Digital Innovation in Clean Energy (DICE) 3.0 Open Competition

Program Webinar
Bruce Duong, Senior Manager, Digital and Recovery Technologies

December 11, 2023
Agenda
1. Housekeeping
2. Alberta Innovates Context
3. Digital Innovation in Clean Energy 3.0
4. Project Targets and Considerations
5. Applicant Eligibility
6. Submission Process
7. FAQs
8. Q&A
Housekeeping

The presentation and Q&A will be recorded and posted on the DICE program website within 24 hours of the end of the webinar.

- Microphones are muted, you are only able to listen to the audio and view the presentation.
- All questions are typed in the message box, directly under the “ask the moderator” section.
- Please ask your questions or vote up questions that may be repeated.
- Questions will be answered and recorded in the Q&A portion of the presentation.
Housekeeping

- Click on the message box located at the top right corner and type in your question
- Hit enter or arrow icon to send question
Land Acknowledgement

We acknowledge the many First Nations, Métis and Inuit who have lived in and cared for these lands for generations. We are grateful for the traditional Knowledge Keepers and Elders who are still with us today and those who have gone before us. Alberta Innovates respectfully acknowledges that we are situated on traditional territory of the Treaty 6, Treaty 7, and Treaty 8 First Nations; home to Métis Settlements, the Métis Nation of Alberta, and Regions 2, 3 and 4 within the historical Northwest Métis Homeland. We respect the histories, languages, and cultures of First Nations, Métis, and Inuit whose presence continues to enrich our vibrant community.
Equity – Diversity – Inclusivity

We believe the Alberta 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.

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

• Women entrepreneurs/researchers
• Indigenous entrepreneurs/researchers
• Remote/small community entrepreneurs/researchers
• New immigrant entrepreneurs/researchers

We encourage ALL entrepreneurs/researchers to apply!

If you are a first time AI applicant, don’t hesitate to reach out for navigation information.
ABOUT US

- 11 Locations
  - 1 million+ sq ft of lab space
  - 600+ acres of research farmland

- 2 Subsidiaries
  - InnoTech Alberta Inc.

- Employees
  - 589 FTEs
  - Including 70+ PhDs

- Operating Budget
  - $250 million
Value of our PORTFOLIO

1,280 projects across business lines and sectors

Total portfolio value

$1.33 billion

in 2022-23
Alberta Innovates is driving innovation to build a bright future for all Albertans.

1,582
Clients supported by Alberta Innovates
(students/trainees, researchers, companies, entrepreneurs and others)

596
Clients supported by C-FER Technologies and InnoTech Alberta
OUR INNOVATION PRIORITIES
Five bold bets with provincial upside

- Entrepreneurial Ecosystem
- Artificial Intelligence
  - Digital Health
  - Clean Resource Technologies
  - Smart Agriculture

Strategy Enablers
Focus Areas
Digital Innovation in Clean Energy (DICE)

Program Objectives

• Advancing technologies that benefit Alberta industry or public sector

• Funding novel technologies with the potential to achieve clean energy impacts, economic diversification, and employment opportunities

• Recruiting and developing highly skilled personnel to support the digital economy in Alberta

ATIS 2030 Innovation Targets:

• Energy, minerals and clean-tech
  • Technologies to optimize effective and efficient resource extraction and processing

• 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
Alberta Innovates is announcing a new round of funding under its Digital Innovation in Clean Energy (DICE) program. $2.5 million in funding from Alberta Innovates is available, with up to $250,000 available per project.

DICE funds the development of:

- Artificial intelligence, machine learning, industrial internet of things, augmented reality, and unmanned aerial vehicle technologies for use in Canada’s energy and cleantech industry.

DICE projects will:

- Develop technologies and accelerate them into market, improving the efficiency of energy production, reducing greenhouse gas (GHG) emissions, creating jobs in the digital economy, and contributing to environmental innovations in water and land management.
Examples of previously funded projects in DICE include:

• Edmonton-based NTWIST is applying artificial intelligence for industrial process optimization and automation to help major resource producers reduce costs and environmental impacts. Full story [here](#).

