of smart technologies for improving operational efficiency.

Soil Sterilants Program (2019)



Vegetation control at an industrial site using soil sterilant herbicide. (Photo Credit: Nichols Environmental Ltd.)

- Will establish technical and cost-effective strategies to ensure sites impacted by residual soil sterilants (herbicides) are effectively managed to minimize risk to the environment.
- \$1.6M consortium (ATCO Electric, ATCO Pipelines, TC Energy, Alberta Innovates & InnoTech Alberta).
- Delivered over five years using guidance from a volunteer advisory committee and multiple service providers: InnoTech Alberta, Advisian Worley Group, Bureau Veritas Labs, University of Guelph, Millennium EMS Solutions, University of Alberta, Vertex Environmental Inc.

Fibre Processing & Value-Added Products



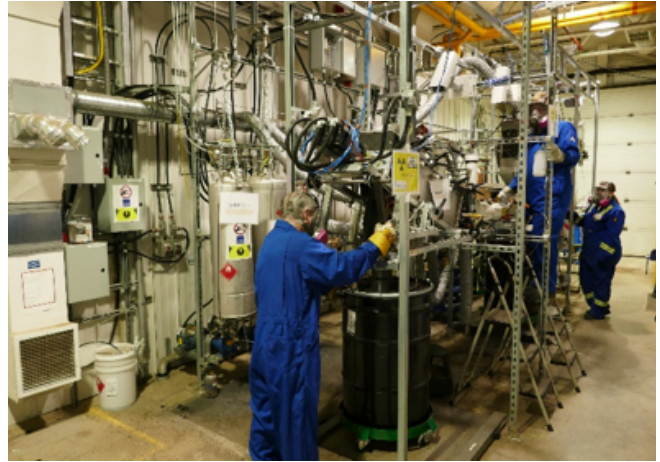
Decortication Plant housed at InnoTech's Vegreville facility is unique in North America.

- Developed hemp expertise and pilot facilities to support advancements from “seed to final product” over the last two decades.
- Outreach activities have helped to attract national and international investors to establish Alberta-based hemp operations.
- Worked on projects for more than 19 Canadian & international companies attracted by unique value offered.

Advancements in Agglomeration

- Contracted to formulate and develop a novel organic fertilizer, and now using pilot facilities to manufacture 15 MT of this pre-commercial organic fertilizer.

Non-Aqueous Extraction (NAE) Technology



NAE Pilot (three barrels/day) at InnoTech Edmonton in 2019

- Groundbreaking technology to extract bitumen from mined oil sands.
- Working with industry partner Suncor Energy.
- Innovations for a cleaner and sustainable environment with wealth and jobs from oil sands resources.
- No tailings ponds, lower greenhouse gas footprint, lower operating cost compared to current hot-water process.
- Produces a more marketable bitumen product.

See Appendix C for key InnoTech initiatives and program updates.

Financial Reporting & Risk Management



Management Discussion & Analysis

The results of the Alberta Innovates consolidated financial statements reflect the objectives of the organization to support R&I activities aligned to meet Government of Alberta priorities for the economic and social well-being of Albertans. This includes, without limitation, activities directed at the discovery, commercialization and application of knowledge in the sectors of agriculture, energy, environment, forestry, health and other sectors determined by the regulations.

Two wholly owned subsidiary corporations, C-FER Technologies (1999) Inc. and InnoTech Alberta Inc., along with the Alberta Foundation for Health Research, are also reporting entities of Alberta Innovates.

The Office of the Auditor General Alberta issued an unqualified audit report on the consolidated financial statements for the year ending March 31, 2020.

Revenue

Total revenue decreased in 2019–20 due to a reduction of \$25 million in funding in the base grant from the Government of Alberta (GOA). Other transfers from the GOA – including other grants, capital contributions and recognition of restricted revenue – decreased by \$32 million compared to last year. Restricted revenue is recognized as spent. Although cash has been received, reductions in Alberta Innovates' net expense target has limited the organization's ability to spend the restricted revenue.

External revenue and industry funding of \$48.2 million dropped slightly from the \$49.2 million generated in 2018–19. In 2019–20 the budget expected C-FER to be consolidated on an equity pick-up basis. However, actuals reflect line-by-line consolidation which resulted in large variances for C-FER in both the revenue and expense.

Expenses

The expenses have been expressed in terms of Alberta Innovates business lines:

Research, Innovation & Commercialization: Includes investments in Health, Clean Resources, Entrepreneurial Investments, Post-Secondary Investments and Strategic Initiatives. Research, Innovation and Commercialization expenses of \$125.5 million were \$8 million higher than budget due to higher expense transfers to inter-governmental post-secondary institutions.

Applied Research: Includes expenses for InnoTech Alberta Inc. and C-FER Technologies (1999) Inc. Applied Research report expenses of \$66 million, which were \$17.2 million higher than budget due to the inclusion of C-FER in expense consolidation.

Administration: Includes all corporate services such as finance, marketing and communications, information services, facilities, legal, human resources, purchasing, corporate planning and portfolio management, and performance management and evaluation. Administration serves a critical function in the Corporation by providing essential supports to the other business lines (Research, Innovation & Commercialization and Applied Research). These corporate services enable the operational business lines to work productively and efficiently toward achieving Alberta Innovates strategic priorities and goals. Corporate services play a direct role in advancing Alberta Innovates strategic priority.

Embrace the Digital Future, given that many of them will be leading and/or actively participating in streamlining and automating our internal processes and operations. Administration expenses of \$36.9 million were slightly above budget and \$8 million higher than the prior year due to restructuring costs in 2019-20.

The gross operating expense target includes amortization and inter-governmental transfers. Inter-governmental transfers are grants or contracts to other government entities that are then eliminated upon consolidation at the GOA. Alberta Innovates' net expense target of \$142.5 million is spending that the organization can direct to strategic priorities and operations. Alberta Innovates exceeded the expense target by \$18 million due to the accounting treatment for C-FER.

Alberta Innovates receives a budgeted revenue and expense target from the Government of Alberta. Although the organization has an accumulated surplus from prior years of underspending, the organization is limited to the expense target provided.

	2018-19 Actual	2019-20 Budget	2019-20 Actual
Gross Operating Expenses	278,145	202,425	228,371
Amortization	(6,750)	(7,200)	(7,202)
Inter-Governmental Transfers	(90,391)	(52,750)	(60,709)
Net Operating Expenses	181,004	142,474	160,460

Committed Funding

Alberta Innovates has funding commitments for specific purposes that are allocated over time. In addition, Alberta Innovates receives funding from third parties, including partnerships that require Alberta Innovates to match the third-party funding. The funding grant must meet all eligibility criteria, the expenditure must be a contractual obligation and the grant must be approved before the expenditure is recognized as an expense in the financial statements. Other funding sources are allocated to Alberta Innovates by agreement. The agreement must be approved by the Alberta Innovates Board of Directors before the expenditure is incurred and recorded as an expense in the financial statements.

Alberta Innovates has \$102.5 million of contractual obligations that will become liabilities over the next five years.

Management's Responsibility for Reporting

Alberta Innovates Management is responsible for the preparation, accuracy, objectivity and integrity of the information contained in the annual report including financial statements, performance results and supporting management information. Systems of internal control are designed and maintained to produce reliable information that meet reporting requirements, and to ensure that transactions are executed in accordance with all relevant legislation, regulations and policies, reliable financial records are maintained, and assets are properly accounted for and safeguarded. The annual report has been approved by the Board of Directors and is prepared in accordance with ministerial guidelines.

The Auditor General of Alberta, the corporation's external auditor appointed under the *Auditor General Act*, performs an annual independent audit of Alberta Innovates' financial statements in accordance with Canadian generally accepted auditing standards.

Original signed by Laura Kilcrease

Chief Executive Officer

Original signed by Maureen Lomas

Vice President, Finance

Statutory Report

Public Interest Disclosure Act

Section 32 of the *Public Interest Disclosure Act* requires the corporation to report annually on the following parts of the Act:

- (a) the number of disclosures received by the designated officer of the Public Interest Disclosure Office, the number of disclosures acted on and the number of disclosures not acted on by the designated officer;
- (b) the number of investigations commenced by the designated officer as a result of the disclosures;
- and (c) in the case of an investigation that results in a finding of wrongdoing, a description of the wrongdoing and any recommendations made or corrective measures taken in relation to the wrongdoing or the reasons why no corrective measure was taken.

In 2019–20, Alberta Innovates had no disclosures of wrongdoing filed with the Public Interest Disclosure Office.

