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Canada



Low Carbon Economy Challenge

Applicant Guide

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1. PURPOSE OF THIS GUIDE

This Applicant Guide has been developed to assist potential applicants to the Low Carbon Economy Challenge. It provides information on project eligibility criteria and detailed instructions on how to complete the online application form to submit an Expression of Interest.

2. PROGRAM OVERVIEW

2.1 THE LOW CARBON ECONOMY FUND

The Government of Canada's Low Carbon Economy Fund (LCEF) is an important part of the Pan-Canadian Framework on Clean Growth and Climate Change (PCF). Over the next few years, the LCEF will support implementation of the PCF by leveraging investments in projects that will generate clean growth and reduce greenhouse gas (GHG) emissions, helping Canada meet or exceed its commitments under the [Paris Agreement](#). Consequently, the LCEF will help support innovation, reduce energy bills, and create jobs for Canadians for years to come.

Funding is allocated through two envelopes: the Low Carbon Economy Leadership Fund ("the Leadership Fund") and the Low Carbon Economy Challenge ("the Challenge"). The Leadership Fund provides funding to provinces and territories that have adopted the PCF to help them deliver on their commitments to reduce GHG emissions. The Challenge is open to a wider range of applicants who are invited to put forward projects that reduce GHG emissions. This Guide focuses only on the Challenge. The Guide was developed by the Low Carbon Economy Fund Secretariat at Environment and Climate Change Canada (ECCC). For general information on the LCEF, please visit the [program website](#) or write to ec.lcef-fefec.ec@canada.ca.

2.2 THE CHALLENGE

The Challenge will provide over \$500 million to successful applicants to support projects that directly reduce GHG emissions while supporting clean growth.

All projects considered under the Challenge will need to ensure that the targeted emission reductions meet the following key guiding principles:

- materiality (i.e., tangible and measurable GHG emissions reductions);
- incrementality (i.e., in addition to existing actions);
- contribution towards Canada's 2030 emission reduction target of 30% below 2005 levels; and
- cost-effectiveness.

2.3 OVERVIEW OF THE APPLICATION PROCESS

2.3.1 TWO STREAMS: CHAMPIONS AND PARTNERSHIPS

The Challenge consists of two streams (Champions and Partnerships), to ensure a wide range of applicants are able to participate in contributing towards Canada's 2030 emission reduction target. The streams will be launched separately.



The Champions stream, launched on March 14, 2018, supports projects undertaken by all types of eligible recipients, including:

- regional, local, municipal, provincial and territorial governments;
- First Nations, Métis and Inuit governments, communities or organizations;
- public sector bodies and boards;
- not-for-profit organizations; and
- private sector, for-profit organizations.

The Partnerships stream, to be launched later in 2018, will support projects undertaken by targeted recipients, including:

- regional, local and municipal governments with populations of 99,999 or below;
- First Nations, Métis and Inuit government, communities or organizations;
- not-for-profit organizations; and
- private sector for-profit small and medium businesses with 1 to 499 employees.

See section 3.4 for a table that provides an overview of the list of eligible recipients under each stream.

If a project is eligible for the two streams, applicants are encouraged to apply to both. Each stream will have a separate selection process. If a proposal meets the eligibility criteria of the Challenge but is not selected as part of the Champions stream, it may still be submitted as part of the Partnerships stream.

2.3.2 TWO STEPS: EXPRESSION OF INTEREST AND FORMAL PROPOSAL

For each stream, there is a two-step application process.

First, applicants need to submit an initial Expression of Interest (EOI). The EOI will be used to screen projects for eligibility based on the program parameters described in this Guide. Projects may also be screened out due to concerns around cost-effectiveness (e.g., high costs per tonne of GHG emissions reductions achieved) and/or significant concerns about project feasibility and risk.

As a second step, successful applicants will be invited to submit a more detailed Formal Proposal. ECCC will undertake a complete review and assessment of the Formal Proposal, including project work plan, costing, and projected GHG emissions reductions.

2.3.3 PROJECT SELECTION

Each proposal will be assessed and ranked based on a combination of the following elements:

- the annual tonnes of GHG emissions reductions achieved in 2030 per federal dollar invested;
- cumulative GHG emissions reductions over the lifetime of the impact per federal dollar invested;
- project feasibility and risk; and
- other co-benefits (e.g., contributing to Canada's environmental, economic and social goals).

Factors other than the above criteria may be taken into consideration. Final decisions are at the Minister's discretion.



ECCC will only review proposals as submitted. The onus is on the applicant to provide clear and comprehensive information.

2.3.4 NOTIFICATION TO APPLICANTS

Once a Formal Proposal has been assessed and selected, ECCC will inform the applicant of the decision and provide information on funding levels and next steps.

Applicants with unsuccessful projects at the EOI or Formal Proposal stages will receive an email notification. Decisions will be final.

2.3.5 FUNDING AGREEMENTS

Federal contributions to selected projects are contingent on the signing of a funding agreement between the Government of Canada and the recipient within 30 business days of the notification of approval. Otherwise, the federal funding may be cancelled. The agreement will outline the terms and conditions according to which federal funding will be provided.

2.3.6 KEY DATES

- March 14, 2018: Launch of Champions stream EOI stage
- May 14, 2018 (11:59 p.m. Pacific Standard Time): Deadline for submission of Champions stream EOI

Additional key dates can be found on the [Challenge homepage](#).

3. RULES, ELIGIBILITY AND DEFINITIONS

The following section describes the minimum eligibility criteria a project needs to meet for consideration under the Challenge.

3.1 PROJECT SCOPE

The project scope described in the application must be limited to the sectors, activities, and time period that are eligible for funding as per this Guide. Ineligible activities must be excluded from the application.

The costs described in the application must be limited to the activities included in the project scope. Likewise, GHG emissions reductions associated with the completion of activities outside the project scope must be excluded from the application.