• Galatea Technologies is creating a “Waste Coordinator” platform to increase workflow transparency, cost accuracy and provide actionable insights into the $4 billion Canadian waste disposal market. Full story [here](#).

• Validere is using advanced analytics and machine learning based platform to measure emission reductions and produce actionable insights for buyers, sellers, and transporters of petroleum products, while improving operations efficiency and trading profits. Full story [here](#).
Current Projects

Data Acquisition
- Internet of Things
  - PTAC Predictive Emissions Monitoring
  - CNRL/IOL SCGD Water Sensor
  - Innotech NIR meter
- Ancillary and Supporting Technologies
  - VR/AR
  - Rapid Prototyping
  - Robotics/UAV
  - Blockchain/DLT
  - Cloud/Data Management

Data Analysis
- Machine Learning
  - Galatea Data Refinery
  - Nanode Battery ML Optimization
  - Kobold Completions Analytics
  - U of C Reservoir Prediction
  - CLM Well Abandonment Analysis
  - U of C H2 Pipeline Risk Analysis
  - PTAC Digital Twin Roadmap

Data Insights
- Artificial Intelligence
  - Validere ESG Forecasting
  - iNumerix ESP Optimization
  - Madala SAGD Optimization

Prediction
- Ancillary and Supporting Technologies

Automation
<table>
<thead>
<tr>
<th>Date</th>
<th>Planned Activity (dates subject to change at AI’s discretion)</th>
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<tbody>
<tr>
<td>November 29, 2023</td>
<td>Launch of open call</td>
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<tr>
<td>December 11, 2023</td>
<td>Webinar (via videoconference)</td>
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<td>February 1, 2024</td>
<td>Close of proposal submissions 3:00 PM MST</td>
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<tr>
<td>May 1, 2024</td>
<td>Announcement of funded projects</td>
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<tr>
<td>November 1, 2025</td>
<td>Latest completion date for funded projects</td>
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Project Targets and Considerations

Proposed solutions should be within a TSRL range of 3-7 at the beginning of the project

- **TSRL 1-3: Research and solution validation:** Research is primarily done in the lab and ranges from fundamental research to proof of concept in a lab setting. Theory and scientific principles are focused on knowledge and application to define the concept. A potential business model is outlined, with problem and solution validation required. A market and competitive analysis is performed to align the proposed solution with the market need.

- **TSRL 4-6: Development:** The basic technological components are integrated for testing in a simulated environment and include alpha testing of prototypes. Knowledge and operational practices (e.g., best management practices) are tested at small scales in the field. A roadmap for the solution’s technical requirements is developed to complete a demonstration of design prototypes in specific applications.

- **TSRL 7: Field Pilot:** The prototype is tested in the field in an operational environment and is well integrated with other systems. The proposed solution package is tested by end-users to validate performance and integration.

- **TSRL 8-9: Demonstration:** The technology is scaled up and tested in its final form and under expected conditions. The solution has been developed to the stage of a minimum viable product, validating the proposed business model and confirming market applicability.
## Project Targets and Considerations

### Clean Resources Focus Areas

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<th>Advanced Hydrocarbons</th>
<th>Clean Technology</th>
<th>Environmental Innovation</th>
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<tr>
<td>Production optimization and yield improvements</td>
<td>Smartgrid, distributed generation, and renewable energy management and control</td>
<td>Water treatment and management</td>
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<tr>
<td>Operational efficiency improvements, improved economic efficiencies</td>
<td>Integration of energy storage and renewable energy</td>
<td>Land and biodiversity monitoring</td>
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<td>Integrated operations solutions</td>
<td>Innovations related to contracts and settlements</td>
<td>Tailings management</td>
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<tr>
<td>Emissions reductions and environmental performance</td>
<td>Transportation system management and control</td>
<td>Management of environmental monitoring and public health</td>
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<tr>
<td>Project execution, operational health and safety</td>
<td>Green buildings technologies</td>
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### Clean Technology
- **Production optimization and yield improvements**
  - Smartgrid, distributed generation, and renewable energy management and control
  - Water treatment and management