Audited Financial Statements

Independent Auditor's Report [55](#)

Consolidated Statement of Operations [58](#)

Consolidated Statement of Financial Position [59](#)

Consolidated Statement of Change in Net Financial Assets [60](#)

Consolidated Statement of Cash Flows [61](#)

Notes to the Consolidated Financial Statements [62](#)

Schedule 1 Expenses – Detailed by Object [73](#)

Schedule 2 Salary and Benefits Disclosure [74](#)

Schedule 3 Related Party Transactions [75](#)

Schedule 4 Allocated Costs [77](#)



Independent Auditor's Report

To the Board of Directors of Alberta Innovates

Report on the Consolidated Financial Statements

Opinion

I have audited the consolidated financial statements of Alberta Innovates (the Group), which comprise the consolidated statement of financial position as at March 31, 2020, and the consolidated statements of operations, change in net financial assets, and cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In my opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at March 31, 2020, and the results of its operations, its changes in net financial assets, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for opinion

I conducted my audit in accordance with Canadian generally accepted auditing standards. My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Consolidated Financial Statements* section of my report. I am independent of the Group in accordance with the ethical requirements that are relevant to my audit of the consolidated financial statements in Canada, and I have fulfilled my other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Other information

Management is responsible for the other information. The other information comprises the information included in the *Annual Report*, but does not include the consolidated financial statements and my auditor's report thereon. The *Annual Report* is expected to be made available to me after the date of this auditor's report.

My opinion on the consolidated financial statements does not cover the other information and I do not express any form of assurance conclusion thereon.

In connection with my audit of the consolidated financial statements, my responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or my knowledge obtained in the audit, or otherwise appears to be materially misstated.

If, based on the work I will perform on this other information, I conclude that there is a material misstatement of this other information, I am required to communicate the matter to those charged with governance.

Responsibilities of management and those charged with governance for the consolidated financial statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless an intention exists to liquidate or to cease operations, or there is no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's financial reporting process.

Auditor's responsibilities for the audit of the consolidated financial statements

My objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, I exercise professional judgment and maintain professional skepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. I am responsible for the direction, supervision and performance of the group audit. I remain solely responsible for my audit opinion.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

[Original signed by W. Doug Wylie FCPA, FCMA, ICD.D]

Auditor General

June 19, 2020
Edmonton, Alberta

ALBERTA INNOVATES
CONSOLIDATED STATEMENT OF OPERATIONS
YEAR ENDED MARCH 31, 2020

	2020		2019
	Budget	Actual	Actual
	<i>(in thousands)</i>		
Revenues			
Government transfers			
Funding from Economic Development, Trade and Tourism			
Base grant	\$ 131,168	\$ 135,068	\$ 160,249
Restricted grant from prior years	33,426	20,641	35,590
Other grants	10,756	6,085	20,654
Restricted capital contribution	1,540	1,691	1,341
Funding from other Government of Alberta entities - Other grants	9,200	9,137	12,354
Federal government transfers	4,000	5,906	5,245
Donations and other contributions	-	489	-
External revenue and industry funding	38,000	48,233	49,191
Investment income	2,000	1,577	2,288
Other revenue	6,523	3,079	3,192
	236,613	231,906	290,104
Expenses (Note 2 (b) and Schedule 1)			
Research, innovation & commercialization	117,395	125,475	183,302
Applied research	48,817	65,984	65,930
Administration	36,213	36,912	28,913
	202,425	228,371	278,145
Annual surplus	34,188	3,535	11,959
Accumulated surplus at beginning of year	68,729	68,729	56,770
Accumulated surplus at end of year	\$ 102,917	\$ 72,264	\$ 68,729

The accompanying notes and schedules are part of these consolidated financial statements.

ALBERTA INNOVATES
CONSOLIDATED STATEMENT OF FINANCIAL POSITION
AS AT MARCH 31, 2020

	2020	2019
	<i>(in thousands)</i>	
Financial assets		
Cash (Note 5)	\$ 69,990	\$ 154,670
Accounts receivable (Note 6)	100,273	15,117
	170,263	169,787
Liabilities		
Accounts payable and other accrued liabilities (Note 9)	38,304	18,142
Unspent deferred capital contributions (Note 10)	301	808
Deferred revenue (Note 10)	78,158	104,230
Deferred contract revenue (Note 10)	9,330	8,655
	126,093	131,835
Net financial assets	44,170	37,952
Non-financial assets		
Tangible capital assets (Note 12)	48,015	49,463
Prepaid expenses	1,560	1,637
	49,575	51,100
Net assets before spent deferred capital contributions	93,745	89,052
Spent deferred capital contributions (Note 10)	21,481	20,323
Net assets	\$ 72,264	\$ 68,729

Contingent assets (Note 7)

Contractual rights (Note 8)

Contingent liabilities (Note 14)

Contractual obligations (Note 15)

The accompanying notes and schedules are part of these consolidated financial statements.

Approved by the Board of Directors

Original signed by Dr. Brenda Kenny

Dr. Brenda Kenny
Board Chair

Original signed by Dr. H.J (Tom) Thompson

Dr. H.J (Tom) Thompson
Audit Chair

ALBERTA INNOVATES
CONSOLIDATED STATEMENT OF CHANGE IN NET FINANCIAL ASSETS
YEAR ENDED MARCH 31, 2020

	2020		2019
	Budget	Actual	Actual
	<i>(in thousands)</i>		
Annual surplus	\$ 34,188	\$ 3,535	\$ 11,959
Acquisition of tangible capital assets (Note 12)	(14,750)	(5,925)	(7,310)
Amortization of tangible capital assets (Note 12)	7,200	7,202	6,750
Net loss/(gain) on disposal of tangible capital assets		149	(8)
Proceeds on sale of tangible capital assets		22	9
Decrease in prepaid expenses		77	23
Net increase in spent deferred capital contributions (Note 10)		1,158	2,151
Increase in net financial assets	26,638	6,218	13,574
Net financial assets at beginning of year	37,952	37,952	24,378
Net financial assets at end of year	\$ 64,590	\$ 44,170	\$ 37,952

The accompanying notes and schedules are part of these consolidated financial statements.

ALBERTA INNOVATES
CONSOLIDATED STATEMENT OF CASH FLOWS
YEAR ENDED MARCH 31, 2020

	2020	2019
	<i>(in thousands)</i>	
Operating transactions		
Annual surplus	\$ 3,535	\$ 11,959
Non-cash items included in annual surplus:		
Amortization of tangible capital assets (Note 12)	7,202	6,750
Deferred contributions recognized as revenue (Note 10)	(129,588)	(178,923)
Donation of tangible capital assets (Note 12)	(489)	-
Net loss/(gain) on disposal of tangible capital assets	149	(8)
	(119,191)	(160,222)
(Increase)/Decrease in accounts receivable	(85,156)	6,320
Decrease in prepaid expenses	77	23
Increase/(Decrease) in accounts payable and other accrued liabilities	20,162	(12,734)
Increase in deferred contract revenue	675	2,271
Contributions restricted for operating (Note 10)	101,266	176,778
Cash (applied to) provided by operating transactions	(82,167)	12,436
Capital transactions		
Acquisition of tangible capital assets (Note 12)	(5,436)	(7,310)
Proceeds on sale of tangible capital assets	22	9
Cash applied to capital transactions	(5,414)	(7,301)
Financing transactions		
Contributions restricted for capital (Note 10)	2,901	1,295
Cash provided by financing transactions	2,901	1,295
(Decrease)/Increase in cash	(84,680)	6,430
Cash at beginning of year	154,670	148,240
Cash at end of year	\$ 69,990	\$ 154,670

The accompanying notes and schedules are part of these consolidated financial statements.

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
MARCH 31, 2020

Note 1 AUTHORITY AND PURPOSE

Alberta Innovates is a Provincial corporation, as defined in the *Financial Administration Act*. It was established effective November 1, 2016 under the *Alberta Research and Innovation Act*. The *Alberta Research and Innovation Act* was amended to dissolve the four corporations: Alberta Innovates - Bio Solutions, Alberta Innovates - Energy and Environment Solutions, Alberta Innovates - Health Solutions, and Alberta Innovates - Technology Futures and create one new research and innovation corporation, "Alberta Innovates." Two wholly owned subsidiary corporations C-FER Technologies (1999) Inc. and InnoTech Alberta Inc. along with the Alberta Foundation for Health Research are also reporting entities of Alberta Innovates ("The Corporation").

The objectives of the Corporation are to support, for the economic and social well-being of Albertans, research and innovation activities aligned to meet Government of Alberta priorities, including, without limitation, activities directed at the discovery, commercialization and application of knowledge in the areas of agriculture, energy, environment, forestry, health and other areas determined by the regulations.

The Corporation is exempt from income taxes under the *Income Tax Act*.

Note 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES

These consolidated financial statements are prepared in accordance with Canadian Public Sector Accounting Standards.

