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# PROGRAM GUIDE: Digital Innovation in Clean Energy (DICE) Program 2021

## PROGRAM OVERVIEW

### BACKGROUND

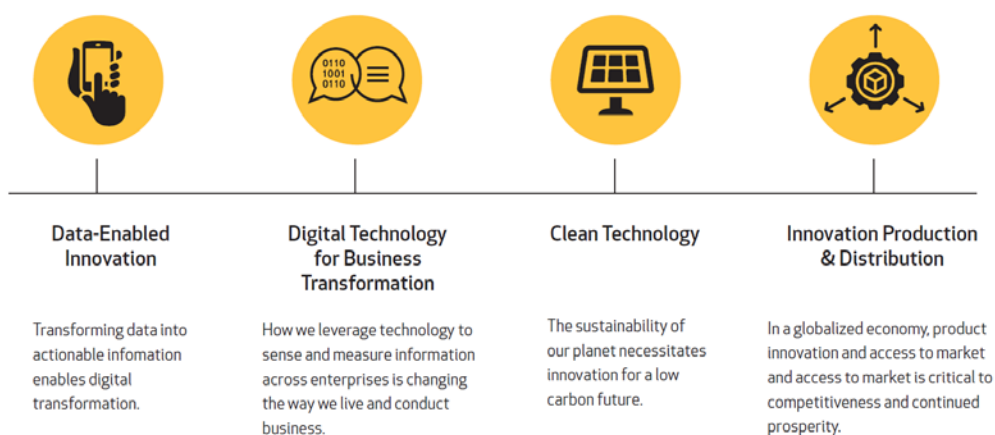
Alberta Innovates is a catalyst for innovation. Alberta Innovates supports research and innovation that leads to economic diversification, enhanced environmental performance, and social well-being. Alberta Innovates pursues a strategic direction that focuses on emerging technologies that support multiple sectors. Embracing the digital future while leveraging Alberta's existing natural resources and human capacity in an increasingly digital based economy is an important innovation strategy.

The Digital Innovation in Clean Energy (DICE) Open Call 2.0 builds on the successful initial round of the DICE program which supported 17 approved projects completed between March 1, 2020 and August 31, 2021. The initial round of DICE funding provided a maximum of \$200,000 per successful project. The Alberta Innovates investment of \$3 million leveraged the private sector 4.5 times to create over \$16 million of total project value for Alberta's economy. Over 50 jobs for highly qualified personnel were created with up to 468 jobs created in Alberta upon project completion. A list of the projects selected for funding can be found here: <https://albertainnovates.ca/impact/newsroom/energy-industry-goes-digital/>. Further details on completed projects can be found on the Alberta Innovates project library: <https://albertainnovates.ca/focus-areas/clean-resources/project-library/>.

The program is directed towards developing projects that support existing Alberta Research and Innovation Framework (ARIF) goals and those that support research for Alberta Innovates' strategic priorities:

- Develop emerging technologies, which include data-enabled innovation; digital technology for business transformation; clean technology; and innovative production and distribution.
- Enhance our knowledge workforce.
- Embrace the digital future.

## Four Core Emerging Technology Areas



The second round of DICE projects will develop technology that creates jobs in the digital economy, improves the efficiency of energy production, reduces GHG emissions and contributes to environmental innovations in water and land management. Projects that specifically address the following relevant Alberta Research & Innovation Framework (ARIF) 2030 Innovation targets (<https://www.alberta.ca/alberta-research-innovation-framework.aspx>) will be considered within the scope of this competition. A 2015 baseline is used in a majority of the following 2030 target focus areas. Projects that have a clear strategic link as set out in the current ARIF targets ensures the projects supported through the DICE program align with the Government of Alberta’s priorities supporting sustainable economic, environmental, and social prosperity for Albertans.