### Environmental Innovation
- **Operational efficiency improvements, improved economic efficiencies**
  - Integration of energy storage and renewable energy
  - Land and biodiversity monitoring

### Integrated operations solutions
- Innovations related to contracts and settlements
- Tailings management

### Emissions reductions and environmental performance
- Transportation system management and control
- Management of environmental monitoring and public health

### Project execution, operational health and safety
- Green buildings technologies
Project Targets and Considerations

Development of project 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
Project Targets and Considerations

Proposal Application Evaluation Criteria

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<tr>
<th>The Innovation</th>
<th>Project Management</th>
<th>Impacts and Outcomes</th>
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<td>Innovation Opportunity</td>
<td>Work Plan, Tasks, and Deliverables</td>
<td>Economic Impacts to Alberta</td>
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<td>Market Opportunity and Competitive Analysis</td>
<td>Budget and Funding Commitment</td>
<td>Environmental Impacts</td>
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<td>Proposed Commercialization Pathway</td>
<td>Project Team</td>
<td>Social Impacts</td>
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<td>Risk Analysis and Mitigation</td>
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Project Targets and Considerations

Proposal Application Evaluation Criteria

Optional attachments:
- Business Plan
- Funding Sources
- Financial Statements

Only information entered in the proposal template is mandatory – attachments can be referenced, but please be concise and to the point in the main proposal sections!
Applicant Eligibility

Project funding can be up to, but not exceeding $250,000 per project

- Program normally supports up to 50% of total project costs (cash plus in-kind) with the balance of funding from other project partners
- Other public funding sources (NSERC, SDTC, NRCan, etc.) are acceptable as eligible partner funding – no stacking limit with other public funding
- All projects must be completed before November 1, 2025
- Funding is disbursed on an initial project approval, milestone, and project completion basis for successful applicants
- A summary of eligible and ineligible costs is available in the Program Guide
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.

Collaboration with other project partners is highly encouraged. Consideration will be given during the review process for projects demonstrating end user engagement and formal partnerships.
Applicant Eligibility

If you’re not sure of your eligibility, ask!

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

• Demonstrate a need or potential for use by Alberta Industry
• No conflict of interest between the Applicant and Partner(s)
• Have no outstanding balances to Alberta Innovates or subsidiaries

Additional Considerations:

• Federal funding agencies (e.g. NSERC, NRCan, etc.) are considered eligible project partners
• An industry partner is recommended but not required for post-secondary institution applicants
Submission Process

Online Portal Instructions
Step 1: Register as an applicant on SmartSimple: https://albertainnovates.smartsimple.ca
Step 2: Select the correct competition: Digital Innovation in Clean Energy : DICE 3.0
Step 3: Complete the single-stage application online, including attachments
Step 4: Submit before the deadline: February 1, 2024: 3:00 p.m. MST
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SAVE DRAFT FREQUENTLY ON SMARTSIMPLE!
Submission Process

Online Portal Instructions

Step 4: Submit before the deadline: **February 1, 2024: 3:00 p.m. MST**
FAQ

Advice for preparing a successful submission

- Read the Program Guide
- Use clear and concise language
- Define what problem you are trying to solve
- Position your proposal relative to competing technologies
- Address each question in the application and read the question guidance carefully

- **SAVE DRAFT FREQUENTLY ON SMARSTIMPLE!**
- **DON’T WAIT UNTIL THE LAST DAY(S) TO SUBMIT!**
FAQ

• What types of organizations are eligible?
• Can projects or funding occur outside the province?
• What are examples of “industry” partners?
• What costs are eligible for matching funding?
• Is there a minimum funding request?

For additional specific questions regarding this program please contact:

Bruce Duong, Senior Manager, Recovery Technologies:
bruce.duong@albertainnovates.ca
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THANK YOU