(a) Reporting Entity and Method of Consolidation

These consolidated financial statements reflect the assets, liabilities, revenue and expenses of the Corporation and its wholly owned subsidiaries InnoTech Alberta Inc., C-FER Technologies (1999) Inc. and the Alberta Foundation for Health Research (AFHR). The AFHR operates under the *Alberta Companies Act* and is a registered charitable organization for income tax purposes. The AFHR's activities are directed to promote and support medical research. All inter-entity balances and transactions have been eliminated on consolidation.

The accounts of government sector entities are consolidated using the line-by-line method. Under this method, accounting policies of the consolidated entities are adjusted to conform to the Corporation's accounting policies and the results of each line item in their financial statements (revenue, expense, assets, and liabilities) are included in the Corporation's results. Revenue and expense, capital, investing and financing transactions and related asset and liability balances between the consolidated entities have been eliminated.

(b) Basis of Financial Reporting

Revenues

All revenues are reported on the accrual basis of accounting. Cash received for which goods or services have not been provided by year end is recognized as deferred revenue and recorded in accounts payable and other accrued liabilities. Externally restricted revenue is recognized as revenue in the period in which the resources are used for the purpose specified. Funds received prior to meeting the criteria are recorded as deferred revenue until the resources are used for the purpose specified.

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES (Continued)

(b) Basis of Financial Reporting (Continued)

Revenues (Continued)

External revenue is contract revenue that is recognized using the percentage of completion method. The Corporation makes full provision for all known or estimated losses on uncompleted contracts as soon as they can reasonably be estimated.

Investment income includes interest income. Investment income earned from restricted sources is deferred and recognized when the terms imposed have been met.

Other revenue is contract and fee for service work billed to Alberta Government ministries and agencies, post secondary institutions and school divisions. Other revenue also includes revenue from the sale of products the Corporation has built.

Government Transfers

Transfers from all governments are referred to as government transfers.

Government transfers and the associated externally restricted investment income are recognized as deferred revenue or deferred capital contributions if the eligibility criteria for use of the transfer, or the stipulations together with the Corporation's actions and communications as to the use of the transfer, create a liability. These transfers are recognized as revenue as the stipulations are met and, when applicable, the Corporation complies with its communicated use of the transfer.

All other government transfers, without stipulations for use of the transfer, are recognized as revenue when the transfer is authorized and the Corporation meets the eligibility criteria (if any).

Donations and Non-Government Contributions

Donations and non-government contributions are received from individuals, corporations, and private sector not-for-profit organizations. Donations and non-government contributions may be unrestricted or externally restricted for operating or capital purposes.

Unrestricted donations and non-government contributions are recognized as revenue in the year received or in the year the funds are committed to the Corporation if the amount can be reasonably estimated and collection is reasonably assured.

Externally restricted donations, non-government contributions and realized and unrealized gains and losses for the associated, externally restricted, investment income are recognized as deferred revenue if the terms for their use, or the terms along with the Corporation's actions and communications as to the use, create a liability. These resources are recognized as revenue as the terms are met and, when applicable, the Corporation complies with its communicated use.

In-kind donations of services and materials are recognized at fair value when such value can reasonably be determined.

Expenses

Expenses are reported on an accrual basis. The cost of all goods consumed and services received during the year are expensed.

Transfers include entitlements, grants and transfers under shared cost agreements. Grants and transfers are recognized as expenses when the transfer is authorized and eligibility criteria have been met by the recipient.

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES (Continued)

(b) Basis of Financial Reporting (Continued)

Valuation of Financial Assets and Liabilities

The Corporation's financial assets and liabilities are generally measured as follows:

<u>Financial Statement Component</u>	<u>Measurement</u>
Cash	Cost
Accounts Receivable	Lower of Cost or Net Recoverable Value
Accounts payable and other accrued liabilities	Cost

The Corporation has no assets or liabilities in the fair value category, has no significant foreign currency transactions and has no significant remeasurement gains or losses. Consequently, no statement of remeasurement gains and losses has been presented.

Financial Assets

Financial assets are assets that could be used to discharge existing liabilities or finance future operations and are not for consumption in the normal course of operations.

Financial assets are the Corporation's financial claims on external organizations and individuals.

Cash

Cash comprises of cash on hand and demand deposits.

The Consolidated Cash Investment Trust Fund (CCITF) is managed with the objective of providing competitive interest income to depositors while maintaining appropriate security and liquidity of depositors' capital. The portfolio is comprised of high-quality, short-term and mid-term fixed income securities with a maximum maturity of three years.

Accounts Receivable

Accounts receivable are recognized at the lower of cost or net recoverable value. A valuation allowance is recognized when recovery is uncertain.

Liabilities

Liabilities represent present obligations of the Corporation to external organizations and individuals arising from past transactions or events occurring before the year end, the settlement of which is expected to result in the future sacrifice of economic benefits. They are recognized when there is an appropriate basis of measurement and management can reasonably estimate the amounts.

Liabilities also include:

- all financial claims payable by the Corporation at the year end;
- accrued employee vacation entitlements; and
- contingent liabilities where future liabilities are likely.

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES (Continued)

(b) Basis of Financial Reporting (Continued)

Environmental Liabilities

Contaminated sites are a result of contamination of a chemical, organic or radioactive material or live organism that exceeds an environmental standard, being introduced into soil, water or sediment. The liability is recognized net of any expected recoveries. A liability for remediation of contaminated sites normally results from an operation(s) that is no longer in productive use and/or unexpected events and is recognized when all of the following criteria are met:

- i. an environmental standard exists;
- ii. contamination exceeds the environmental standard;
- iii. the Corporation is directly responsible or accepts responsibility;
- iv. it is expected that future economic benefits will be given up; and
- v. a reasonable estimate of the amount can be made.

A liability for remediation of contaminated sites from an operation(s) that is in productive use and may be due to unexpected events resulting in contamination, is recognized net of any expected recoveries, when all of the following criteria are met:

- i. the Corporation has a duty or responsibility to others, leaving little or no discretion to avoid the obligation;
- ii. the duty or responsibility to others entails settlement by future transfer or use of assets, or a provision of services at a specified or determinable date, or on demand;
- iii. the transaction or events obligating the Corporation have already occurred; and
- iv. a reasonable estimate of the amount can be made.

Asset Retirement Obligations

Liabilities are recognized for statutory, contractual or legal obligations, associated with the retirement of tangible capital assets when those obligations result from the acquisition, construction, development or normal operation of the assets. The obligations are measured initially at fair value, determined using present value methodology and the resulting costs capitalized into the carrying amount of the related asset. In subsequent periods, the liability is adjusted for the accretion of discount and any changes in the amount or timing of the underlying future cash flows. The capitalized asset retirement cost is amortized on the same basis as the related asset and the discount accretion is included in determining the results of the operations.

Non Financial Assets

Non-financial assets are acquired, constructed, or developed assets that do not normally provide resources to discharge existing liabilities, but instead:

- (a) are normally employed to deliver government services.
- (b) may be consumed in the normal course of operations; and
- (c) are not for sale in the normal course of operations

Non-financial assets include tangible capital assets and prepaid expenses.

Tangible Capital Assets

Tangible capital assets are recognized at cost less accumulated amortization, which includes amounts that are directly related to the acquisition, design, construction, development, improvement or betterment of the assets. Tangible capital assets are amortized on a straight-line basis over the estimated useful life of the assets. The threshold for capitalizing new systems development is \$250,000 and the threshold for major systems enhancements is \$100,000. The threshold for all other tangible capital assets is \$5,000. All land is capitalized.

Work in progress, which included facilities and improvements projects and development of information systems, is not amortized until after a project is complete (or substantially complete) and the asset is put into service.

Tangible capital assets are written down when conditions indicate that they no longer contribute to the Corporation's ability to provide goods and services, or when the value of future economic benefits associated with the tangible capital assets are less than their net book value. The net write-downs are accounted for as expenses in the Consolidated Statement of Operations.

Contributed tangible capital assets from non-related entities are recognized at their fair value at the time of contribution.

Prepaid Expenses

Prepaid expenses are recognized at cost and amortized based on the terms of the agreement.

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES (Continued)

(b) Basis of Financial Reporting (Continued)

Financial Risk Management

The Corporation's financial instruments include cash, accounts receivable and accounts payable and accrued liabilities. The Corporation is not involved in any hedging relationships through its operations and does not hold or use any derivative financial instruments for trading purposes.

