



Canada Foundation for Innovation
Fondation canadienne pour l'innovation

2012 Leading Edge and New Initiatives Funds Competition

Call for proposals

September 2011

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COMPETITION DESCRIPTION

Context

The Canada Foundation for Innovation (CFI) invests in state-of-the-art infrastructure. These investments allow institutions to capitalize on their areas of strength and enhance their research or technology development capacity to remain internationally competitive. The research or technology development enabled by CFI funding creates the necessary conditions for sustainable, long-term economic growth, including the creation of spin-off ventures and the commercialization of discoveries. It supports improvements to society, quality of life, health, the environment, and public policy.

CFI-funded infrastructure helps attract top researchers to Canadian institutions and contributes to Canada's global research reputation. Institutions must maintain this status in order to continue to perform world-class research and technology development. To support this objective, the CFI's 2012 Leading Edge and New Initiatives Funds competition will invest in innovative infrastructure projects that sustain and enhance areas of activity in which the CFI has already invested and provide support to explore promising new research directions. It is important to note that previous CFI investments have facilitated the creation or enhancement of clusters that bring people and resources together across institutions, disciplines, sectors and regions to drive advances in research and technology development.

Challenge

For this competition, the CFI challenges institutions to develop projects that sustain and enhance the research and technology development capacity created by past CFI infrastructure investments. The CFI encourages institutions to make choices and set priorities that build on their distinct research and technology development advantages.

The CFI also challenges institutions to anticipate how research and technology development may evolve and to advance projects that allow them to seize opportunities in breakthrough research or technology development activities.

CFI support through the 2012 LEF/NIF competition is intended to:

- enable researchers to undertake world-class research and technology development in areas of regional and national strength that lead to social, economic and environmental benefits for Canada, including private-sector innovation and commercialization;
- attract and retain the world's top researchers and highly qualified personnel;
- ensure the optimal use of research infrastructure within and among Canadian institutions;
- promote networking, collaboration and partnership among researchers, institutions and sectors as well as multidisciplinary approaches to research and technology development.

This competition will fund innovative and transformative infrastructure projects covering the spectrum of research and technology development activities that lead to breakthroughs and advantages for Canadians. More specifically, the focus of the competition will be to sustain and enhance the research and technology development capacity enabled through past CFI infrastructure investments at Canadian institutions. The previous investments made by the CFI may involve single or multiple awards that present an opportunity to advance the research or technology development capacity at the institution and gain a global competitive advantage.

The CFI expects that institutions will be selective and only present exceptional proposals to position themselves as global leaders in the proposed area of research or technology development. The CFI also expects that institutions will only submit proposals that are consistent with their strategic research plans and reflect their institutional priorities. Institutions will be required to identify how they have and will continue to sustain their CFI-funded infrastructure (e.g., institutional resources committed to capitalize on the proposed infrastructure). Additionally, institutions must demonstrate how they will support the areas of research or technology development being proposed for this competition (e.g., creation of new research positions or research chairs in these areas, etc.).

Definitions

Leading Edge Fund

Leading Edge Fund (LEF) proposals should support leading-edge research or technology development activities that:

- build on past CFI investments at the applicant institution and are dependent upon the results and outcomes of these infrastructure projects;
- strengthen particularly successful and productive activities in areas of institutional strategic priority and enhance the institution's competitive advantage in these areas.

Institutions will be required to include in their LEF proposals a report on the productivity of the infrastructure previously funded by the CFI. The report must include evidence of the research or technology development results and outcomes facilitated by the infrastructure and an explanation of how new investment would support innovative new activities beyond those enabled by the existing resources. For proposals that align multiple infrastructure projects previously funded by the CFI, the report must outline the need to enhance and sustain the existing capacity in the area of research or technology development and demonstrate how new investment would enable even greater synergies (i.e. the sum is greater than the parts).

New Initiatives Fund

New Initiatives Fund (NIF) proposals should support promising and innovative directions in research or technology development that:

- respond to an opportunity to participate in breakthrough research that aims to fundamentally change the current understanding of a concept of national or international importance, or to participate in the development of transformational technologies that will benefit Canadians;
- are in areas of institutional strategic priority;
- are not dependent on the results and outcomes of infrastructure projects previously funded by the CFI.

Critical dates

| Dates | Activity |
|--------------------|--|
| September 15, 2011 | Issue <i>Call for proposals</i> Online notice of intent (NOI) forms available |
| January 2011 | Online proposal forms available |
| January 20, 2012 | Deadline for the submission of notices of intent |
| April 26, 2012 | Deadline for the submission of proposals |
| November 13, 2012 | CFI Board decisions |

FUNDS AVAILABLE

Competition budget

The CFI will invest up to \$155 million in infrastructure costs for funded projects in this competition. To ensure that the competition focuses primarily on keeping previous CFI investments at the leading edge, at least two-thirds of the available budget will be awarded to meritorious LEF proposals.

The CFI will fund up to 40 percent of a project's eligible infrastructure costs.

Operating and maintenance costs

The CFI will contribute to the operating and maintenance (O & M) costs of funded projects through its Infrastructure Operating Fund (IOF). The IOF allocated will be equivalent to 30 percent of the CFI contribution to the capital cost of projects funded under the LEF and NIF.

Institutions must demonstrate that sufficient O & M resources are, and will continue to be, available in order to capitalize on the full potential of the CFI-funded infrastructure. This O & M requirement is an integral part of the review process and may influence recommendations of the Multidisciplinary Assessment Committees (MAC).

Institutional envelopes

Given the limited resources available for this competition and the significant time and effort required by institutions to design major projects and prepare proposals, the CFI will place an upper limit on the total value of the funding that an eligible institution may request from the CFI for LEF and NIF proposals combined. Although at least two-thirds

of the available budget will be awarded to meritorious LEF proposals, there is no pre-set allocation between the two funds to allow institutions maximum flexibility.