For example, as explained in the sections below, in order to be eligible for the Challenge, activities must be completed between the date of the signature of the funding agreement and March 31, 2022. As such, costs for any activities prior to, or after, that period must be excluded from the application. The project must be considered as starting and ending within that timeframe, and estimated GHG emissions reductions caused by activities taking place outside of that period cannot be included. An important clarification point is that emissions reductions taking place beyond March 31, 2022 can and should be counted, as long as they stem directly from activities that took place before that date, within the eligible period for the project.



3.2 ELIGIBLE SECTORS

The Challenge supports GHG mitigation projects in a number of sectors. The list of eligible sectors below is not exhaustive. If the project does not correspond to one of the sectors listed below, the sector must be described in the online application form.

To determine whether a sector that is not listed below is eligible, the list of ineligible sectors that follows this one may also be consulted.

LIST OF ELIGIBLE SECTORS

Building energy efficiency and fuel switching

- Residential and commercial retrofits, including fuel switching
- Social housing retrofits, including fuel switching
- Municipal building retrofits, including fuel switching
- Government buildings retrofits, including fuel switching
- Universities/Schools/Hospitals (USH) retrofits, including fuel switching

Industrial

- Energy efficiency
- Fuel switching
- Process changes

Forestry

- Enhancing carbon sinks in the forestry sector (e.g., afforestation, reforestation, changes to forest management)
- Reducing GHG emissions in the forestry sector

Agriculture

- Enhancing carbon sinks in the agriculture sector
- Reducing GHG emissions in the agriculture sector

Waste

- Methane capture
- Organics diversion

Transportation

- Heavy-Duty Vehicle (HDV) retrofits, including energy efficiency and/or fuel switching
- Marine vehicle retrofits, including energy efficiency and/or fuel switching
- Rail retrofits, including energy efficiency and/or fuel switching

Low-emissions fuel production

- Renewable natural gas production for own-use
- Liquid renewable fuel production for own-use
- Other low-carbon fuel production for own-use

Electricity and/or energy production

- District heating systems
- Combined heat and power for own use
- Renewable energy systems (e.g., solar photovoltaic (PV), solar hot water systems, wind, micro-hydro) for own-use



The following sectors are ineligible for the Challenge.

LIST OF INELIGIBLE SECTORS

Building energy efficiency

- New residential, commercial or institutional construction

Waste sector

- Increased recycling

Transportation

- Electric Vehicle (EV) and alternative fuel infrastructure
- New vehicles
- Active transport (e.g., biking or pedestrian infrastructure)
- Public transit infrastructure and vehicles

Low-emissions fuels

- Fuel transportation infrastructure
- Low emissions fuels for sale on market

Electricity and/or energy production, transmission and distribution

- Electricity production for sale on market
- Transmission and distribution (T&D) infrastructure

3.3 ELIGIBLE ACTIVITIES AND TECHNOLOGIES

Eligible activities considered for funding under the Challenge must be based on the implementation of specific activities/technologies that have demonstrated effectiveness in obtaining direct GHG emissions reductions. As such, research activities or more general projects, such as those aiming to build capacity or educate Canadians will not be considered.

The project must meet the following key requirements:

- **The project must make use of commercially available technologies:** the Challenge will only fund projects using technologies at the [Technology Readiness Level \(TRL\) scale 8 or above](#). In order to minimize uncertainty and risk, the Challenge will not support projects that make use of technologies that are still being developed or are under demonstration.
- **The project cannot include research, development and demonstration (RD&D) elements:** Projects with RD&D activities are not eligible for funding under the Challenge. Any RD&D activities aimed at demonstrating the effectiveness of a product or technology used as part of the project must be concluded prior to the Formal Proposal. Any concurrent RD&D activities must be excluded from the project scope and costs, and project results (e.g., GHG emissions reductions) cannot be dependent on these activities.



- **The project cannot include standalone educational or capacity building elements:** In order to focus on activities that result in direct GHG emissions reductions, the Challenge will not fund general, standalone educational or capacity-building projects. However, it should be noted that technical staff or end-user training directly related to the implementation of the project is not considered a “standalone” element.
- **The project cannot include a standalone feasibility study or other prospective studies:** Standalone feasibility or engineering studies are not eligible for funding under the Challenge and cannot be included as an element of a proposed project. The project cannot be dependent on any preliminary studies aimed at informing the decision of whether or not to go forward with the initiative. Such studies must be completed before the Formal Proposal is submitted.
- **The project must result in measurable GHG emission reductions towards Canada’s 2030 target:** The Challenge will fund projects that reduce GHG emissions in Canada. Project assessment will consider both cumulative GHG reductions caused by the project and annual emissions reductions in 2030. GHG emissions reductions that take place outside of Canada, such as those stemming from the use of products or technologies exported to other countries, will not be considered.
- **The project or portfolio of projects must be identified before the Formal Proposal is submitted:** The Challenge will only fund projects where activities, investments, and locations have been confirmed. Incentive programs and/or projects yet to be selected via a call for proposals or an application-based process are not eligible for funding. Applicants can put forward activities at the EOI stage that have not been confirmed; however, the Formal Proposal must provide confirmed project details.
- **The project cannot include the construction of new buildings:** The Challenge will not fund projects for which GHG emissions reductions are achieved based on the construction of new buildings (e.g., reductions stemming from building beyond code or via carbon sinks in wood buildings). However, new buildings which are necessary as part of projects that aim to reduce GHG emissions through other methods (e.g., municipal waste, energy efficiency in industrial processes) are acceptable.
- **The project cannot include endowments, revolving funds, financing, loans and loan guarantees:** The Challenge will only reimburse eligible expenses incurred for a specific project.

3.4 ELIGIBLE RECIPIENTS

Applicants for both the Champions and Partnerships streams must fall within the following list of eligible recipients. Recipients may further distribute federal funds to eligible ultimate recipients subject to ultimate recipient agreements (see section 3.6 for more details on ultimate recipients). It should be noted that federal public administration entities, as identified in the Financial Administration Act, are not eligible.