The Corporation's financial instruments are exposed to credit risk, market risk, and liquidity risk.

a) Credit Risk

Counterparty credit risk is the risk of loss arising from the failure of a counterparty to fully honour its financial obligations with the Corporation. The Corporation's accounts receivable are exposed to credit risk. Management manages this risk by continually monitoring the creditworthiness of counterparties and by dealing with counterparties that it believes are creditworthy.

b) Market Risk

Market risk is the risk of loss from unfavourable change in fair value or future cash flows of a financial instrument causing financial loss. Market risk is comprised of currency risk, interest rate risk and price risk. The Corporation's cash is exposed to interest rate risk. Management manages this risk by continually monitoring the Corporation's deposits in the Consolidated Cash Investment Trust Fund (CCITF) and their corresponding rate of return.

c) Liquidity Risk

Liquidity risk is the risk that the Corporation will encounter difficulty in meeting obligations associated with its financial liabilities. The Corporation's accounts payable and accrued liabilities are exposed to liquidity risk. Management manages this risk by continually monitoring cash flows.

Measurement Uncertainty

Measurement uncertainty exists when there is a variance between the recognized or disclosed amount and another reasonably possible amount. Asset retirement obligations recorded in accounts payable and accrued liabilities are \$2,549 (2019 - \$2,549). This balance is for estimated decommissioning costs for the Alberta Carbon Capture Technology Centre and is subject to measurement uncertainty.

The World Health Organization declared on March 11, 2020 the outbreak of a strain of the novel coronavirus ("COVID-19") as a pandemic which has resulted in a series of public health and emergency measures that have been put in place to combat the spread of the virus and provide financial assistance as necessary. The duration and impact of COVID-19 are unknown at this time and it is not possible to reliably estimate the effect of these developments will have on the Corporation.

Note 3 FUTURE ACCOUNTING CHANGES

The Public Sector Accounting Board has issued the following accounting standards:

- **PS 3280 Asset Retirement Obligations (effective April 1, 2021)**

Effective April 1, 2021, this standard provides guidance on how to account for and report liabilities for retirement of tangible capital assets.

- **PS 3400 Revenue (effective April 1, 2022)**

This standard provides guidance on how to account for and report on revenue, and specifically, it addresses revenue arising from exchange transactions and unilateral transactions.

Management is currently assessing the impact of these standards on the consolidated financial statements.

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 4 BUDGET
(in thousands)

A preliminary business plan with a budgeted surplus of \$34,188 was approved by the Board on December 4, 2019 and the full financial plan was submitted to the Minister of Economic Development, Trade and Tourism. The budget reported in the consolidated statement of operations reflects the \$34,188 surplus.

Note 5 CASH
(in thousands)

	2020	2019
Cash	\$ 69,990	\$ 154,670

Cash in the amount of \$69,990 (2019 - \$154,670) includes deposits in the Consolidated Cash Investment Trust Fund (CCITF) of the Province of Alberta amounting to \$52,990 (2019 - \$141,324).

As at March 31, 2020, securities held by the Corporation had a time-weighted rate of return of 1.9% per annum (2019 – 1.8% per annum). Due to the short-term nature of the CCITF investments, the carrying value approximates fair value.

Note 6 ACCOUNTS RECEIVABLE
(in thousands)

	2020		2019	
	Gross amount	Allowance for doubtful accounts	Net recoverable value	Net recoverable value
Accounts receivable	\$ 9,663	\$ 125	\$ 9,538	\$ 11,349
Alberta government departments and agencies	87,699	-	87,699	1,254
Accrued income receivable	3,036	-	3,036	2,514
	\$ 100,398	\$ 125	\$ 100,273	\$ 15,117

Accounts Receivable are unsecured, non-interest bearing and reported at their estimated net recoverable value.

Note 7 CONTINGENT ASSETS
(in thousands)

The Corporation has no open insurance claims this year for which possible assets are being sought (2019 - three). Accordingly, no amounts have been recognized in the financial statements. In the previous year (2019) the Corporation anticipated receiving a specified amount of \$3, on the three filed insurance claims.

Note 8 CONTRACTUAL RIGHTS
(in thousands)

Contractual rights are rights of the Corporation to economic resources arising from contracts or agreements that will result in both assets and revenues in the future when the terms of those contracts or agreements are met.

	2020	2019
Contractual Rights from Operating Contracts	\$ 45,033	\$ 94,591

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 8 CONTRACTUAL RIGHTS (Cont'd)
(in thousands)

Estimated amounts that will be received or receivable for each of the next five years and thereafter are as follows:

	Operating Contracts
2020-21	\$ 29,976
2021-22	8,694
2022-23	2,775
2023-24	1,613
2024-25	688
Thereafter	1,287
	<u>\$ 45,033</u>

Note 9 ACCOUNTS PAYABLE AND OTHER ACCRUED LIABILITIES
(in thousands)

	2020	2019
Accounts payable and other accrued liabilities	\$ 19,303	\$ 15,006
Alberta government departments and agencies	16,452	587
Asset retirement obligations	2,549	2,549
	<u>\$ 38,304</u>	<u>\$ 18,142</u>

Note 10 DEFERRED CONTRIBUTIONS
(in thousands)

	2020	2019
Unspent deferred capital contributions (a)	\$ 301	\$ 808
Spent deferred capital contributions (b)	21,481	20,323
Deferred operating contributions (c)	78,158	104,230
Deferred contract revenue	9,330	8,655
	<u>\$ 109,270</u>	<u>\$ 134,016</u>

(a) Unspent deferred capital contributions

	2020			2019		
	Government of Alberta	Other	Total	Total		
Balance at beginning of year	\$ 808	\$ -	\$ 808	\$ 2,223		
Cash contributions received/receivable during year	1,769	1,119	2,888	1,295		
Transfers from deferred revenue	470	-	470	1,470		
Interest income	13	-	13	-		
Transferred to spent deferred capital contributions	(2,759)	(1,119)	(3,878)	(4,180)		
Balance at end of year	<u>\$ 301</u>	<u>\$ -</u>	<u>\$ 301</u>	<u>\$ 808</u>		

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 10 DEFERRED CONTRIBUTIONS (Continued)*(in thousands)*

(b) Spent deferred capital contributions

	2020			2019	
	Government of Alberta	Other	Total	Total	
Balance at beginning of year	\$ 11,291	\$ 9,032	\$ 20,323	\$ 18,172	
Transferred from unspent deferred capital contributions	2,759	1,119	3,878	4,180	
Less amounts recognized as revenue	(1,694)	(1,026)	(2,720)	(2,029)	
Balance at end of year	\$ 12,356	\$ 9,125	\$ 21,481	\$ 20,323	

(c) Deferred operating contributions

	2020			2019	
	Government of Alberta	Other	Total	Total	
Balance at beginning of year	\$ 95,462	\$ 8,768	\$ 104,230	\$ 105,816	
Cash contributions received/receivable during the year	99,773	546	100,319	175,378	
Interest income	947	-	947	1,400	
Transfers to unspent deferred capital contributions	(470)	-	(470)	(1,470)	
Recognized as revenue:					
Grants	(120,390)	(5,555)	(125,945)	(175,505)	
Interest income	(923)	-	(923)	(1,389)	
Balance at end of year	\$ 74,399	\$ 3,759	\$ 78,158	\$ 104,230	

Note 11 BENEFIT PLANS*(in thousands)*

(a) The Corporation participates in the multi-employer pension plans: Management Employees Pension Plan (MEPP), the Public Service Pension Plan (PSPP), as well as, a Supplementary Pension Plan (SRP) for Public Service Managers. The Corporation does not have sufficient plan information on MEPP, PSPP or the SRP to follow the standards for defined benefit accounting and therefore follows the standard for defined contribution accounting. Accordingly, pension expense recognized for the PSPP/SRP/MEPP is comprised of employer contributions to the plan that are required for its employees during the year, which are calculated based on actuarially pre-determined amounts that are expected to provide the plan's future benefits. The expense for these pension plans is equivalent to the annual contributions of \$5,664 for the year ended March 31, 2020 (2019 - \$6,228)

At December 31, 2019, the Management Employees Pension Plan reported a surplus of \$1,008,135 (2018 – surplus \$670,700), the Public Service Pension Plan reported a surplus of \$2,759,320 (2018 – surplus \$519,218) and the Supplementary Retirement Plan for Public Service Managers reported a deficiency of \$44,698 (2018 – deficiency \$70,310). The Corporation is not responsible for future funding of the plan deficit other than through contribution increases.

The fair value of the pension plans are subject to significant market volatility due to the economic crisis stemming from the global pandemic COVID-19 virus. To the extent that the pension plans may not recover market-losses during the remainder of 2020, the funded status of the plans would experience a correlated decline. The financial market impact of the outbreak has been rapidly evolving, which precludes a reasonable estimate of the impact.

