

Digital Innovation in Clean Energy (DICE) Program 2023

November 21, 2023

Open to Applications from November 27, 2023 to February 1, 2024

About Alberta Innovates

Innovation is the catalyst for sustainable jobs, economic and community strength, improved health, and environmental benefits. Alberta Innovates leads and accelerates innovation from discovery to use across all sectors in all parts of the province. As Alberta's largest research and innovation agency, we are uniquely positioned to propel great ideas forward to improve the lives of Albertans today and for generations to come.

Alberta Innovates believes the research and innovation (R&I) ecosystem is stronger and more sustainable when it is broadly representative of the overall diversity of our community. We strive to ensure that all interested and qualified parties have an equitable opportunity to participate and contribute to the ecosystem and that our processes are inclusive.

The projects that our programs invest in are critical to how Alberta Innovates achieves positive impact for Albertans in alignment with the Government of Alberta's R&I priorities, as expressed in our corporate Business Plan. (See the most recent Business Plan on our [Publications](#) page on our website.) Accordingly, it is essential for project outcomes to align with those of the program.

The **Digital Innovation in Clean Energy (DICE) program** is managed by the Clean Resources team at Alberta Innovates. The DICE program has shown measurable impacts in creating jobs in the digital economy, improving efficiency of energy production, reducing GHG emissions and developing environmental innovations in water and land management.

This funding competition is Digital Innovation in Clean Energy (DICE) Open Call 3.0, building on two successful previous competitions. To date, the DICE program has supported 30 projects completed between March 1, 2020, and August 31, 2023. A total Alberta Innovates funding contribution of \$6.1 million was leveraged 3.3 times for a total project value of \$26.2 million.

Project summaries and final reports for completed projects can be found in the Alberta Innovates project library: <https://albertainnovates.ca/focus-areas/clean-resources/project-library/>.

Program Overview

The objectives of the Digital Innovation in Clean Energy (DICE) program are to support **data-enabled innovation** (transforming data into actionable information), and **digital tech for business transformation** (leveraging technology to sense and measure information across enterprise is changing the way we live and conduct business).

The DICE program supports the Alberta Technology and Innovation Strategy (ATIS) 2030 Innovation Targets and two of Alberta Innovates' strategic priorities – adopting artificial intelligence and advancing clean resource technologies.

Specific alignment to ATIS targets is highlighted below:

Energy, minerals and clean-tech:

- New clean energy sources and storage technologies that are efficient, cost-effective and reliable.
- **Technologies to optimize effective and efficient resource extraction and processing.**
- Discovery, development and production of non-renewable and renewable energy resources, value-added and alternative products, the minerals value chain and green technologies.

Emerging technologies:

- Advancing commercialization opportunities in areas of existing strength, including artificial intelligence, machine learning and quantum science.
- **Developing technologies to increase productivity, improve efficiency, reduce environmental impact and achieve a low-carbon future.**
- Harnessing the digital economy across sectors, including infrastructure, broadband, and big and open data, to encourage digital adoption.

The program will achieve the following key outcomes for the benefit of Albertans.

Program Performance Indicators

- Support digital literacy and connectivity.
- Support solutions to reduce methane emissions.
- Illustrate a dynamic portfolio of GHG emission reduction technologies.
- Decrease fresh water use in oil sands production.
- Increase employment, resource revenues, economic diversification and improved export potential.
- Attract investment capital.
- Increase renewable sources of energy.
- Enhance the health of the aquatic ecosystems and improve overall water use.

The program supports these broader outcomes for Alberta:

- Contribute to economic diversification
- Reduce GHG emissions
- Improve oil sands efficiency
- Grow Alberta's green economy
- Support sustainable water and land management
- Develop renewable energy sources
- Advance the digital economy

Short-Term Outcomes

The program aims to achieve the following outcomes in the short term:

- Cost reduction
- Increased competitiveness
- Development of HQP
- GHG emissions reductions
- Water, land environmental impacts
- Health improvements
- Company creation
- New product development

Funding

The Program provides support for up to \$2,500,000 over 18 months with project funding up to but not exceeding \$250,000 per project for proposals with a technology development scope of work.

The program normally supports up to 50 per cent of total project costs, with remaining funding from other project partners (including cash and in-kind support). Alberta Innovates encourages co-funding of projects with other public funding agencies up to a maximum of 75 per cent of the total project cost.

Alberta Innovates only funds reasonable costs incurred after an Investment Agreement is signed by Alberta Innovates and the Applicant. Any costs incurred prior to the signing of the Investment Agreement, and costs greater than market prices, are ineligible. Costs must be incurred between arm's-length entities. Please refer to Schedule B for detailed information, including eligible and ineligible expenses.