ELIGIBLE RECIPIENTSS	SHORT TITLE USED IN THE ONLINE APPLICATION TOOL	ELIGIBILITY BY STREAM	
		CHAMPIONS	PARTNERSHIPS
Provinces and territories	<ul style="list-style-type: none"> • Provincial government • Territorial government 	•	
Regional entities delivering municipal type services, local, or regional municipal governments established by or under provincial statute or territorial statute, or regional municipal organizations	• Regional/local/municipal government with population of 99,999 or below	•	•
	• Regional/local/municipal government with population of 100,000 or above	•	
First Nations, Métis and Inuit communities; First Nations, Métis and Inuit development corporations; Indigenous organizations; modern land claim organizations; band or tribal councils; modern treaty signatories; and self-governing First Nations	• First Nations, Métis and Inuit government, community or organization);	•	•
Public sector bodies or boards that are established by or under provincial or territorial statute or by regulation or are wholly owned by a province, territory or local or regional government	• Public sector body or board	•	
Canadian not-for-profit non-governmental organizations (NGOs), such as provincial and territorial municipal associations, professional and industry associations, and educational institutions in partnership with a provincial or municipal government	• Private sector not-for-profit	•	•
Canadian for-profit organizations with established businesses in Canada	• Private sector for-profit small business (1 to 99 employees)	•	•
	• Private sector for-profit medium business (100 to 499 employees)	•	•
	• Private sector for-profit large business (500 employees or more).	•	



3.5 PARTNERING AND JOINT PROPOSALS

A lead applicant can partner with other eligible recipients to submit joint proposals under the Challenge – for example, to leverage capacity and/or economies of scale. In this situation, a lead applicant must be identified for the purposes of applying and signing the funding agreement and for ongoing project implementation.

It should be noted that a joint proposal, which is comprised of a lead applicant and partner applicants, is different from a proposal submitted by a group of organizations forming a single legal entity. The latter would be considered as submitted by a single applicant without partners.

Formal Proposals must clearly delineate the portion of the project costs per assets owned by each of the partner applicants. The calculation of cost sharing for joint proposals is explained in section 4.4 Cost Sharing.

3.6 ULTIMATE RECIPIENTS

Eligible ultimate recipients include all recipients described in section 3.4 as well as individual Canadians. Ultimate recipients do not apply directly to the Challenge, but receive their funding from recipients who have been awarded Challenge funding.

4. FUNDING PARAMETERS

4.1 MINIMUM AND MAXIMUM LCEF FUNDING LEVELS

For the Champions stream, federal contributions will be no less than \$1 million and no more than \$50 million per project for each funding agreement.

For the Partnerships stream, federal contributions will be no less than \$1 million and no more than \$10 million per project for each funding agreement.

4.2 ELIGIBLE PROJECT COSTS

Only project costs incurred between the effective date of the signing of the funding agreement and March 31, 2022 will be considered as eligible costs.

Eligible expenditures are costs considered by ECCC to be direct and necessary for the successful implementation of an eligible project. These costs may include:

- staff salaries and benefits paid to staff for incremental work directly related to the project where the recipient can demonstrate value for money;



- management and professional service costs, such as accounting, communications, official languages translation, audit charges, GHG emission reductions and energy savings estimate verification, and results monitoring, measuring and reporting;
- material and supplies costs;
- equipment and capital assets purchase or rental;
- vehicle rental and operation costs;
- contractors required to perform activities related to the project;
- any GST/HST that is not reimbursable by Canada Revenue Agency and any PST not reimbursable by the provinces; and
- other costs necessary to support the purpose of the funding, as approved by the Minister.

4.3 INELIGIBLE PROJECT COSTS

Ineligible costs include the following:

- costs incurred for cancelled projects;
- land acquisition; leasing land, buildings or other facilities; leasing equipment other than equipment directly related to the construction of the project; real estate fees and related costs;
- financing charges, legal fees, loans, loan interest payments, loan guarantees, including those related to easements (e.g., surveys);
- costs for services or work normally provided by the recipient, incurred in the course of implementation of a project, except those specified as eligible expenditures;
- overhead and administrative costs;
- costs associated with operating expenses and regularly scheduled maintenance work; and
- provincial sales tax and GST/HST, for which the ultimate recipient is eligible for a rebate, and any other costs eligible for rebates.

It is important to note that all costs incurred prior to the signing of a funding agreement between the recipient(s) and ECCC are ineligible for funding under the Challenge. This includes any costs related to a contract signed prior to the funding agreement.

4.4 COST SHARING

The maximum level of assistance, from all federal sources of funding, is calculated based on which recipient or ultimate recipient owns the assets benefitting from the project, as per the following table:



CATEGORY OF RECIPIENT OR ULTIMATE RECIPIENT WHO OWNS THE ASSET BENEFITTING FROM THE PROJECT	MAXIMUM LEVEL OF FEDERAL ASSISTANCE AS A PERCENTAGE OF TOTAL ELIGIBLE EXPENDITURES
Provincial government	50%
Territorial government	75%
Regional/local/municipal government	40%
First Nations, Métis and Inuit government, community or organization	75%
Public sector body or board	50% for a provincial body or board 75% for a territorial body or board
Not-for-profit organization	40%
Private sector for-profit	25%
Individual Canadian	25%

How to calculate the cost sharing when assets are owned by multiple categories of recipients or ultimate recipients?

Although not required at the EOI stage, Formal Proposals must clearly indicate what portion of the project costs will be spent on assets owned by each recipient and/or ultimate recipient.

If all the assets are owned by the same category of recipients/ultimate recipients, the cost sharing will be calculated based on that category. If different assets are owned by different categories of recipients, the cost sharing will be calculated based on all applicable categories, proportionally. If the same asset is co-owned by different categories of ultimate recipients, the cost sharing will be calculated based on the category with the lowest level of assistance.

4.5 INCREMENTALITY REQUIREMENT

The project must be incremental to any existing or already planned projects. To demonstrate incrementality, applicants will be required to attest at the Formal Proposal stage that their organization had not already made a decision to implement the project and that it cannot go forward without LCEF funding.