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 11 BENEFIT PLANS (continued)*(in thousands)*

(b) The Benefit Plans consists of the unfunded liability for the Corporation's supplemental retirement plan, the benefits under which are paid for entirely by the Corporation when they come due. There are no plan assets. There are no active members remaining in the plan and one retired member eligible for benefits.

At March 31, 2020 these plans have net accrued liability of \$nil (2019 - \$36).

	<u>2020</u>	<u>2019</u>
Benefit plans at beginning of year	\$ 36	\$ 92
Benefits paid	(36)	(56)
Benefit plans at end of year	<u>\$ -</u>	<u>\$ 36</u>

Note 12 TANGIBLE CAPITAL ASSETS*(in thousands)*

Estimated Useful Life					2020	2019
	Land	Building and Improvements ⁽²⁾	Equipment ⁽³⁾	Computer Hardware & Software	Total	Total
	Indefinite	10-30 years	3-25 years	3-10 years		
Historical Cost⁽¹⁾						
Beginning of year ⁽⁴⁾	\$ 566	\$ 29,454	\$ 75,041	\$ 11,363	\$ 116,424	\$ 109,335
Additions ⁽⁵⁾	-	459	5,119	347	5,925	7,310
Disposals, including write-downs	-	(1,037)	(1,145)	(1,144)	(3,326)	(221)
	<u>566</u>	<u>28,876</u>	<u>79,015</u>	<u>10,566</u>	<u>119,023</u>	<u>116,424</u>
Accumulated Amortization						
Beginning of year	-	7,159	51,438	8,364	66,961	60,431
Amortization expense	-	2,704	3,422	1,076	7,202	6,750
Effect of disposals, including write-downs	-	(909)	(1,145)	(1,101)	(3,155)	(220)
	<u>-</u>	<u>8,954</u>	<u>53,715</u>	<u>8,339</u>	<u>71,008</u>	<u>66,961</u>
Net Book Value at March 31, 2020	<u>\$ 566</u>	<u>\$ 19,922</u>	<u>\$ 25,300</u>	<u>\$ 2,227</u>	<u>\$ 48,015</u>	
Net Book Value at March 31, 2019	<u>\$ 566</u>	<u>\$ 22,295</u>	<u>\$ 23,603</u>	<u>\$ 2,999</u>		<u>\$ 49,463</u>

⁽¹⁾ Historical costs includes work-in-progress at March 31, 2020 totaling \$6,082 (2019 - \$3,299) comprised of building and improvements \$314 (2019 - \$2,725), equipment \$5,588 (2019 - \$483), and computer hardware and software \$180 (2019 - \$91).

⁽²⁾ Buildings and improvements include leasehold improvements (amortized over the life of the lease).

⁽³⁾ Equipment includes laboratory equipment, heavy equipment, vehicles, office equipment, and other equipment.

⁽⁴⁾ \$2,487 was reclassified between Buildings & Improvements and Equipment for costs incurred in the prior year.

⁽⁵⁾ \$489 of equipment was donated from external sources in 2020

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 13 ACCUMULATED SURPLUS
(in thousands)

	2020			2019
	Investments in Tangible Capital Assets	Unrestricted Surplus	Total	Total
Balance, beginning of year	\$ 29,140	\$ 39,589	\$ 68,729	\$ 56,770
Annual surplus (deficit)	(7,373)	10,908	3,535	11,959
Net investments in capital assets	5,925	(5,925)	-	-
Transfers to spent deferred capital contributions	(3,878)	3,878	-	-
Spent deferred recognized in revenue	2,720	(2,720)	-	-
Balance, end of year	\$ 26,534	\$ 45,730	\$ 72,264	\$ 68,729

Note 14 CONTINGENT LIABILITIES
(in thousands)

Alberta Innovates is involved in legal matters where damages are being sought. These matters may give rise to contingent liabilities.

Accruals have been made in specific instances where it is likely that losses will be incurred based on a reasonable estimate. As at March 31, 2020 accruals totalling \$467 (2019 - \$nil) have been recognized as a liability.

Note 15 CONTRACTUAL OBLIGATIONS
(in thousands)

Contractual obligations are obligations of the Corporation to others that will become liabilities in the future when the terms of those contracts or agreements are met.

	2020	2019
Obligations under operating leases and contracts	\$ 102,538	\$ 123,074

Estimated payment requirements for each of the next five years are as follows:

	Operating
2020-21	\$ 56,127
2021-22	35,643
2022-23	8,727
2023-24	1,771
2024-25	270
Thereafter	-
	\$ 102,538

Note 16 ALBERTA CARBON CONVERSION TECHNOLOGY CENTRE
(in thousands)

The Alberta Carbon Conversion Technology Centre (ACCTC) is a commercialization and testing centre designed to advance CO2 capture and conversion technologies, and conduct related research. InnoTech Alberta Inc, a wholly owned subsidiary of the Corporation, completed the purchase and transfer of the ACCTC on March 15, 2018. \$22,391 (2019 - \$20,345) is recorded in tangible capital assets in Note 12. \$Nil (2019 - \$462) of related deferred revenue, \$nil (2019 - \$803) of related unspent deferred capital contributions and \$19,781 (2019 - \$17,796) of related spent deferred capital contributions, are recorded in Note 10. There were no in-kind contributions received at March 31, 2020 (2019 - \$nil).

ALBERTA INNOVATES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
MARCH 31, 2020

Note 16 ALBERTA CARBON CONVERSION TECHNOLOGY CENTRE (continued)

(in thousands)

From June 2018 until June 2020 the ACCTC will be the host site for the NRG COSIA Carbon XPRIZE – a competition to pilot various carbon capture and conversion technologies. InnoTech will not be directly involved in supervising or overseeing the XPRIZE Competition, aside from its day to day role as the owner and operator of the ACCTC. After the XPRIZE competition, InnoTech will own and operate the ACCTC, which will be marketed to industry and government as a carbon capture testing site until December 2027. At that time, exclusive use of the site and ownership of the ACCTC will pass back to the owner of the land, who may elect to wholly or partially de-commission the ACCTC. Accordingly, \$2,549 (2019 - \$2,549) of asset retirement obligations have been recorded in Note 9.

The Corporation has entered into various contractual arrangements with respect to ACCTC including a license of occupation, an operating costs recovery agreement, and a repayable contribution agreement. The impact on contractual rights, contractual obligations, contingent assets, and contingent liabilities, when known, has been reflected in these consolidated financial statements in accordance with the accounting policies described in Note 2.

Note 17 COMPARATIVE FIGURES

Certain 2019 figures have been reclassified, where necessary, to conform to the 2020 presentation.

Note 18 APPROVAL OF CONSOLIDATED FINANCIAL STATEMENTS

The Board approved the consolidated financial statements of Alberta Innovates on June 19, 2020.

ALBERTA INNOVATES
CONSOLIDATED EXPENSES - DETAILED BY OBJECT
YEAR ENDED MARCH 31, 2020

SCHEDULE 1

	<u>2020</u>	<u>2020</u>	<u>2019</u>
	<u>Budget</u>	<u>Actual</u>	<u>Actual</u>
		<i>(in thousands)</i>	
Grants	\$ 97,337	\$ 106,748	\$ 161,560
Salaries, wages and employee benefits	63,426	79,875	71,770
Supplies and services	34,462	34,546	38,065
Amortization of tangible capital assets (Note 12)	7,200	7,202	6,750
	<u>\$ 202,425</u>	<u>\$ 228,371</u>	<u>\$ 278,145</u>

**ALBERTA INNOVATES
SALARY AND BENEFITS DISCLOSURE
YEAR ENDED MARCH 31, 2020
(dollars in thousands)**

SCHEDULE 2

	2020			2019 (restated)	
	Base Salary (1)	Other Cash Benefits (2)	Other Non-Cash Benefits (3)	Total	Total
Chair of the Board	\$ -	\$ 24	\$ 1	\$ 25	\$ 41
Board Members	-	59	2	61	77
Chief Executive Officer	399	259	13	671	551
Chief Operating Officer (4)	273	-	72	345	-
General Counsel & Corporate Secretary (5)	242	10	67	319	-
Vice Presidents:					
Executive Vice President, Operations (6)	29	-	8	37	376
Vice President, Clean Energy	227	6	64	297	288
Vice President, Marketing & Communications (5)	220	22	10	252	244
Vice President, Finance (7)	227	40	17	284	263
Vice President, Health (8)	267	27	19	313	295
Vice President, Investments	217	-	55	272	270

(1) Base salary includes regular salary.

(2) Other cash benefits include honoraria for the Chair and Board Members. Other cash benefits for the Chief Executive Officer, General Counsel & Corporate Secretary and Vice Presidents include vacation payouts, car and living allowance, payments in lieu of pension and lump sum amounts.

