
PROGRAM GUIDE: THE CLEAN TECHNOLOGY FACILITIES SUPPORT PROGRAM

Part of the Climate Change Innovation and Technology Framework

PROGRAM OVERVIEW

Background

In December 2017, the Government of Alberta (GOA) published the Climate Change Innovation and Technology Framework (CCITF) as the overarching guide for the government's investments in innovation and technology to reduce greenhouse gas (GHG) emissions, while preparing our province for the lower carbon economy of tomorrow. On behalf of Economic Development & Trade, Alberta Innovates is offering five programs: Clean Technology Development, Clean Technology Networks & Emerging Partnerships, Clean Technology Commercialization, Clean Technology Business Innovation Vouchers, and Clean Technology Facilities' Support.

The **Clean Technology Facilities Support** program will provide funding support to enhance existing Research and Innovation facilities and to create new facilities that would address technical capacity gaps in the priority sectors for GHG emission reduction, economic growth and diversification. Such facilities will provide access to equipment, utilities and operations to industry and research organizations and include testing, certification, training, demonstration, experimentation and the creation of a hub for technology awareness.

The program will support new development and technical upgrades of existing facilities that align with the following five themes:



The program will support projects that offer significant advances in GHG emissions reduction technologies. The program will, where appropriate, support projects that leverage larger opportunities for regional economic and social impact.

Facilities that receive CCITF funding are expected to:

- **Support technology infrastructure in priority areas** - cleaner oil and gas production, GHG emissions reductions, low-carbon electricity, green-building materials, and waste to value-added products;
- **Deliver technical support** - for testing, prototyping, demonstration, validation, and certification; of new products or techniques; and
- **Provide technical training** - and HQP opportunities.

Within the Clean Technologies Facility Support Program, a **Project** is defined as:

- a **capital investment** to enhance existing infrastructure or to develop a new facility that fills a gap in advancing technology in the priority areas;
- **operating expenses** to run testing and demonstration facilities for a specified time with defined outcomes;
- a **technology development project** that will be operated in the facility.

HOW THE PROGRAM WORKS

Eligibility

(a) Facility Eligibility Criteria - to qualify for funding, all projects proposed under this Program must:

- be aligned with Government of Alberta and Alberta Innovates' strategic priorities and targets;
- target an identified opportunity, demonstrated by a need or potential use by Alberta industry, to develop technology:
 - critical to Alberta industry or public-sector needs; or
 - to address capacity gaps in Alberta facility infrastructure;
- be led or co-led by an Alberta legal entity (the "Applicant"), as defined below;
- provide broad access to a variety of stakeholders for testing, analysis, etc.;
- provide experiential learning opportunities for undergraduate and graduate students or professionals requiring skills' upgrades, develop High Quality Skill Personnel (HQSP), support technology development, and adoption of technologies in practice.
- submit a completed application, following the proposal template; and
- submit to other criteria that Alberta Innovates may develop from time to time.

(b) Applicant Eligibility Criteria – the Applicant must be a legal entity registered or incorporated in Alberta, which may include:

- those 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;

It must have no outstanding balance or otherwise owe money and/or reports to Alberta Innovates or its subsidiaries. Such entities include:

- private sector industry, industry association or trade organization;
- a post-secondary institution;
- an applied research organization, including InnoTech Alberta and C-FER Technologies;
- a municipality;
- a not-for-profit organization; or
- consortia comprising any combination of the above.

Additional Information:

- Partnerships including Alberta's post-secondary institutions are strongly preferred.
- Alberta Innovates may, from time to time, modify objectives or reporting metrics required under funding provided through this Program.
- Examples of projects that may be funded under this Program can be found in Appendix C.

Performance Management and Evaluation

Over the life of a project, Alberta Innovates employs an active project management philosophy, regularly monitoring performance and supporting the Applicant to reach their outcomes. Funding is tied to outcomes and achievement of results and submission of progress and performance reports. For this reason, Alberta Innovates funds on a milestone completion basis. This means the Applicant is expected to complete a task and submit a progress report before Alberta Innovates advances the next tranche of funds. Failure to complete annual performance reporting may also impact the release of Alberta Innovates' funding.