If the project is an expansion of existing activities, the project description must clearly delineate between the existing activities and the proposed new ones.

Costs and results associated with existing activities cannot be included in the project scope. This will be important in determining if the project meets the LCEF’s cost-sharing parameters and in estimating GHG results. See the example below.



Example: A for-profit organization has an existing \$10M project that is expected to result in a reduction of 1 Mt of GHG emissions, and is seeking LCEF funding for a \$4M expansion of this project, which would add 0.4 Mt in reductions.

The project description submitted to the LCEF must make it clear that the funding requested is only for the \$4M expansion. As per the cost-sharing parameters detailed in section 4.4, the LCEF contribution can cover up to 25% of the total project cost for a for-profit organization, in this case a maximum of \$1M. The project would be considered to contribute 0.4Mt in emissions reductions.

Example calculation of cost-sharing and results for project expansion

	EXISTING PROJECT	EXPANSION	TOTAL PROJECT	FUNDING SOUGHT AND RESULTS CONSIDERED
Cost	\$10M	\$4M	\$14M	25% of \$4M (eligible project costs) = \$1M (funding sought from LCEF)
GHG emissions reductions in 2030	1 Mt	0.4 Mt	1.4 Mt	0.4 Mt (results considered for the complete expansion)

5. GREENHOUSE GAS ASSESSMENT

5.1 OVERVIEW

This section provides general guidance for the development of initial estimates of GHG reductions for the EOI.

This guidance is based on [ISO 14064-2:2006: Greenhouse gases-Part 2: Specification with guidance at the project level for quantification, monitoring, and reporting of greenhouse gas emission reductions or removal enhancements and the GHG Protocol on Project Accounting](#). While applicants are encouraged to consult these internationally recognized standards to learn more about GHG accounting, this section is intended to provide the information and guidance necessary for completion of the EOI application.

Detailed methodological guidance as well as sector-specific input templates will be provided to applicants invited to submit a Formal Proposal.

5.2 RELEVANT GHGS

The LCEF is focused on GHGs listed under the United Nations Framework Convention on Climate Change and Canada’s National Inventory Report (see list below).



GHGs in Canada’s National Inventory Report

GREENHOUSE GAS	FORMULA
Carbon dioxide	CO ₂
Methane	CH ₄
Nitrous oxide	N ₂ O
Hydrofluorocarbons	HFCs
Perfluorocarbons	PFCs
Sulphur hexafluoride	SF ₆
Nitrogen trifluoride	NF ₃

GHG sources reported under the LCEF shall be in tonnes of carbon dioxide equivalent (CO₂e), which shall be calculated using the prescribed global warming potentials listed in Appendix C.

5.3 PRINCIPLES OF GHG ACCOUNTING

The GHG assessment shall adhere to the following principles identified in the GHG Protocol for Project Accounting:

- **Relevance:** The data, methods, criteria and assumptions shall be appropriate for the quantification of GHG effects from the project.
- **Completeness:** All relevant information related to GHG estimation, including choice of baseline, shall be included in the proposal.
- **Consistency:** All data, methods, criteria, and assumptions shall be applied consistently in the GHG assessment to ensure meaningful comparisons.
- **Transparency:** All data, methods, assumptions, and calculations, shall be clearly explained in order for proposal evaluators to assess the credibility and reliability of the GHG reduction claims.
- **Accuracy:** Uncertainties shall be reduced as far as practical by using unbiased GHG measurements, estimates and calculations.
- **Conservativeness:** Assumptions, values and procedures shall be conservative to ensure that GHG reductions are not overestimated.

For additional information on these principles, refer to the ISO and GHG Protocol standards noted in 5.1.



5.4 DEMONSTRATING INCREMENTALITY OF GHG REDUCTIONS

The LCEF is not intended to provide funding to support compliance with existing federal, provincial and territorial regulations and standards. Applicants will need to attest that any project activities are not required by current regulations.

5.5 PROJECT ASSESSMENT TIME PERIOD AND LIFETIME GHGS

The GHG assessment shall determine estimated GHG emission reductions over the ‘project lifetime’(i.e., cumulative emission reductions from the first year to the last year of project operation). The last year of project operation is the last year that the completed project generates GHG reductions (as compared to the baseline). While ‘project lifetime’ depends on the type of project, it is expected to be longer than the LCEF funding period (ending in March 2022).

The applicant shall provide estimates of both the cumulative GHG reductions over the entire lifetime (adding up the annual emission reductions for each year as noted above) as well as estimated annual GHG reductions in the year 2030.

5.6 GHG ASSESSMENT CALCULATIONS

For the EOI, the applicant shall provide an overview of key assumptions, methods, criteria and calculations used in the GHG assessment; detailed information on these aspects will be needed for the Formal Proposal.

Below are the key steps of the GHG assessment.

Step 1 – Define the GHG assessment boundary

The description of the GHG assessment boundary shall include:

- The type of activity or activities in the proposed project (e.g., reduced energy use, fuel switching, waste management, establishment of forest area);
- The GHG pools, sources and sinks controlled by the project proponent (see further guidance below regarding primary effects);
- The geographic region in which emission reductions will occur; and,
- The time period(s) used for project activities in the GHG assessment (e.g., lifetime of installed equipment is x years).

Under the LCEF, the GHG assessment for each project shall account for the primary effect (i.e., the intended change(s) caused by all project activities that are under control of the project proponent). The primary effect shall include all direct and indirect emissions, as defined below:

Direct emissions: Emissions and/or removals from GHG pools, sources or sinks owned or controlled by the project proponent. Examples include:

- combustion emissions from on-site use of fuels (e.g. natural gas, oil);
- industrial process emissions from industrial activities; and
- fugitive emissions.



NOTE: For those familiar with the GHG Protocol Corporate Accounting and Reporting Standard, these direct emissions correlate with Scope 1.

Indirect emissions: Emissions and/or removals that are caused by a project activity but occur at GHG sources not owned by the project proponent (i.e. where emissions physically occur at another facility). For the LCEF, this means indirect emissions associated with purchases of electricity, heating/cooling or steam.