(3) Other non-cash benefits include employee benefits and contributions or payments made on behalf of employees including pension and supplementary retirement plan, employee health care expense accounts, dental coverage, major medical, group life insurance, short term disability plan, CPP, EI, Workers Compensation Board premiums and professional memberships.

(4) Chief Operating Officer position was effective May 6, 2019

(5) General Counsel & Corporate Secretary position was effective April 16, 2019

(6) Executive Vice President, Operations position was vacated May 6, 2019.

(7) Vice President, Finance & Corporate Secretary position was renamed to Vice President, Finance effective April 22, 2019.

(8) Vice President, Health position was effective on April 16, 2018.

**ALBERTA INNOVATES
RELATED PARTY TRANSACTIONS
YEAR ENDED MARCH 31, 2020**

SCHEDULE 3

Related parties are those entities consolidated or accounted for on the modified equity basis in the Government of Alberta's Consolidated Financial Statements. Related parties also include key management personnel and close family members of those individuals in the Corporation. The Corporation and its employees paid or collected certain taxes and fees set by regulation for premiums, licences and other charges. These amounts were incurred in the normal course of business, reflect charges applicable to all users, and have been excluded from this schedule.

The Corporation had a shared service agreement with the Ministry of Economic Development, Trade and Tourism for Information Technology and Management Services at the rate of Service Alberta consumption costs and projects indicated by the Corporation. The shared service agreement ended in October 2018.

The Corporation had the following transactions with related parties recognized in the Consolidated Statement of Operations and the Consolidated Statement of Financial Position at the amount of consideration agreed upon between the related parties.

	<u>Entities in the Ministry</u>		<u>Other Entities Outside of the Ministry</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
	<i>(in thousands)</i>			
Revenues				
Grants	\$ 163,485	\$ 217,834	\$ 9,137	\$ 12,354
Other	10	10	1,918	2,182
	<u>\$ 163,495</u>	<u>\$ 217,844</u>	<u>\$ 11,055</u>	<u>\$ 14,536</u>
Expenses - Directly Incurred				
Grants	\$ -	\$ -	\$ 59,697	\$ 89,011
Other services	11	17	1,001	1,363
	<u>\$ 11</u>	<u>\$ 17</u>	<u>\$ 60,698</u>	<u>\$ 90,374</u>
Receivables from	<u>\$ 84,530</u>	<u>\$ 250</u>	<u>\$ 3,169</u>	<u>\$ 1,004</u>
Payable to	<u>\$ 552</u>	<u>\$ 10</u>	<u>\$ 15,900</u>	<u>\$ 577</u>
Unspent deferred capital contributions	<u>\$ 301</u>	<u>\$ 808</u>	<u>\$ -</u>	<u>\$ -</u>
Spent deferred capital contributions	<u>\$ 12,216</u>	<u>\$ 11,291</u>	<u>\$ 140</u>	<u>\$ -</u>
Deferred revenue	<u>\$ 59,235</u>	<u>\$ 78,273</u>	<u>\$ 15,164</u>	<u>\$ 17,189</u>
Deferred contract revenue	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 42</u>	<u>\$ 206</u>
Contractual obligations	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 42,680</u>	<u>\$ 52,627</u>
Contractual rights	<u>\$ 14,420</u>	<u>\$ 59,126</u>	<u>\$ 3,825</u>	<u>\$ 6,286</u>

Schedule 3 - Related Party Transactions (Cont'd)

The above transactions do not include support service arrangement transactions disclosed below. The Corporation also had the following transactions with related parties for which no consideration was exchanged. The amounts for these related party transactions are estimated based on the costs incurred by the service provider to provide the service. These amounts are not reported in the consolidated financial statements. Accommodation expenses incurred by others are disclosed in Schedule 4

	Other Entities Outside of the Ministry	
	2020	2019
	<i>(in thousands)</i>	
Expenses - Incurred by others ⁽¹⁾		
Accommodation ⁽²⁾	\$ 20,463	\$ 23,095
	<u>\$ 20,463</u>	<u>\$ 23,095</u>

⁽¹⁾ During the year, the Corporation received financial processing and reporting services from Service Alberta and the Department of Economic Development, Trade and Tourism at no cost. The dollar value of these services cannot be accurately determined.

⁽²⁾ The Corporation's share of accommodation costs is based on the proportion of space occupied compared to the total space occupied by all Ministries.

**ALBERTA INNOVATES
CONSOLIDATED ALLOCATED COSTS
YEAR ENDED MARCH 31, 2020**

SCHEDULE 4

Program	2020		2019	
	Expenses - Incurred by Others			
	Expenses⁽¹⁾	Accommodation Costs	Total Expenses	Total Expenses
	<i>(in thousands)</i>			
Research, innovation & commercialization	\$ 125,475	\$ -	\$ 125,475	\$ 183,302
Applied research	65,984	-	65,984	65,930
Administration	36,912	20,463	57,375	52,008
	\$ 228,371	\$ 20,463	\$ 248,834	\$ 301,240

⁽¹⁾ Expenses - Directly Incurred as per Consolidated Statement of Operations.

Report on Risk Management

Alberta Innovates embeds risk management practices into the development of its strategic, business and operational plans to drive consistent, effective and accountable action and decision-making in management practice and Board governance oversight. Our enterprise risk management framework is consistent with generally accepted global risk management standard frameworks, aligns with the Government of Alberta's risk management framework, and reflects adoption of best practices.

Our Executive identified new risks and reviewed existing corporate-level risks of highest relevance for our organization on a quarterly basis in 2019–20. Each risk was assigned an overall rating based on the likelihood of the risk occurring and the potential impact of the risk on our goals and operations. Informed decisions or strategies on how best to handle the individual risks was also developed and implemented as necessary. The corporate risk register – which includes the risks, ratings and strategies – is reviewed by our Board of Directors each quarter.

The key risks faced by Alberta Innovates last year were:

Impacts on desired outcomes from budgetary & expenditure constraints and declining revenue streams

Our ability to fund and transform Alberta's R&I system was adversely affected by a delayed and markedly reduced budget from the Government of Alberta and this was further compounded by government-imposed limitations on our expenditures. The expense targets restrict the use of our accumulated surplus and significantly inhibit Alberta Innovates from sufficiently investing in new ideas and sustaining funding in high-priority areas.

To manage this risk, we focused our resources to streamline support and services for clients and partners while continuing to develop our budget and business plan prudently. This allowed us to balance short-term fiscal pressures with long-term demands and cost commitments. We also built and maintained relationships with many stakeholders and advocated the unique value that Alberta Innovates brings to the province's R&I system.

Crisis management and business continuity

As 2019–20 came to an end, Alberta was facing not only a depressed economy, but also the global COVID-19 pandemic. As the pandemic rapidly emerged, a low level of readiness to respond to its potential impacts on our employees, operations and facilities placed us at risk.

To mitigate this risk, we rapidly put corporate crisis management plans into place. Through the leadership of our Crisis Management Team, we actioned an immediate response to ensure the mental and physical health and safety of our employees while also ensuring business continuity.

Impacts of reporting requirements and long-term investment model

As a government agency, we are faced with multi-layered reporting requirements. This combined with our long-term investment model challenges our ability to adequately report on the outcomes of our investments. This could potentially lead to a loss of confidence in Alberta Innovates.

To mitigate this risk, we have been consolidating our legislated reporting requirements and ad hoc requests. This includes having information and reporting requests directed to a single point of contact on our Executive team for consideration and prioritization. This ensures that duplicate efforts in addressing reporting requests are minimized while improving the consistency of information provided.

Appendices

Appendix A

Tech Comm Scorecard

Appendix B

Outcome Survey Results

Appendix C

InnoTech Alberta

Appendix D

C-FER Technologies

Appendix A

Tech Comm Scorecard

Alberta Innovates strengthens the provincial economy by investing in technology commercialization.

The performance of 631 Alberta technology-based small and medium sized enterprises (SMEs) that received Alberta Innovates mentorship and funding support are showcased here.

\$59.3 million in funding support was provided through five programs for 962 projects completed between 2015–2019. Results are measured as the difference between the year prior to Alberta Innovates direct funding support and 2019.