All investment agreements outline the intended outcomes of the program and the corresponding performance indicators (measures) that will be tracked over the course of the project. Specific performance indicators will also be developed at the level of the individual project given the uniqueness of each project.

The annual performance reports are used to inform program planning and performance management. The Program level performance results will be communicated back to Applicants, key stakeholders and the public.

Once projects are completed, Alberta Innovates continues to monitor performance for an additional five-year period to accurately evaluate the economic, environmental and social benefits realized for Albertans and our province.

As a results-focused organization, Alberta Innovates uses a performance management framework to monitor and evaluate the outcomes and impacts of its investments. The Applicant will be responsible for annually reporting to Alberta Innovates on all required indicators.

The Clean Technology Facilities Support Program contributes to the strategic outcomes of the Climate Change Innovation and Technology Framework (CCITF).

CCITF Vision: *By year 2030, Alberta's use of innovation and clean technology ("Clean Innovation") will accelerate the shift to lower carbon economy, generating significant environmental and economic benefits.*

Short, mid and long-term program outcomes and a sample of key performance indicators are highlighted in the following diagram.

Pathway to Outcomes



INSTITUTION/SME/INDUSTRY BENEFITS

- Respond to carbon emissions reduction pressures
- Profitably evolve toward low carbon economy
- Innovate to find new market growth opportunities
- Funding de-risk for technology and commercialization development
- Access to financial resources, relationships and mentorship
- Increased global competitiveness



SHORT TERM PROGRAM OUTCOMES

Increased access to research and innovation infrastructure

SAMPLE OF PERFORMANCE INDICATORS

- \$ invested in research infrastructure
- \$ invested in innovations infrastructure
- % usage of research infrastructure by clients
- % usage of in innovation infrastructure by clients
- # of companies using infrastructure
- \$ leveraged from Federal gov't, industry and others
- # of technologies and products tested, demonstrated, certified etc.
- # of highly qualified personnel trained



ALBERTA STRATEGIC OUTCOMES

- Environmental Performance – GHG Emission Reductions
- Lower Carbon Diversified Economy
- Lower Carbon Energy Transition
- Innovation System Performance



MID / LONG TERM PROGRAM OUTCOMES

Increased supply & use of clean technology, products & practices

SAMPLE OF PERFORMANCE INDICATORS

- # of potential reduced GHG emissions from projected deployments
- \$ invested per MT potential GHG emissions and reductions
- # actual GHG emission reductions from new clean technology deployment

How Funding Works

(a) Project Funding

Each facility has a maximum eligible funding request, as indicated below in the Facility descriptions. There is no limit on individual grant amounts, however, no project can exceed the maximum amount. Access to the facilities by Alberta's post-secondary institutions, SMEs and Industry is a requirement. Please reach out to the Program Leads for further information. Their contact information is provided below.

The program normally supports 50% of project cost, with remaining funding coming from other partners (including cash and in-kind support). Contributions leveraged from industry, institutions and other federal funding organizations (e.g. NRCan, etc.) are highly desirable.

The program funding is normally for 1-2-year capital development projects and operations.

Alberta Innovates encourages co-funding of projects with other funding agencies, and does not limit the amount of funding leveraged from other sources towards the applicant's contribution.

(b) Eligible and ineligible expenses

Alberta Innovates funds expenses directly attributable to the delivery of approved projects. All costs incurred must be critical to the performance of the project, as outlined in the application.

Alberta Innovates will only fund reasonable costs incurred as defined in the executed investment agreement.

A high-level summary of eligible and ineligible expenses is provided in Appendix A.

HOW TO APPLY

The Clean Technology Facilities Support Program has identified five opportunities in Alberta. The process to apply for funding has been identified for each opportunity. Proposals will be evaluated on their potential impacts, aligned with the program criteria.