NOTE: For those familiar with the GHG Protocol Corporate Accounting and Reporting Standard, these indirect emissions correlate with Scope 2.

To allow the LCEF Secretariat to assess proposals on the basis of comparable emissions estimates, the GHG assessment shall not include leakage¹ nor secondary effects, such as one-time effects (e.g. emissions from construction and decommissioning), and upstream or downstream activities (e.g. from extraction and production of energy and materials)².

NOTE: For those familiar with the GHG Protocol Corporate Accounting and Reporting Standard, these secondary effects correlate with Scope 3.

GHG effects occurring outside of Canada shall not be included in the GHG assessment boundary. For example, emission reductions associated with the export of a product or technology for use outside of Canada would not be eligible for inclusion in the main project estimates. Further, international emission reductions, including purchased offsets or carbon credits, shall not be accounted in the GHG assessment.

Step 2 – Identify the baseline scenario and GHGs

The baseline scenario represents a hypothetical scenario for business-as-usual GHG emissions or removals. It is based on a scenario of existing policies (e.g. regulations, building codes), actions, technology deployment and activities that would occur in the absence of the project. The baseline is not necessarily the status quo over the GHG assessment period – the baseline should reflect the expected evolution of technologies and practices over time.

The chosen baseline should be conservative and represent the conditions most likely to occur in the absence of the proposed project. Note that applicants should be prepared to justify their chosen baseline at the Formal Proposals stage.

Step 3 – Identify the project scenario and GHGs

The project scenario estimates the expected GHG effects associated with implementation of the project. Actual GHG effects will be based on monitoring, reporting and verification of project activities during and after project completion.

The project scenario shall be consistent with the GHG assessment boundary (as defined in Step 1), and shall account for the following aspects:

1. For example: activity shifting (physical displacement of GHG generating activities that would have occurred in the baseline to other locations), market leakage (from changes in supply or demand in commercial markets) and temporal (i.e. re-release of GHGs from sequestration projects).

2. At the Formal Proposals stage, however, applicants will be invited to quantify secondary effects should they wish.



- Key project activities and how will these will affect GHG sources/sinks;
- Expected rate of adoption, level of uptake, or deployment (e.g. percentage of total stock per year, number of retrofits, etc);
- Other assumptions made and parameters used in the calculation of estimates, e.g. average home energy consumption or fixed energy savings per measure or based on past average energy savings.

Step 4 – Calculate incremental project GHG emission reductions

GHG effects resulting from the project are calculated as the difference between baseline scenario emissions and project scenario emissions. These estimates need to be calculated for annual emissions in the year 2030 and for cumulative reductions over the project lifetime.

5.7 PROJECT MONITORING, REPORTING AND VERIFICATION

Applicants selected for funding under the Challenge will be required to monitor progress and prepare annual reports that provide, at a minimum, details about project implementation and associated GHG reductions, including whether and what assumptions used to estimate GHG emissions have changed.

6. SERVICE STANDARDS AND POINT OF CONTACT

SERVICE STANDARDS

A service standard is a public commitment to a measurable level of performance that clients can expect under normal circumstances. ECCC has set three service standards for the timely and accurate delivery of the EOI phase of the Challenge under normal circumstances:

Challenge EOI service standards

SERVICE	STANDARD
General email acknowledgement	Within 5 business days of receipt
EOI determination	Within 30 business days of the deadline to submit
Invitation to submit Formal Proposal	Within 10 business days of the EOI determination

FEEDBACK IS WELCOME

LCEF encourages all applicants to share their views and welcomes questions and suggestions at ec.lcef-fefec.ec@canada.ca. Any feedback will be considered anonymously and will not impact proposals. Where relevant, answers to questions will also be posted to the [Frequently Asked Questions section of the Challenge homepage](#) page to ensure all applicants have the same information.



7. CONFIDENTIALITY

All information provided by applicants in an application, including supporting documentation, is collected by ECCC solely for the purpose of the Challenge, under the authority of the Department of the Environment Act, and will be treated in accordance with the Federal Government's Access to Information Act, Privacy Act and Library and Archives Canada Act. These laws govern the retention, use and disclosure of personal and confidential information by Federal Government institutions. It is therefore important that an applicant clearly identify and label any proprietary data, commercially sensitive information and potentially valuable results or ideas submitted to ECCC in connection with the application.

In submitting an application, the applicant or lead and partner applicant(s) consent to the sharing of all the information by ECCC with other Federal Government institutions and, subject to confidentiality agreements, to its disclosure by ECCC to selected external experts (e.g., scientific, technical, financial, marketing, commercialization, credit agencies, etc.) for the purpose of assisting ECCC with project review and evaluation and/or to determine eligibility under other Federal Government programs.





Appendices

APPENDIX A: EXPRESSION OF INTEREST – ONLINE APPLICATION TOOL GUIDANCE

The Expression of Interest (EOI) is designed to obtain preliminary information on a project to determine if it meets eligibility requirements for federal funding under the Low Carbon Economy Challenge (the Challenge) and that it has strong value for the selection process. Only applicants whose projects are consistent with the eligibility criteria and will lead to significant results that are in line with the objectives of the program will be invited to submit a Formal Proposal.

The following instructions, which mirror the structure of the online EOI form, will assist applicants in completing sections that require more explanation. All questions must be answered for the EOI to be considered. Failure to follow these instructions carefully may result in a project being deemed ineligible.

APPLICANT INFORMATION

Q 1.1 & 1.2 – Lead applicant: This is the name of the organization that will lead the application process and will be the main point of contact for ECCC during the administration of the application process.

If the organization does not exist at the time of completing this form (e.g., group of businesses), a descriptive temporary name must be included. It should be noted that the group will need to be formally established before submitting the Formal Proposal, at which point its formal legal name will be required.

The eligible recipient type must be selected as outlined in section 3.4 of this Guide.

Q 1.14 & 1.15 – Partner applicant(s): If applicable, all confirmed, or considered, partner organization(s) must be listed and all applicable partner organization type(s) must be selected. This information will be confirmed again during the Formal Proposal stage.