Key Dates

Date	Planned Activity
November 27, 2023	Launch of open call
December 11, 2023	Webinar (via videoconference)
February 1, 2024	Close of proposal submissions 3 p.m. MT
May 1, 2024	Completion of agreement execution, announcement of funded projects
October 31, 2025	Latest completion date for funded projects

Eligibility

Eligible Projects should clearly address one or more of the following Clean Resources targeted project themes. Examples of successfully funded projects in the initial rounds of DICE program funding can be found here: <https://albertainnovates.ca/impact/newsroom/energy-industry-goes-digital/> and <https://albertainnovates.ca/news/advancing-clean-technology-solutions/>. This is an incomplete list, and consideration may be given to project themes in addition to these currently identified areas:

Advanced Hydrocarbons

- Production optimization and yield improvements
- Operational efficiency improvements, improved economic efficiencies
- Integrated operations solutions
- Emissions reductions and environmental performance
- Project execution, operational health and safety

Cleantech

- Smartgrid and distributed generation management and control
- Renewable energy management and control
- Integration of energy storage and renewable energy
- Innovations related to contracts and settlements
- Transportation system management and control
- Green buildings technologies

Environmental Innovation

- Water treatment and management
- Land and biodiversity monitoring
- Tailings management
- Management of environmental monitoring and public health

Technology and Solution Readiness Level

For technology development projects, the focus for funding will be on technologies and solutions that are currently at a Technology and Solution Readiness Level (TSRL) between 3-7; namely beyond the conceptual stage but not advanced enough to be commercialized. The TSRL definitions to be used under this competition are provided on the DICE program web page. A non-exhaustive list of possible technologies, project themes and use cases can be found in Appendix C.

Applicant Eligibility

The DICE Program is open to technology developers, industry, industrial associations, small and medium-sized enterprises, research and development (R&D) organizations, post-secondary institutions, municipalities, not-for-profit organizations, and government research labs, providing they are legally able to execute the Investment Agreement. Applicants are not required to be based in Alberta but must demonstrate a clear value proposition for the province.

In addition, to qualify for funding, the Applicant must:

- Exist as a corporate person, with up-to-date corporate filings;
- Be authorized to undertake the proposed project, and execute a grant with Alberta Innovates on our standard terms; and
- Not otherwise be prohibited from receiving Alberta Innovates funding, for instance due to a past bad debt or otherwise not be in good financial standing with Alberta Innovates or its subsidiaries, InnoTech Alberta and C-FER Technologies.
- Be incorporated in Alberta AND/OR incorporated in another jurisdiction and extra-provincially registered in Alberta;
- To qualify as a small or medium enterprise (SME), a company must have fewer than 500 full-time employees and less than \$50,000,000 in annual gross revenue.
- Collaboration with other Project Partners is highly encouraged and projects that demonstrate end user engagement and formal partnerships will receive additional consideration for funding.
- Proposed Projects that demonstrate HQP (highly qualified personnel) capacity-building in Alberta will receive additional consideration for funding.

Please note: For Applicants that are **not** post-secondary institutions, Alberta Innovates may perform corporate, bankruptcy and litigation searches, and conduct other forms of due diligence on the Applicant company and its principals.

Partner/Service Provider Eligibility

Partners/strategic partners/service providers/collaborators are required to:

- Exist as a corporate person, with up-to-date corporate filings.
- Be authorized to undertake the proposed project.
- Demonstrate a need or potential for use by Alberta industry or other end-users;
- Demonstrate that the relationship between the Applicant and Partner/Strategic Partner/Service Provider/Collaborator does not create a conflict of interest.
- Provide a letter indicating the Partner's/Service Provider's/Collaborator's intention to participate in the Project at the time of application.
- Have the financial capability to purchase or enter into a distribution agreement of the product upon Project completion of a demonstration.
- Show tangible resources committed to the Project.
- Not otherwise be prohibited from receiving Alberta Innovates funding, for instance due to a past bad debt or otherwise not be in good financial standing with Alberta Innovates or its subsidiaries, InnoTech Alberta and C-FER Technologies.
- An industry or other end-user Project Partner is recommended but not required for post-secondary institution applicants; and
- Federal funding agencies (e.g. NSERC, NRCAN, etc.) are considered eligible Project Partners.

Note: For partners, collaborators and/or service providers that are **not** post-secondary institutions, Alberta Innovates may perform corporate, bankruptcy and litigation searches, and other forms of due diligence.

Project Eligibility

To qualify for funding, all Projects must:

- Align with the objectives of the Program;
- Be stepped with critical “go/no go” milestones;
- Be completed within the eighteen-month term; and
- Comply with other criteria that Alberta Innovates may develop from time to time.

Project Expenses

A list of eligible and ineligible project expenses is summarized in Appendix A.

How to Apply

The Program will accept applications on an open competition basis, with Applications accepted from November 27, 2023, to February 1, 2024.