Each of the five facilities has been proposed by the Ministry of Economic Development and Trade with Alberta Innovates as the delivery agent. Each theme has a different application process to achieve specific objectives. The application processes are described below.

Whether the intake process is through an open call or by invitation, each proposal will be evaluated in a two-step process:

Step 1: Expressions of Interest are accepted from applicants until the submission deadline. Applications received after the deadline will not be reviewed. Successful applicants will be invited to submit a Full Project Proposal (Phase 2) for evaluation.

Step 2: Full Project Proposal. The evaluation process at this phase is highly competitive and only the highest-quality projects will be considered for funding.

Successful applicants will execute an agreement with Alberta Innovates to proceed with the activities of the Project. Agreement expectations will include:

- Alberta Innovates participation in project management activities;
- Reporting on progress to milestones and/or budget on a quarterly basis during the term of the Agreement; and
- Reporting on progress to outcomes on an annual basis during the term of the Agreement and annually for five years after that term.

FACILITY 1

Cleaner Oil Sands Test Facility

Overview: A testing facility where latest technologies including digital solutions relating to the production of oilsands can be tested in field-like conditions without disrupting operations at individual production sites and may serve to accelerate the innovation required to move the needle on environmental performance. To be effective and efficient, this kind of facility will ensure access and knowledge dissemination across industry. A strong industry champion can provide the operational expertise and resource management that is needed for success.

Application Process: An Open Call for Proposals from eligible applicants has been launched and additional details are outlined for this stream on the Alberta Innovates CCITF website.

Maximum Funding Request: \$10 M

FACILITY 2

Emissions Reduction Test Facility

Overview: An Emissions Reduction Test Facility would address gaps in research/validation of technologies and methodologies for the detection, measurement, reporting, and verification of emissions of short-lived climate pollutants (e.g. methane, volatile organic compounds, etc.).

A world-class network of facilities would model upstream/downstream oil and gas scenarios, in a fully controlled and instrumented environment, and would enable field-scale testing, demonstration, and verification of technologies to bridge them to commercialization. Such facilities could replicate field activities of key concern to governments and regulators, including for example:

- Wet and dry solution gas or flash gas from oil and gas production;
- Evaporative losses from processing, handling and storage;
- Venting and flaring oil and gas operations; or
- Fugitive equipment leaks.

Application Process: An initiative between Alberta Innovates and NRCan is underway to map existing emissions reduction infrastructure, assets, capabilities, and expertise. Please contact Paolo Bomben paolo.bomben@albertainnovates for more information.

Maximum Funding Request: \$8M

FACILITY 3

Centre for Biomass, Waste and Natural Gas Conversion Technologies

Overview: The centre would enable facilities to search, evaluate and develop world-class technologies that convert biomass, waste and natural gas to valuable products. It is intended to advance:

1. Development and demonstration of next generation technologies converting biomass, waste and natural gas into biofuel and other marketable products; and
2. Enhancement and optimization of existing waste and natural gas conversion technologies.

The Centre is seeking Projects that help Alberta:

- become a global hub for expertise in bioenergy technology development and deployment, divert its organic waste from landfills and supports the creation of infrastructure that would reduce GHG emissions and generate high-quality jobs across the province;
- support the successful commercialization of new value-added products from biomass, waste and hydrocarbon-based methane; and
- attracts capital investment for biofuel technology deployment and builds a global marketing network.

Application Process: An Open Call for Proposals from eligible applicants has been launched and additional details are outlined for this stream on the Alberta Innovates CCITF website.

Maximum Funding Request: \$6M

FACILITY 4

Electricity Technology Test Centre

Overview: The Electricity Technology Test Centre could enable research into the design, operation, capability and impact of distributed generation and microgrids while also providing a development and verification platform for researchers, technology developers and utilities working to advance technologies applicable to grid modernization. A network of facilities would enable both simulation systems and hardware demonstrators to test latest technologies under ideal and non-ideal controlled grid conditions and/or in real-time grid simulations.