Net New Jobs Created

2,389



87.5% are full time

Revenue

\$1.00

Alberta Innovates Funding



\$7.37

SME Net Revenue Growth

22% Public Funding
78% Private Funding

Investment

\$1.00



Alberta Innovates Funding



\$23.50



Follow-on Investment

78% Private Funding
22% Public Funding

Diversification



70%

Of revenue generated by SMEs was outside energy sector



76%

Of jobs created by SMEs were outside energy sector

Exports¹



3.2%

Of Alberta establishments overall exported in 2018*



47.7%

Of SMEs funded by Alberta Innovates exported in 2019

*2019 statistics not available

2019 Job Growth²



-0.2%

Alberta SMEs overall

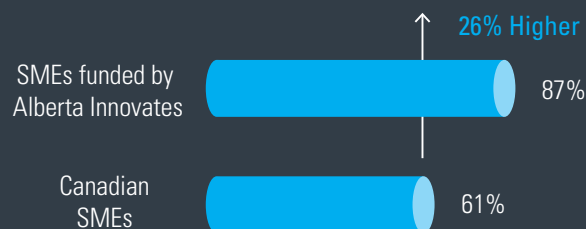


11.5%

SMEs funded by Alberta Innovates

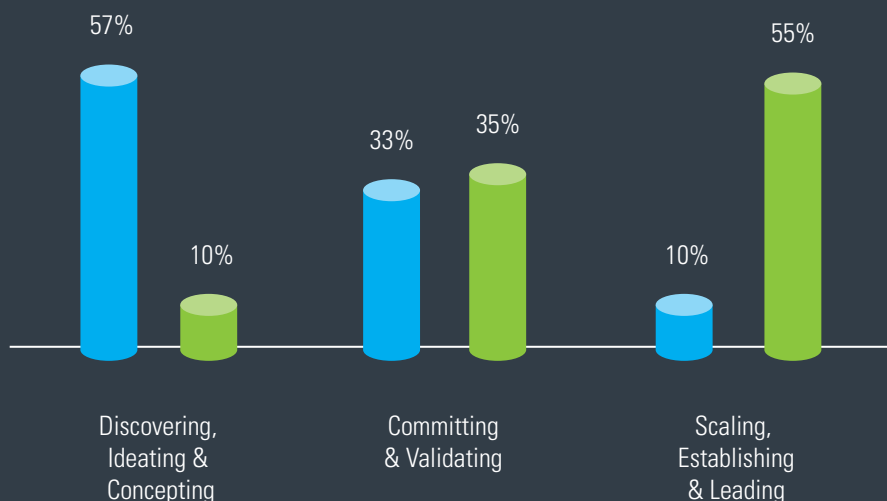
SME Survival Rates*

(6 years post-incorporation)



*The median number of years since incorporation for AI's SME portfolio is 6 years.

Accelerating Scale-Up



Before

Alberta Innovates Funding

After

Alberta Innovates Funding (2019)

962

Projects

85%

Continue to be developed and commercialized

¹ Key Small Business Statistics, November 2019 – Innovation, Science and Economic Development Canada

² Statistics Canada – December 2019 Labour Force Survey

Appendix B

Outcome Survey Results

Alberta Innovates strategic investments in world-class researchers and leading-edge facilities paves the path of innovation that will build and grow a sustainable and prosperous economy in Alberta.

In 2020, Alberta Innovates surveyed our non-SME clients that received funding through a number of programs in Clean Resources, Health, and Post-Secondary Investments. Responses were received from 561 projects spanning 42 of our programs. Results are reported as achieved within the 2019-20 fiscal year.

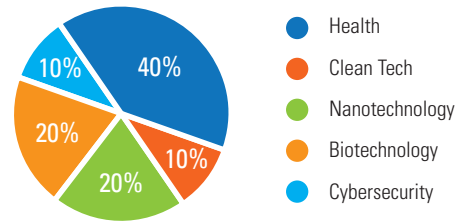


4,800

HQSP Directly and Indirectly Supported

Highly qualified and skilled personnel include students & trainees, research staff and other personnel

New spinoffs in emerging technology areas



Partnerships reported by our funded research projects



444

Policy innovations reported by clients who received funding in 370 projects

1,100

Nearly 1,100 publications were published as a result of our investments in 243 projects

\$98 M

Additional funding raised by researchers and trainees supported by Alberta Innovates in 130 projects

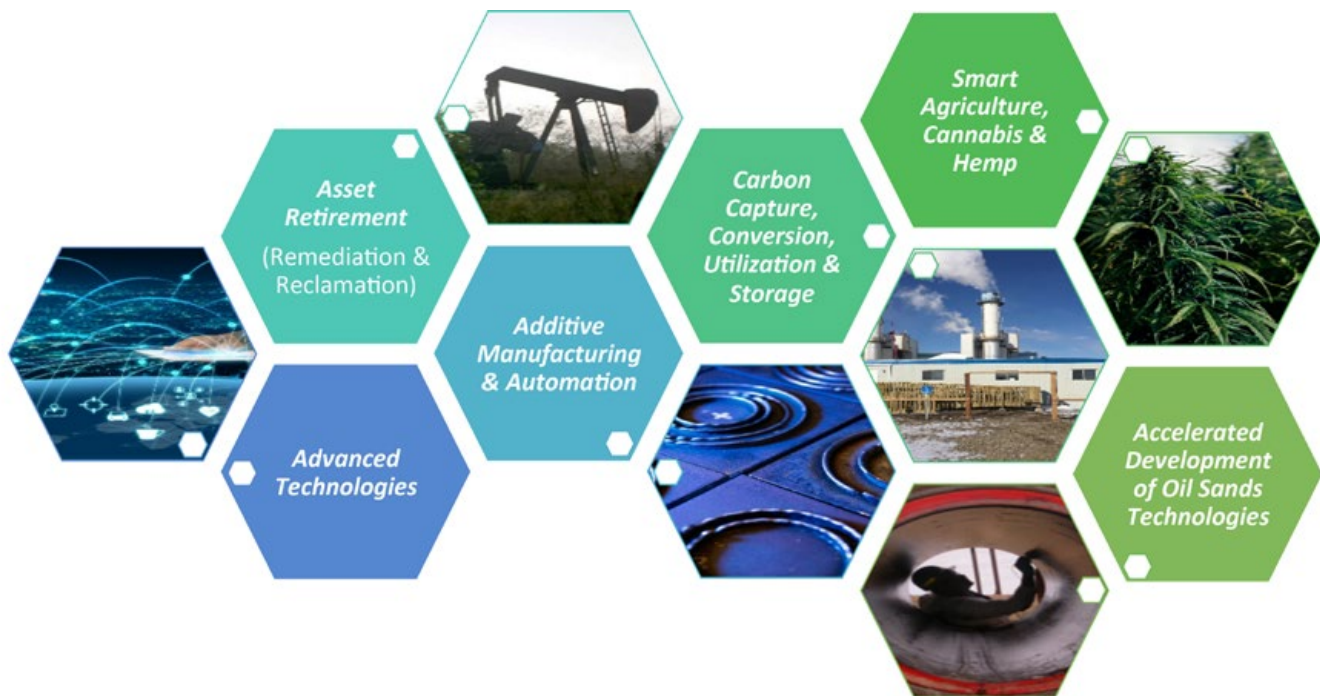
55

Patents issued to researchers in 35 of our projects

Appendix C

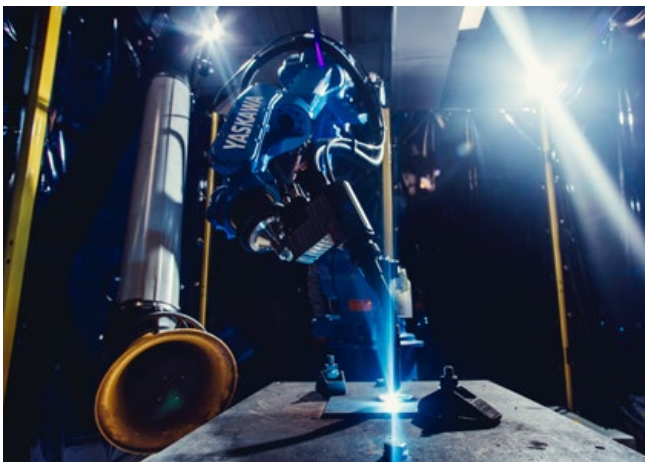
InnoTech Alberta

Key Initiatives & Program Updates



Energy

Smart Manufacturing



- InnoTech launched the Alberta Additive Manufacturing Network to enable local fabrication and novel solutions to challenges in the Alberta energy industry, by convening and facilitating the manufacturing sector, end-users and academia to create large-scale metal components (albertaamn.com).
- Alberta Metal Fabrication Innovation (AMFI) – This program (supported by the Alberta Ministry of Economic Development, Trade and Tourism and National Research Council-IRAP) delivered 14 one-on-one projects with manufacturing SMEs to evaluate technologies. A smart technologies workshop was attended by 20 technology firms.

Oilsands Development

AACI (Alberta Research Council Core Industry Research Initiative)



- Industry-led consortium (37th year, nine producer members and one oilfield service member; 26 projects in 2019/20) focused on in-situ recovery process and field technology advancement for heavy oil and bitumen recovery.
- Key projects include new solvent-based recovery process development and improving SAGD performance.
- Dimethyl ether solvent recovery process lowers GHG emissions by 70 per cent and water consumption by 95 per cent compared to typical SAGD. Technology is currently being scaled.