For more details, see section 3.5 Partnering and joint proposals.

KEY PROJECT REQUIREMENTS

The following questions are designed to determine whether a project is eligible. If the answer to one of the questions does not match the eligibility criteria for the Challenge, the applicant will not be able to continue with the application. All answers must accurately describe the project.

More explanations on the questions in this section are provided below or in other sections of this Guide, as referenced below.

Q 2.1 – Will the project make use of commercially available technology as defined in the Applicant Guide?

See section 3.3 Eligible activities and technologies.

Q 2.2 – Will this project include research, development and/or demonstration elements as defined in the Applicant Guide?

See section 3.3 Eligible activities and technologies.



Q 2.3 – Will this project include standalone educational or capacity building element as defined in the Applicant Guide?

See section 3.3 Eligible activities and technologies.

Q 2.4 – Will this project include a standalone feasibility study or other prospective studies as defined in the Applicant Guide?

See section 3.3 Eligible activities and technologies.

Q 2.5 – Will this project result in measurable GHG emissions reductions towards Canada's 2030 target?

See section 3.3 Eligible activities and technologies.

Q 2.6 – Is this project incremental (in addition) to projects for which sources of funds have already been identified?

See section 4.5 Incrementality requirement.

Q 2.7 – Will this project be compatible with cost-sharing limits?

See section 4.4 Cost-sharing

Q 2.8 – Will the project or portfolio of projects be identified before the Formal Proposal is submitted?

See section 3.3 Eligible activities and technologies.

Q 2.9 – Will all other sources of funds be secured before the funding agreement is signed?

It should be noted that, while not required at the EOI stage, confirmation of all other sources of funding (i.e., attestation, formal letter, or other) will be required prior to any agreement being signed under the Low Carbon Economy Challenge.

Q 2.10 – Will any of the funds be used for an endowment or revolving fund, or to provide financing, loans or loan guarantees?

See section 4.3 Ineligible Project costs.

Q 2.11 – Will this project include the construction of new buildings as defined in the Applicant Guide?

See section 3.3 Eligible activities and technologies.

PROJECT INFORMATION

Q 3.4 & 3.5 – Sector(s): Under Q 3.4, all sector(s) that apply to the project must be selected. Under Q 3.5, the applicant must indicate which of the sectors selected under Q 3.4 best describes the project, or where the largest amount of funding will be spent.

If the applicable sector(s) is/are missing from the list provided, the applicant must choose "other" and type the answer.



The list of eligible and non-eligible sectors is provided in section 3.2 of this Guide.

Q 3.7 – Ultimate recipients: All applicable categories from the list of eligible ultimate recipient(s) must be selected, as described in section 3.6 of this Guide.

Q 3.8 & 3.9 – Project start and end dates: This corresponds to the scope of the project. This time period cannot go beyond that of the eligible project costs described under section 4.2 (i.e., project costs must be incurred between the date upon which the funding agreement is signed and March 31, 2022).

If a date beyond March 31, 2022 is provided, the applicant will not be able to continue with the application. More explanations are provided in section 3.1 Project scope.

PROJECT COSTS

Q 4.1. Total estimated eligible costs for the project (in \$) – This amount must take into consideration all the information in section 4 Funding parameters.

Q 4.2 Contribution sought from the LCEF (in \$) – Total contribution sought from the Challenge, based on the estimated total eligible project costs and the calculation of cost sharing as explained in section 4.4 Cost sharing.

If an amount outside of the allowed range of \$1-50M is provided, the applicant will not be able to continue with the application.

GHG EMISSIONS REDUCTIONS

Q 5.1 Summary of GHG emissions reductions impact – This should briefly explain how the proposal will lead to GHG emission reductions. In particular, this should describe how reductions will take place in Canada in 2030 and why they are incremental to any existing or announced activities, policies or regulations.

For each activity in the proposed project, this summary should provide a short description of the estimated lifetime of the project's GHG impacts and how the project will result in a change to GHG emissions or removals over this period. At a minimum, impacts until 2030 should be described.

It is not necessary to quantify the GHG impact in the response to this question, only to describe narratively how the project will contribute to a reduction in GHG emissions and/or increased removals. The response must include information on how the activity goes beyond existing policies or regulations (i.e., is incremental), as well as a brief description of the conditions that would occur in the absence of the activity (i.e., a baseline). The baseline is necessary to understand the GHG impact of an activity and may be based on factors such as current or expected future policies, actions, technology deployment etc. The GHG impact of the activities will be the difference between the baseline and the project GHGs.

To help draft the answer to this question, examples of responses are provided below.

Example A: Industrial operation seeking to retrofit less energy efficient equipment

Storage Solutions Canada is a medium sized manufacturer seeking funding to retrofit equipment in our operation. The proposed project will partially fund the purchase and installation of several high efficiency natural gas boilers to replace the current old heavy fuel oil boilers which are less energy efficient. Along with the replacement of the boilers, a heat recovery system will be added to the plant, as well as a new



automated controller which will more efficiently manage heat demand. The project will result in substantial energy savings based on the difference in energy use of the old inefficient equipment in comparison to the new high efficiency equipment. The efficiency improvement will directly translate to reduced energy use. Emission reductions will arise from more efficient combustion of a cleaner-burning fuel and reduced energy demand from improved controls. Our baseline scenario assumes the plant would continue to operate with current equipment for the next fifteen years. Without LCEF funding, these retrofits will not take place as they are not cost-effective on their own and there is currently no requirement to replace or upgrade the current equipment in the jurisdiction that the plant is located in, or an alternative source of funding support.

Example B: Municipality seeking funding for home retrofits

Our “Think Green” project will cost share energy efficiency upgrades with 1000 pre-identified homeowners towards a deep green retrofit approach that will result in at least a 40% reduction in space and water heating energy consumption, and their associated GHG emissions. The project will focus first on improving the building envelope by increasing insulation in above grade walls and attics, and where feasible, basement walls and floors. Where warranted, older, less efficient space, water heating and ventilation equipment will be replaced with newer, ENERGY STAR certified products.