A successful Applicant can receive up to \$250,000 in Canadian dollars. The Program supports up to 50 per cent of the total project costs, with remaining funding from the Applicant and/or other project partners (including cash and in-kind support). Funding will be dispersed to successful Applicants at the end of each project milestone, based on milestone proof, up to an 18-month term. **All projects must be completed before October 31, 2025.**



PHASE 1 Application

- 1) This is a one-stage application process. Applications will be submitted electronically using the Alberta Innovates SmartSimple online Application Portal (“Portal”).
- 2) **Register** on the [Alberta Innovates Application Portal](#).
- 3) **Access, complete and submit** the Intake Form within the *Funding Opportunities* tab on the Portal dashboard.



PHASE 2 Evaluation

The evaluation process is highly competitive and only the highest-quality projects will be considered. Merit is determined against the evaluation criteria detailed in Appendix B of this guide.

If the review is positive, a funding recommendation will be made to senior management and may include adjustments to the funding request and / or funding conditions.



PHASE 3 Agreement and Project Management

Successful Applicants will execute an Investment Agreement with Alberta Innovates to proceed with the activities of the Project.

- Alberta Innovates will provide ongoing management, receiving and evaluating Applicants’ reporting of milestones and payments on each milestone based on achievement of the objectives.
- Alberta Innovates continues to require information from the Applicant for five years following the completion of the project in order to measure long-term benefits.

Evaluation Process

All applications are reviewed and evaluated to determine fit with the Program objectives and intended outcomes. Alberta Innovates staff and external expert reviewers are engaged to evaluate Applications.

Alberta Innovates evaluates submitted Applications to the Program based on a single-stage review process according to the project evaluation criteria outlined in Appendix B.

Alberta Innovates retains the sole right to determine the evaluation process and assessment criteria and does not disclose the names of its reviewers to ensure their objectivity and impartiality. Internal and external parties involved in the evaluation are subject to confidentiality and conflict-of-interest policies set by Alberta Innovates.

All investment decisions are at the sole discretion of Alberta Innovates.

Diversity, Equity and Inclusion

The Alberta research and innovation (R&I) ecosystem is stronger and more sustainable when it is broadly reflective of the overall diversity of our community. Alberta Innovates strives to ensure all interested and qualified parties have an equitable opportunity to participate and contribute.

Historically, there have been a number of groups/populations that have been under-represented in the Alberta R&I landscape including:

- Female entrepreneurs/researchers;
- Indigenous entrepreneurs/researchers;
- Remote/small community entrepreneurs/researchers; and
- New immigrant entrepreneurs/researchers.

We are guided by the principles of:

- **Diversity** – both internal and external participants to our processes are comprised of a varied composition of demographics;
- **Equity** – our processes support equal access across all demographics; and
- **Inclusivity** – our processes proactively work to include underrepresented segments of the R&I landscape.

As part of its commitment to Diversity, Equity and Inclusion (DEI), Alberta Innovates will:

- Collect data in the grant application on a voluntary basis to better understand diversity;
- Provide grant application navigation support to applicants from under-represented groups; and
- Integrate a DEI focus into its due diligence processes including striving to have diverse review committees to foster unbiased decision-making.



Performance Management

Alberta Innovates invests in research and innovation activities on behalf of Albertans to help build a healthier, more sustainable and prosperous future for the province.

To maximize the impact of these investments, our funding is tied to the achievement of results and outcomes. For this reason, Alberta Innovates funds on a milestone completion basis. This means the Applicant must submit a Progress or Final Report and demonstrate sufficient progress before Alberta Innovates advances the next milestone payment.

The Investment Agreement outlines the responsibilities the Applicant has in reporting Project outcomes to Alberta Innovates over the course of the Project and following completion of the Project. Outcomes of the Project may be monitored for up to five years after Project completion, so Alberta Innovates can evaluate the economic, social, health and/or environmental benefits to Alberta resulting from our investments.

Alberta Innovates has a common set of performance metrics it monitors, both at the individual Project level and for the aggregate Program. These metrics may evolve over time.

Terms and Conditions

Once we have evaluated and approved an application for funding, Alberta Innovates will require the Applicant to sign our standard-form Investment Agreement. A copy of the Investment Agreement is available on the Alberta Innovates website for your reference (https://albertainnovates.ca/wp-content/uploads/2020/01/Clean-Energy-Agreement-Template_Industry.pdf).

The Investment Agreement sets out in detail the roles, responsibilities and obligations of the various Parties to ensure a successful Project. Alberta Innovates will not provide any funding until the Investment Agreement has been signed by all Parties.

Alberta Innovates will only fund Applicants who have satisfied all eligibility criteria. Meeting the eligibility criteria does not guarantee access to funding, and all funding decisions will be made by Alberta Innovates at its sole discretion.