Environment

Management of Ecological Assets



Canadian Conservation Land Management Knowledge Portal

- Developed an accessible online platform to grow communities of practice and to facilitate knowledge exchange around land management (www.cclmportal.ca).
- Done in collaboration with Ducks Unlimited Canada, Natural Resources Canada, Environment and Climate Change Canada, and NAIT Centre for Boreal Research.

Aquatic Mesocosms Facility

- Completed Year 3 of five-year study funded by consortium comprised of Canadian Natural Resources Limited (CNRL), Imperial, Suncor and Teck. Results will inform end pit lake design by enabling controlled monitoring of ecological system responses of oil sands process water and treated tailings under alternative natural treatment conditions.

Remediation & Reclamation

- Proposed \$17M collaborative program between Alberta Innovates and InnoTech to accelerate wellsite decommissioning and closure in Alberta.
- Focused on supporting “near-shovel-ready” technologies and processes, enhancing collaboration and avoiding redundancy to create jobs and drive efficiencies.

Carbon Capture, Conversion & Utilization

Alberta Carbon Conversion Technology Centre (ACCTC)



- Establishing a technology hub for accelerated development and industrial adoption of commercially viable, transformative carbon conversion technologies.
- Providing ongoing services to the NRG COSIA Carbon XPRIZE Competition finalists until end of 2020. Three of five XPRIZE finalists have relocated their operations to the ACCTC. One finalist, C2CNT, has 20 staff and contractors supporting their operations, and has performed significant testing of their conversion technology.
- Capital Power increased its equity interest position in C2CNT to 25 per cent with plans to increase this to 40 per cent by the end of 2020.

Fibre & Bioindustrial

Smart Agriculture



- Conceived, developed and patented a biosensor to detect disease in wheat and canola funded by Alberta Innovates and industry.
- Potential further application toward COVID-19 response, and public health, defence and industrial safety.

Cellulose Nanocrystals (CNC)



- Continued support of commercialization of CNC production technologies with Alberta-Pacific Forest Industries, including production of >200kg of CNC for commercial evaluation.

Pulp and Paper Industry



- Developed a Chip Quality Analyzer with artificial intelligence Deep Learning as part of strategy to increase processes efficiency and productivity.

Appendix D

C-FER Technologies

C-FER Technologies (C-FER) provides engineered and tested solutions for the energy industry to improve safety, environmental performance and efficiency. The company uses engineering analysis, risk assessment and large-scale testing to provide the information our clients need to make operational decisions.

C-FER helps industry in the areas of drilling, completion, production and pipeline operations. They deal with global challenges including deep water operations, HPHT wells, unconventional reservoirs and Arctic energy developments. C-FER also assists in other industries including geothermal, aerospace, defence, mining and construction.

For broad industry challenges, C-FER assembles Joint Industry Projects that leverage resources, experience and data from industry and government agencies to share and expand knowledge. This collaborative approach has resulted in developing several new engineering software products and new industry standards.

C-FER helps small enterprises and manufacturers commercialize technologies by conducting independent demonstrations of their technologies. This helps end users find the best available technologies for their operation. These demonstrations also provide unique information to the equipment designers to guide improvements.

C-FER's niche is taking on engineering challenges that haven't been addressed before through combined testing and analysis services. Some of the areas where C-FER is helping Alberta industry change the technology landscape include:

- Developing new ways to test the performance of downhole flow control devices that are used to improve the efficiency of in situ oil sands operations. These devices ensure that the steam, and in the newest processes, solvent that are injected into the reservoir, effectively contact the oil in the reservoir. These devices have the potential to significantly reduce the amount of energy, and thus greenhouse gases that are emitted from these oil sands operations.

- Helping Alberta-based pipeline operating companies evaluate the performance of leak detection systems by developing a new, large-scale testing method that simulates liquid leaks into the ground. This has helped the operators select the most effective technologies and has helped Alberta-based technology vendors demonstrate their technologies to customers around the world. The evaluation techniques developed by C-FER have also been adopted by the federal pipeline regulator in the United States.
- Promoting the idea of using technologies from thermal oil sands operations to support the global development of grid-scale geothermal power production. Alberta service, supply and production companies could diversify their market to become world suppliers to the emerging geothermal industry. C-FER has already helped Alberta companies adapt their products and services to geothermal operations in the U.S. and Southeast Asia.

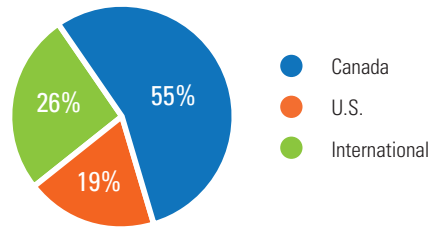
Working with their clients, C-FER advances engineering frontiers.

We are pleased to share the following key results achieved by C-FER in 2019-20.

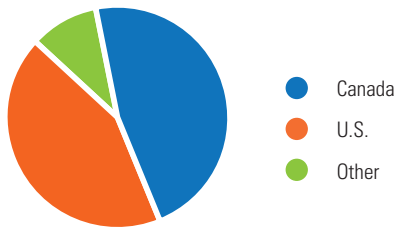
C-FER clients type by % of revenue



C-FER clients by geography



C-FER external revenue by geography



\$13.7 million

C-FER generated \$13.7 million in external revenue

170+ / 270+

C-FER worked with more than 170 clients on more than 270 projects

Our **Success** Stories

Working with industry to make liquefied natural gas facilities safer



C-FER partnered with the Gas Technology Institute in Chicago to create a new set of guidelines to analyze and assess the risks associated with liquefied natural gas (LNG) facilities. C-FER used their expertise to create a rigorous quantitative risk assessment (QRA) approach for the project. This QRA methodology was also applied to two example LNG facilities developed by a project partner, to demonstrate their practical use.

The guidelines and results give operators the information they need to assess the risks associated with facility designs and siting decisions. The guidelines can also be used by regulators to standardize their approach to the review of QRAs for LNG facilities and pipelines.

Once completed, the new guidelines will be presented to the U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA) for potential implementation in their risk assessment standards.

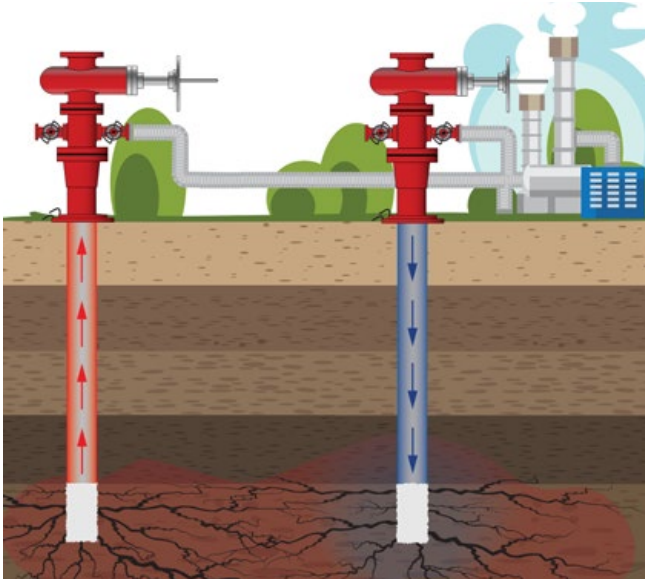
Evaluating the effectiveness of non-welding pipeline repair technologies



C-FER Technologies brought the pipeline industry together in a joint industry project (JIP) to rigorously evaluate the performance of novel non-welding repair technologies for pipelines.

The JIP is the only program to date that can accurately replicate real pipeline repair conditions at pressure. The work impartially assesses the performance and viability of multiple non-welding repair technologies. Pipeline operating companies receive side-by-side comparisons of the performance of the different repair methods that will help them select the best technology to ensure the safe operation of their pipelines.

Reducing greenhouse gas emissions in Alberta's oil sands mining



C-FER Technologies assessed how Enhanced Geothermal Systems (EGS) could be used as an alternative to the combustion of natural gas to produce hot water for the bitumen extraction process in Alberta's oil sands. Because of the amount of hot water required, implementing EGS at oil sands mines has the potential to significantly decrease the amount of greenhouse gas (GHG) emissions.

A feasibility assessment was provided to Canada's Oil Sands Innovation Alliance (COSIA) showing the economic feasibility of implementing EGS as a hot water source. Oil sands operators are considering the next phase, which would be to drill appraisal wells to further confirm the feasibility of this approach.

Learn how
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