Application Process: An Open Call for Proposals from eligible applicants has been launched and additional details are outlined for this stream on the Alberta Innovates CCITF website.

Maximum Funding Request: \$4M

FACILITY 5

Green Building Technology Test Centre

Overview: The Green Building Technology Test Centers will help Alberta diversify its economy and build on its existing strengths as a leader in Canadian construction. Proposals should consider Alberta's existing research and development capabilities and enable development and deployment of innovative products, technologies and practices for the construction sector.

Proposals will be sought for projects related to construction innovation and the enhanced utilization of existing buildings and infrastructure or opportunities to expand that public infrastructure to respond to emerging needs.

Application Process: An Open Call for Proposals from eligible applicants has been launched and additional details are outlined for this stream on the Alberta Innovates CCITF website.

Maximum Funding Request: \$3M

APPLICATION REVIEW PROCESS

During the proposal review process, Alberta Innovates will leverage 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, intellectual property management and conflict of interest policies set by Alberta Innovates. For a more detailed account of the evaluation process for this program, see Appendix B.

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

TERMS AND CONDITIONS

This Program Guide provides a high-level overview of the Clean Technology Facilities Support program. It intends to provide interested parties with a description of what to expect over the life of a project, from the application stage through to post-completion. Please be aware Alberta Innovates may modify this guide from time to time in keeping with any changes to the Clean Technology Facilities Support program, or the Climate Change Innovation and Technology Framework.

Once we have evaluated and approved an application for funding, Alberta Innovates will require the participants to sign a standard form investment agreement. The investment agreement sets out in detail the roles, responsibilities and obligations of the various parties to ensure a successful project. Funding will not be provided until the execution of the investment agreement

CONTACT INFORMATION

To discuss eligibility for this program, to receive an application form or for specific questions regarding this program and guide, please contact:

For Oil Sands, Methane and Waste Conversion, Methane Reduction, and Electricity

Candice Paton, Executive Director, Clean Technology

(403) 297-7261

candice.paton@albertainnovates.ca

For Green Buildings

Pat Guidera, Director, Bio

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APPENDIX A

Summary of Eligible and Ineligible Expenses

| Category | Eligible Expenses | Ineligible Expenses |
|--------------------------------------|---|--|
| Labour | <ul style="list-style-type: none"> ✓ Salary and benefits for individuals who are specifically working on the project | <ul style="list-style-type: none"> ✗ Overhead costs charged to employee labour rates ✗ Professional training & development ✗ Professional fees unless directly related to the project |
| Materials | <ul style="list-style-type: none"> ✓ Reasonable material costs | |
| 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 timeframe |
| 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

Detailed Evaluation Criteria per phase

PHASE 1

At the **Expression of Interest** stage of application, proposals will be evaluated against the following criteria:

1. **The Opportunity:** This section should include non-confidential project abstracts, project description and an opportunity to identify the project's alignment with the Program. The technology status and technology readiness level (if appropriate) should be indicated. A description of the market for the technology and potential market penetration should be included.
2. **Pathways to Outcomes:** This section should focus on how the project will help Alberta reach the outcomes identified in the CCITF program. Applicants are asked to estimate the reduction in GHG emissions from the technology and other social and economic benefits to Alberta. Applicants should also state how the facility will support economic diversification.
3. **Implementation:** This section should focus on the project's work plan and the research team. Evaluators will also consider the training, attraction and retention of Highly Qualified Skilled People (HQSP) to Alberta. The funding commitments from other partners should be identified here.

Signatures: The Expression of Interest must be signed by authorized representatives of the lead applicant's employing organization and must indicate if Alberta Innovates can share the application with trusted funding partners.