Alberta Innovates will only correspond in writing and provide copies of the Application to the person named in the Application form as the one authorized to speak for the Applicant.

Should you have any questions about this guide or what is expected, please contact Alberta Innovates (see contact information below). Please note that Alberta Innovates may modify this guide from time to time in keeping with any changes to the program.

Contact Information

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APPENDIX A: Eligible and Ineligible Expenses

Summary of Eligible and Ineligible Expenses

Category	Eligible Expenses	Ineligible Expenses
Labour	<ul style="list-style-type: none"> ✓ Labour costs for those individuals specifically identified as working on the Project 	<ul style="list-style-type: none"> ✗ Overhead costs ✗ Professional training & development ✗ Professional fees unless directly related to the Project
Materials	<ul style="list-style-type: none"> ✓ Reasonable material costs which can be specifically identified for use in the Project 	
Capital Assets & Software	<ul style="list-style-type: none"> ✓ Capital improvements ✓ Capital equipment ✓ Software or information databases <p><i>Note: Eligible costs will be pro-rated to the Project time frame based on the asset's expected economic life</i></p>	<ul style="list-style-type: none"> ✗ Acquisitions of land or buildings ✗ The undepreciated value of eligible capital costs which extends beyond the Project term
Travel	<ul style="list-style-type: none"> ✓ Travel, including mileage, low economy airfare, and accommodation for the purposes of executing the Project 	<ul style="list-style-type: none"> ✗ Passport or immigration fees ✗ Costs relating to meals, entertainment, hospitality and gifts ✗ Reimbursement for airfare purchased with personal frequent flyer programs ✗ Commuting costs between place of residence and place of employment
Sub-contractors	<ul style="list-style-type: none"> ✓ Services or products of another entity 	<ul style="list-style-type: none"> ✗ Costs associated with applying for government grants and Programs ✗ Provisions for contingencies, technical or professional journals ✗ Routine testing and maintenance
Other	<ul style="list-style-type: none"> ✓ Costs which Alberta Innovates pre-approves in writing as an eligible expense 	<ul style="list-style-type: none"> ✗ Collection charges, allowance for interest on debt, fines and penalties ✗ Federal and provincial income taxes, goods and services taxes ✗ Expenses for Projects or activities outside the approved Project

APPENDIX B: Evaluation Criteria

Applications for the Digital Innovation in Clean Energy Program will be reviewed based on several broad criteria, with more specific details evident through the information requested in the application form. A summary of those criteria follows:

Proposed Projects will be evaluated against criteria in three major categories: Innovation, Project Management, and Impacts and Outcomes. The considerations for each criterion are detailed in the online SmartSimple Application form.

The Innovation	Project Management	Impacts and Outcomes
Innovation Opportunity	Work Plan, Tasks, and Deliverables	Economic Impacts to Alberta
Market Opportunity and Competitive Analysis	Budget and Funding Commitment	Environmental Impacts
Proposed Commercialization Pathway	Project Team	Social Impacts
	Risk Analysis and Mitigation	

APPENDIX C: Project Examples

- Product yield optimization and production efficiency
 - Downhole/surface IoT data acquisition and control
 - Artificial lift operation, pipeline operation automation
 - Enhanced seismic data acquisition, real-time reservoir history match
 - Real-time 3D imaging, fracturing optimization, reservoir optimization
 - Optimization using artificial intelligence
- Value creation and operational efficiency
 - Scenario modelling, arbitrage, trading, product value realization
 - Smart contracts, project execution optimization
 - Simulation, production planning, projections
 - Precision agriculture
 - Optimization using artificial intelligence
- Project execution and predictive maintenance
 - Shutdown reduction, integrity issue avoidance
 - VR/AR/visualization - digital twins and project execution
 - IoT sensor analogs, computer vision, cameras
 - Integration with existing operational data; SCADA, fluid samples etc.
 - Innovative data collection technologies
 - Optimization using artificial intelligence
- Health, safety and environment
 - IoT for connectivity, communication
 - VR/AR/visualization - training, construction management, HR processes
 - Cameras, motion sensors, image recognition, video analysis; computer vision
 - GIS mapping, surveys, maintenance in difficult access/remote access areas
 - Workplace health and safety through sensors, analytics, dashboards and predictive learning
 - Optimization using artificial intelligence

- Environmental monitoring and public health
 - Remote monitoring and automation for reclamation, remediation, closure
 - Machine learning and IoT sensors to manage air quality, water quality
 - Optimization using artificial intelligence
- Automation
 - IoT sensors, edge controllers; automated optimization
 - UAVs and LIDAR, mapping and satellite technology
 - Self-driving haulers, autonomous mining, autonomous transportation
 - Optimization using artificial intelligence