The project will fund retrofits in residential homes that have already been identified as needing upgrades. The homes currently have a wide variety of energy efficiency levels. They also have high levels of air leakage. Past data also tells us that most of their energy use is for space heating due to lack of insulation in walls and attics, as well as older, leaky windows. The other major energy consumer in these homes is water heating due to use of older, less efficient equipment.

This information will be used as the baseline when we calculate the impact of the project. Our baseline assumes that all participating homes would continue using energy at current rates as these retrofits are not cost-effective without the requested LCEF funding and there are currently no requirements for energy retrofits in this province. The lifetime of the project’s GHG impacts is estimated at 20-40 years depending on specific measures, based on experience with utility retrofit programs.

Q 5.2 Methodology for estimating reductions – The methodology should include information on the approach used to estimate the project’s GHG emission reductions. The estimate for the EOI can be calculated using basic assumptions. A full GHG assessment will be required at the Formal Proposal stage, as well as a complete description of the estimation approach including details on assumptions and calculations. It is expected that GHG estimates could change between the EOI and the Formal Proposal. The assessments at both application phases will need to take into consideration the main sources and /or sinks affected by the activities of the proposed project.

For more guidance, see Section 5 – Greenhouse gas assessment.

To help draft the answer to this question, examples of responses are provided below.

Example A: Industrial operation seeking to retrofit less energy efficient equipment

The project consists of three elements:

- replacement of several heavy oil boilers with high efficiency natural gas boilers
- addition of a heat recovery system
- addition and implementation of an automated controller



For the Expression of Interest (EOI), the approach we used to estimate the project GHG emission reductions is a simplified version of the assessment we intend to use for the Formal Proposal.

- We know that each current HFO boiler has annual GHG emissions of approximately 20,000 t CO₂e and the expected high efficiency natural gas boiler would have annual GHG emissions of approximately 4,000 t CO₂e, at nameplate capacity in both cases. The anticipated annual GHG savings would be approximately 16,000 t CO₂e.
- We assume the heat recovery system coupled with the automated control could contribute to an additional 15% efficiency savings, equivalent to 3,000 t CO₂e annually, which would bring the anticipated annual GHG savings to approximately 19,000 t CO₂e. Energy savings are assumed to start in 2020.
- The emission reductions in 2030 are estimated at 19,000 t CO₂e.

The cumulative GHG emission reductions over the 15-year lifetime of the project impact are 285,000 t CO₂e.

Example B: Municipality seeking funding for home retrofits

For this project, we have assumed the boundary to be the energy consumption of each house. We are not including any energy consumption associated with the manufacture or transportation of products that will be installed in the homes.

For the baseline, we assumed that all 1000 houses scored an EnerGuide 40 rating and consumed, on average, 160 GJ per year, and that the breakdown of energy consumption is as follows:

- 90 GJ – space heating
- 30 GJ – water heating
- 25 GJ - electrical loads (lighting, appliances – this is a standard of the EnerGuide system)
- 15 GJ – ventilation

For the project scenario, we assumed that space and water heating energy consumption decreases by 40%, therefore it reduces from 120 GJ to 72 GJ (difference of 48 GJ), per house. We also assumed that ventilation loads decrease by 5 GJ (or 1389 kWh), per house.

To calculate associated GHGs, we assumed that space and water heating use natural gas, and remaining loads are all electrical (from the electrical grid), with the following emission factors:

- Natural gas: 1902 g/m³
- Electrical grid: 150 g/kWh

To quantify the GHG reductions, we calculated the difference in energy consumption by energy type and multiplied it by its corresponding emission factor:

- For space and water heating - energy saving of 48 GJ:
 - $[48 \text{ GJ} \times (26.5 \text{ m}^3/1 \text{ GJ})] \times [1902 \text{ g/m}^3] \times [1 \text{ t}/10^6 \text{ g}] = 2.4 \text{ tonnes}$
- For ventilation savings - energy saving of 1389 kWh:
 - $[1389 \text{ kWh}] \times [150 \text{ g/kWh}] \times [1 \text{ t}/10^6 \text{ g}] = 0.2 \text{ tonnes}$
- Total savings per house = 2.6 tonnes
- Total savings for project (1000 homes), in 2030 = 2609 tonnes
- Assuming an average lifetime of 30 years, lifetime savings = 78,288 tonnes



It should be noted that these are estimates only at this time. Actual Energuide evaluations will be completed and specific retrofit measures will be identified for each house before the Formal Proposal is submitted, allowing a more precise estimate of reductions at that stage.

Q 5.3 Total estimated annual domestic GHG reductions in tonnes (CO₂e) in 2030 – Enter the estimated annual direct domestic emission reductions in the year 2030. If significant electricity indirect GHG emissions are within the project scope, the applicant shall include them here. For more guidance, see Section 5 – Greenhouse gas assessment.

Q 5.4 Total estimated cumulative domestic GHG reductions in tonnes (CO₂e) over the lifetime of the project's impact – Enter the estimated cumulative direct domestic emission reductions over the lifetime of the project's impact. If significant electricity indirect GHG emissions are within the project scope, the applicant shall include them here. For more guidance, see Section 5 – Greenhouse gas assessment.