| Focus Area                                    | 2030 Innovation Target   |
|---|--|
| <b>Reduce green house gas (GHG) Emissions</b> | Support Alberta’s climate change goals by accelerating solutions to reduce methane emissions by 45% by 2025 and ensure a dynamic portfolio of GHG emission reduction technologies.             |
| <b>Increase Value and Market Access</b>       | Support the successful commercialization of new value-added products to increase the market value of Alberta's oil and gas exports by 25% and expanding access to market.                      |
| <b>Improve Oil Sands Efficiency</b>           | Oil sands production efficiency and economics improve by decreasing fresh water use by 50%, GHG emissions by 50% on a per barrel basis, and supply cost of bitumen to be globally competitive. |
| <b>Renewable Energy</b>                       | Renewable sources, like wind and solar, will contribute up to 30% of Alberta’s electricity generation.   |
| <b>Conserving Biodiversity</b>                | Biodiversity is maintained or enhanced at levels relative to reference conditions.   |
| <b>Restoring Alberta’s Landscapes</b>         | Reduce landscape disturbance intensity by 20% and accelerate reclamation of disturbed lands to promote native habitat and species recovery.  |
| <b>Sustainable Water Management</b>           | Safe, secure, and reliable water resources, while enhancing the health of the aquatic ecosystems and improving overall water use efficiency by 30% (2010 base).                                |
| <b>Grow Alberta’s Green Economy</b>           | Support the cleantech sector to increase industry sales revenue by 25%, thereby increasing Alberta’s global market share by 20%.   |

|   |   |
|---|---|
| <b>Advanced Manufacturing and Materials</b> | The value of Alberta’s manufacturing sector will increase from \$18.8 billion to \$40 billion through the development of advanced materials, instrumentation and repurposing jobs (2014 basis). |
| <b>Digital Economy</b>                      | The ICT industry in Alberta generates more than \$20 billion in annual revenues and the province is the best in Canada for digital literacy and connectivity.                                   |
| <b>Reduce Waste</b>                         | 50% reduction in organic waste to landfill through innovative technologies which produce value-added products.  |
| <b>Bioindustrial Investment</b>             | Industry operating in the value-added bioindustrial sector will attract an additional \$3 billion private sector investment in Alberta.   |

## Program Details

Two and a half million dollars are available over eighteen months to support projects. Alberta Innovates’ role as a funding partner will reduce innovation risk for proponents, offset internal funding competition within organizations, enable collaboration beyond individual organizations, and facilitate access to highly qualified personnel (HQP) while developing additional skills and knowledge in the digital innovation ecosystem. As demonstrated in the initial DICE call for funding, this additional open competition will support digital development that is cost effective and in demand.

The Proposed Projects should have a clear and direct pathway to creating tangible impacts in Alberta. While the full market potential may not be reached as an outcome of the Project, technologies with high near-term market potential are of great interest. Applicants may focus on one or more technology or opportunities. Development of technologies should be able to either show direct measurable benefits or to reasonably quantify enabled/indirect benefits in at least one of the following areas:

- Cost reduction
- Increasing competitiveness
- Development of HQP
- GHG emission reductions
- Water, land environmental impacts; clean air, water, and soil
- Company creation and new product development
- Economic diversification

Preference will be given to 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 webpage.

Eligible Projects should clearly address one or more of the following Clean Energy targeted Project themes. Examples of successfully funded projects in the initial round of DICE program funding can be found here: <https://albertainnovates.ca/impact/newsroom/energy-industry-goes-digital/>. This is an incomplete list, and consideration may be given to project themes adjacent 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

# HOW THE PROGRAM WORKS

## Eligibility

### (a) Applicant Eligibility Criteria

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.

All corporate Applicants must:

- have a physical presence in Alberta, or intend to create a physical presence in Alberta;
- be a legal entity:
  - incorporated in Alberta; or
  - incorporated federally or in another jurisdiction AND extra-provincially registered in Alberta; or
  - a General Partnership, Limited Partnership or Limited Liability Partnership AND registered in Alberta.

All Applicants must:

- be in good financial standing with Alberta Innovates and its subsidiaries InnoTech Alberta and C-FER Technologies; and

- demonstrate the relationship between the Applicant and the Project Partner(s) does not create a conflict of interest.

Proposed Projects that demonstrate HQP capacity building in Alberta will receive additional consideration for funding.

Collaboration with other Project Partners is highly encouraged and projects that demonstrate end user engagement and formal partnerships will receive additional consideration for funding.

### **(b) Project Partner Eligibility Criteria**

The Project Partner(s) is(are) required to satisfy the following criteria:

- demonstrate a need or potential for use by Alberta industry or other end-users;
- demonstrate the relationship between the Applicant and the Project Partner(s) does not create a conflict of interest;
- be in good financial standing with Alberta Innovates and 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.

### **(c) Project Eligibility Criteria**

To qualify for funding all Projects must:

- be structured with critical “go/no go” milestones;
- be completed within the eighteen month term; and
- submit to other criteria that Alberta Innovates may develop from time to time.