PHASE 2

At the **Full Project Proposal** stage of application, proposals will be evaluated against the following criteria:

1. **Knowledge/Technology Opportunity** - strength of the technology, including the scientific basis for the innovation and novelty of the solution, and the extent to which the proposed project will achieve meaningful technological advancement.
2. **Competitive Analysis** - competitiveness of the proposed solution, including advantages relative to existing and nascent technologies or research. Opportunities for synergies and collaboration must be described.
3. **Implementation Potential and Market** - strength of the implementation potential and pathway that will lead to application or use of the knowledge/technology in Alberta. Proponents must identify the market opportunity, including the size of addressable market(s) and alignment of the technology or research with market needs.
4. **Risk Analysis and Mitigation** - identification of key project risks and the mitigation strategy and status to support the achievement of short and long-term goals of the project.

5. **Economic Benefits to Alberta** - potential for economic benefits in Alberta, including increased employment, attraction of investment capital, increased resource revenues, economic diversification, improved export potential, product development, and company creation.
6. **GHG Emissions Reductions and Climate Change Benefits** - potential to reduce GHG emissions in Alberta in the near term (i.e. by 2025, 2030, and beyond). This includes reductions directly resulting from implementation of the project, from future commercial implementations (e.g. retrofits at existing sites, new builds), and from broader adoption across the relevant industry.
7. **Environmental and Social Benefits** - potential to provide additional benefits to Alberta, including reduced environmental impacts and societal benefits (e.g. environmental and/or societal benefits of the research / technology relative to current practice. Consider climate adaptation, water quantity and quality, land management, contaminant reduction, health improvements, safeguarding investments).
8. **Job Creation and Building Innovation Capacity** - potential to contribute to the training and development of Highly Qualified Skilled Personnel (HQSP). The Full Project Proposal must provide details of the project's expected contribution to the training of HQSP, and their potential to be retained within or recruited to Alberta.
9. **Work Plan, Budget and Deliverables** - strength of the project plan, including how well developed the work structure is, whether key elements are present to enable meeting project objectives, and the quality of task/category breakdown in the work plan and budget. Project deliverables will be evaluated on the applicant's ability to measure and describe project success.
10. **Excellence of the Project Team** - Proposals will be evaluated on the expertise and capability of the project team to carry out the proposed project and advance toward commercialization, including the level of commitment from key team members and partners, as well as additional capacity provided by strategic partners to support commercialization and widespread adoption of the technology. Teams emphasizing inter-organizational collaboration will be given preference.
11. **Funding Commitment** - Proposals will be evaluated on the applicant's financial ability to carry out the proposed project, including the financial position of the applicant organization, the level of non-CCITF funding that is confirmed or in discussion, and the justification for seeking CCITF funding.

APPENDIX C

Examples of projects that might be funded:

- **Cleaner oil sands test facility:** including but not limited to lower energy oil recovery, advanced combined heat and power with CO₂ reduction; advanced reservoir technologies including solvent recovery, electromagnetic systems, and non-aqueous/non-thermal processes; improved conventional and unconventional oil and gas process technologies; novel surface mining and bitumen ore processing technologies; improved bitumen upgrading and partial upgrading processes.
- **Emissions reduction test facility:** including but not limited to minimizing flaring and venting emissions (e.g. methane, black carbon, volatile organic compounds, etc.) from oil and gas production or agricultural operations; monitoring, measuring and eliminating fugitive emissions from oil and gas facilities.
- **Centre for Biomass, Waste and Natural Gas Conversion Technologies:** including but not limited to waste and methane to value-added technology and products including integration of agricultural, forestry, and municipal wastes; non-fuel uses of hydrocarbons; gas to liquid technologies, including biogas, syngas and methane to biofuels; non-combustion materials and new products from waste and methane, etc.; bio-industrial products.
- **Electricity technology test centre:** including but not limited to grid modernization technologies; optimal microgrid control in isolated and grid connected systems; modeling energy supply options for new sustainable communities, testing and validation of new and existing energy storage technologies, appraisal of blockchain and other innovative transaction technologies, etc.
- **Green building technology test centre:** including but not limited to development of novel green building products or techniques, leveraging a variety of social and technology advances; development of high-tech solutions to reduce impacts of the built environment (smart buildings, innovative hardware/software) innovative building components and materials; incorporation of into building materials and advanced manufacturing.