APPENDIX B: GLOBAL WARMING POTENTIALS

GREENHOUSE GAS	FORMULA	GLOBAL WARMING POTENTIALS
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Intergovernmental Panel on Climate Change IPCC Global Warming Potentials - 100-Year Time Horizon

Carbon dioxide	CO ₂	1
Methane	CH ₄	25
Nitrous oxide	N ₂ O	298
Sulphur hexafluoride	SF ₆	22 800
Nitrogen trifluoride	NF ₃	17 200

Hydrofluorocarbons (HFCs) IPCC Global Warming Potentials - 100-Year Time Horizon

HFC-23	CHF ₃	14 800
HFC-32	CH ₂ F ₂	675
HFC-41	CH ₃ F	92
HFC-43-10mee	CF ₃ CHFCHFCF ₂ CF ₃	1 640
HFC-125	CHF ₂ CF ₃	3 500
HFC-134	CHF ₂ CHF ₂	1 100
HFC-134a	CH ₂ FCF ₃	1 430
HFC-143	CH ₂ FCHF ₂	353
HFC-143a	CH ₃ CF ₃	4 470
HFC-152	CH ₂ FCH ₂ F	53
HFC-152a	CH ₃ CHF ₂	124
HFC-161	CH ₃ CH ₂ F	12
HFC-227ea	CF ₃ CHFCF ₃	3 220
HFC-236cb	CH ₂ FCF ₂ CF ₃	1 340
HFC-236ea	CHF ₂ CHFCF ₃	1 370
HFC-236fa	CF ₃ CH ₂ CF ₃	9 810
HFC-245ca	CH ₂ FCF ₂ CHF ₂	693
HFC-245fa	CHF ₂ CH ₂ CF ₃	1 030
HFC-3265mfc	CH ₃ CF ₂ CH ₂ CF ₃	794

Perfluorocarbons (PFCs) IPCC Global Warming Potentials - 100-Year Time Horizon

Perfluoromethane	CF ₄	7 390
Perfluoroethane	C ₂ F ₆	12 200
Perfluoropropane	C ₃ F ₈	8 830
Perfluorobutane	C ₄ F ₁₀	8 860
Perfluorocyclobutane	c-C ₄ F ₈	10 300
Perfluoropentane	C ₅ F ₁₂	9 160
Perfluorohexane	C ₆ F ₁₄	9 300
Perfluorodecalin	C ₁₀ F ₁₈	7 500
Perfluorocyclopropane	c-C ₃ F ₆	17 340

Data source: IPCC's Fourth Assessment Report - Errata (IPCC 2012).



APPENDIX C: GLOSSARY

Capacity building – Projects or project elements that result in the development and enhancement of human and institutional resources, which do not directly result in measurable GHG reductions (Section 3.3 of this Guide).

Commercially available – Currently available for purchase in the market. Technologies that are commercially available usually correspond with a level 8 or above on the [Technology Readiness Level \(TRL\) Scale](#) or higher (Section 3.3 of this Guide).

Direct GHG emissions or removals – GHG emissions or removals from sources or sinks that are owned or controlled by the project proponent (Section 3.3 of this Guide).

Educational project – Projects or project elements that seek only to educate, generate knowledge, or promote awareness, which do not directly result in measurable GHG reductions (Section 3.3 of this Guide).

Eligible costs – Project costs that meet the criteria of federal assistance, described in the program terms and conditions.

Endowment – A source of (usually non-redeemable) funding awarded to a recipient for the sole purpose of being invested. Endowments are intended to produce an ongoing source of income to be used by the recipient for purposes specified in a funding agreement.

Feasibility study – A review that evaluates the anticipated practicality, cost-effectiveness, or feasibility of a project in order to determine if it is worthwhile (Section 3.3 of this Guide).

Greenhouse gas (GHG) – GHGs are the seven gases covered by the United Nations Framework Convention on Climate Change (UNFCCC): carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).

Incrementality of Project – Projects are incremental if the proponent has not yet made a decision to implement the project and if the project cannot be implemented without the requested LCEF funding. (Section 4.5 of this Guide).

Incrementality of GHG emissions reductions – GHG emissions reductions are incremental if they will be achieved in addition to what would occur in the business-as-usual scenario and under existing policies. Incremental GHG reductions result from projects that would not otherwise occur in the absence of LCEF contributions (Section 5.6 of this Guide).

Indirect GHG reductions or removals – Emissions and/or removals that are consequences of project activities but occur at GHG sources or sinks not controlled by the project proponent. For the LCEF, this includes indirect emissions associated with purchases of electricity, heating/cooling or steam.

Pilot project – A preliminary trial of a project conducted in the early stages of development used to test performance and evaluate feasibility.

Research, Development and Deployment (RD&D) – Refers to activities surrounding the initial stages of new technology development, idea generation, and testing (Section 3.3 of this Guide).



Removal – Removal of GHG emissions from the atmosphere through sequestration or absorption, such as when CO₂ is absorbed by biogenic materials during photosynthesis

Sink – An asset or process that increases storage or removals of GHGs from the atmosphere.

Source – Any process, activity, or mechanism that releases a GHG into the atmosphere.

Stacking – Acquiring more than one source of federal financial assistance through contributions, whether provided by one or multiple federal departments or agencies (Section 4.4 of this Guide).

Technology Readiness Level scale (TRL) – A **ranking system** that rates technological maturity based on its status from inception to commercially available (Section 3.3 of this Guide).

Ultimate recipients – Eligible ultimate recipients include all recipients described in section 3.4 as well as individual Canadians. Ultimate recipients do not apply directly to the Challenge, but receive their funding from recipients who have been awarded Challenge funding.

Verification – Confirming, through assessment, that the GHG reductions expected from the project are being met (Section 5.7 of this Guide).



APPENDIX D: ACRONYMS

ACRONYMS FOR GREENHOUSE GASES

CH ₄	methane
CO ₂	carbon dioxide
GHG	greenhouse gas
HFC	hydrofluorocarbon,
N ₂ O	nitrous oxide
NF ₃	nitrogen trifluoride
PFC	perfluorocarbon
SF ₆	sulfur hexafluoride

OTHER ACRONYMS

ECCC	Environment and Climate Change Canada
EOI	Expression of Interest
EV	Electric vehicle
GST	goods and services tax
HDV	Heavy-duty vehicle
HST	Harmonized sales tax
LCEF	Low Carbon Economy Fund
LDV	Light-duty vehicle
Mt	Megatonne
NGO	Non-governmental organization
PCF	Pan-Canadian Framework on Clean Growth and Climate Change
PST	Provincial sales tax
PT	Provinces and territories
TD	Transmission and distribution
USH	Universities, schools and hospitals