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*Over the life of a Project, Alberta Innovates employs an active project management philosophy, regularly monitoring performance and supporting the Applicant to reach their objectives. Funding is tied to outcomes and achievement of results. For this reason, Alberta Innovates funds on a milestone completion basis. This means the Applicant are expected to submit a Progress Report before Alberta Innovates advances the next tranche of funds.*

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Once Projects are completed, Alberta Innovates continues to monitor performance to accurately evaluate the economic, social, and environmental benefits realized for the province.

All Investment Agreements outline performance indicators tracked over the course of the Project and the responsibilities of the Applicant to report on outcomes subsequent to the completion of the Project. Alberta Innovates has a common set of performance metrics it monitors, both at the individual Project level and for the aggregate Program. These are highlighted on the next page.

**(d) Project Evaluation Review Criteria**

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.

| <b>The Innovation</b>                       | <b>Project Management</b>          | <b>Impacts and Outcomes</b> |
|---|------------------------------------|-----------------------------|
| 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       |                             |

# PROGRAM OBJECTIVES AND PERFORMANCE MEASUREMENT



## 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
- Enhance the health of the aquatic ecosystems and improve overall water use
  - Increase industry sales revenue
  - Increase Alberta's global market share

SHORT TERM



## PROGRAM SHORT TERM OUTCOMES

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



## APPLICANT OBJECTIVES

- Technology development & scale-up
  - Reduce innovation risk
  - Offset internal funding competition
- Enable collaboration beyond individual organizations
- Facilitate access to Highly Qualified Personnel (HQP)
- Attracting partner funding for technology development and demonstration

LONG TERM



## ALBERTA OBJECTIVES

- Economic Diversification
  - Reduce GHG Emissions
  - Improve Oil Sands Efficiency
- Grow Alberta's Green Economy
- Sustainable Water and Land Management
  - Renewable Energy
  - Digital Economy

## How Funding Works

### (a) Project Funding

A successful Applicant can receive up to \$350,000 in Canadian dollars.

The Program supports up to 50% of the total project costs, with remaining funding from the Applicant and/or other project partners (including cash and in-kind support). For projects involving post-secondary institution researchers, leverage from federal funding organizations (NSERC, etc.) is highly desirable.

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 September 1, 2023.**

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*Alberta Innovates encourages co-funding of Projects with other funding agencies and does not limit the amount of stacking towards the applicant's contribution.*

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### (b) Eligible and ineligible expenses

Alberta Innovates only funds reasonable costs incurred after the execution of a signed Investment Agreement between Alberta Innovates and the Applicant. Any costs incurred prior to the signing of the Investment Agreement, or costs greater than market prices, are deemed ineligible. Please refer to our standard Investment Agreement found on our website ([https://albertainnovates.ca/wp-content/uploads/2020/01/Clean-Energy-Agreement-Template\\_Industry.pdf](https://albertainnovates.ca/wp-content/uploads/2020/01/Clean-Energy-Agreement-Template_Industry.pdf)) for further information and an in-depth description of eligible and ineligible costs. The chart on the next page provides a summary of eligible and ineligible expenses.



## Summary of Eligible and Ineligible Expenses

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

## HOW TO APPLY



### **STEP 1** Application

This is a one stage application process. Applications will be submitted electronically using the Alberta Innovates SmartSimple online intake system; the link can be found on the Alberta Innovates website along with the competition timelines.



### **STEP 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 on page 6 of this guide.



### **STEP 3** Project Management

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

Alberta Innovates will provide on-going 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

Alberta Innovates leverages internal staff and external expert reviewers to evaluate Applications submitted. Alberta Innovates retains the sole right to determine the evaluation process and does not disclose the names of its external reviewers to ensure their objectivity and impartiality. All external parties are subject to confidentiality, non-disclosure, and conflict of interest policies set by Alberta Innovates.

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*The assessment criteria and all investment decisions are at the sole discretion of Alberta Innovates.*

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## TERMS AND CONDITIONS

This Program Guide is intended as a high-level overview of the DICE Program. It provides interested parties with a roadmap of what to expect over the lifecycle of a Project, from the application stage, during the project and post-completion. Should you have any questions about this guide or what is expected, please contact Alberta Innovates. Please be aware Alberta Innovates may modify this guide from time to time in keeping with any changes to the program.

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.

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. ([https://albertainnovates.ca/wp-content/uploads/2020/01/Clean-Energy-Agreement-Template\\_Industry.pdf](https://albertainnovates.ca/wp-content/uploads/2020/01/Clean-Energy-Agreement-Template_Industry.pdf))

The Investment Agreement sets out 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 met 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.

## 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.

## CONTACT INFORMATION

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