ELIGIBILITY

Institution eligibility

Canadian universities, colleges, research hospitals and non-profit research institutions that have been recognized as eligible by the CFI can apply. These institutions must have submitted to the CFI:

- a signed *Institutional agreement* before submitting an NOI;
- a *Strategic research plan summary* before submitting a proposal for this competition.

Eligible CFI projects for LEF proposals

LEF proposals will build on past CFI investment(s) made through any previous CFI funding mechanisms. These previously funded projects will have been operational and functional for an appropriate period of time, as determined by the nature of the infrastructure and the area of research or technology development. In proposals that build on multiple previous investments, the previously awarded projects are expected to be in the same or related areas. The 2012 proposal will advance the research or technology development capacity at the institution and create an opportunity for the institution to gain a competitive advantage.

LEF proposals can build on either the infrastructure previously funded by the CFI, or on the results of the research or technology development activities performed using the infrastructure that was previously funded by the CFI.

Eligible infrastructure

An eligible infrastructure project involves the modernization, acquisition, development or leasing of research infrastructure. The eligible infrastructure represents a new capital asset and provides new and/or improved research capability, including research tools and/or research facilities.

Given the limited funds available and the focus on sustaining and enhancing previously funded infrastructure, construction costs to build new space will not be eligible in this competition. However, renovations, including fitting out existing space essential to house and use the infrastructure effectively will be eligible.

To be eligible for funding, in-kind contributions from external partners and cash expenditures by the institution must have taken place on or after April 1, 2011. Expenditures are considered incurred when goods are received, services have been rendered or work has been performed.

High performance computing

Although high performance computing (HPC) infrastructure may be requested in this competition, the CFI expects HPC infrastructure to be housed and managed by Compute Canada. Therefore, institutions wishing to submit an HPC proposal must do so in collaboration with [Compute Canada](#).

For the purposes of these guidelines, high-performance computing (HPC) infrastructure encompasses any computing system with capabilities larger or more powerful than typically available in a standard desktop system. Such HPC infrastructure normally includes systems or resources such as the following:

- Capacity or throughput computing
- Capability computing supporting tightly coupled, fine grained applications
- Shared memory systems
- Systems supporting very large memory requirements
- High-performance storage
- Long-term storage
- Cloud computing
- Computing using specialized accelerators including GP-CPU and others
- High-performance visualization systems
- Systems suitable for computational steering and interactive use

Typically, such systems cost more than \$50,000.

In each case the term HPC encompasses the software and environment needed for a given discipline to effectively utilize these types of infrastructure and encompasses needs such as high levels of data security and integrity as may be required by specific disciplines or researchers.

REVIEW AND DECISION-MAKING

Proposals should address the extent to which the project meets the competition objectives:

- Enables researchers to undertake world-class research and technology development in areas of regional and national strength that lead to social, economic and environmental benefits to Canada, including private-sector innovation and commercialization;
- Attracts and retains the world's top researchers and highly qualified personnel;
- Ensures the optimal use of research infrastructure within and among Canadian institutions; and,
- Promotes networking, collaboration and partnership among researchers, institutions and sectors as well as multidisciplinary approaches to research and technology development.

Further, proposals should clearly present the merits of the proposed project and provide sufficient information to enable reviewers to evaluate the proposal in accordance with the merit review criteria, as outlined below.

Criteria

The CFI will evaluate proposals on the basis of the three broad criteria that reflect the CFI's mandate: research or technology development; benefits to Canadians; and capacity for innovation. To be considered for funding, a proposal must satisfy all three criteria to a degree commensurate with the size and complexity of the proposal.

1. Research or technology development

- The research or technology development opportunity is timely and has the potential to lead to breakthroughs. The proposed activities are innovative and at the leading edge internationally.
- The principal users of the infrastructure are experts in the relevant research or technology development domains. The team has the necessary expertise, ability and relevant collaborations and partnerships in place to successfully conduct the research or technology development programs.

2. Benefits to Canadians

- The research or technology development programs lead to tangible benefits for society, health, the economy and/or the environment.
- Appropriate measures are in place to transfer the research results and outputs of the technology development to end users in a timely manner.

3. Capacity for innovation

- The infrastructure is necessary and appropriate to conduct the research or technology development programs. The use of the infrastructure will be maximized within and among institutions and sectors (private, public and non-profit).
- The institution has made, and will continue to make, tangible and significant commitments in support of this area of strategic priority. The proposed infrastructure will be effectively managed, operated and maintained for its useful life.

In addition, and in accordance with these criteria, LEF proposals will demonstrate how the research and technology development capacity, enabled through past CFI infrastructure investments, will be enhanced and sustained. Proposals will also demonstrate how these past investments have enabled the institutions and their researchers to gain an international competitive advantage.

In selecting proposals for the 2012 LEF/NIF competition, institutions should take into consideration the current capabilities at the institution, in their region and across the country, (where appropriate) to ensure that the infrastructure is shared and its use is maximized. Institutions will be required to clearly demonstrate the unique and value-added nature of the proposed research infrastructure from a local, regional, national or international perspective.

Assessment process

The CFI will initially ensure proposals are eligible and complete. The assessment of each proposal will be tailored to the nature and complexity of the proposal and will normally include three stages, outlined below.

Expert review

The first stage of review, the expert review process, is designed to assess the strengths and weaknesses of the proposals in relation to the evaluation criteria. Expert reviewers will also evaluate the performance reports (for LEF proposals). To assist the committee in assessing these reports, the CFI will provide information about the past CFI investments associated with the LEF projects.

Wherever possible, expert committees will review small groups of similar or related proposals. Written external reviews may be used when an expert committee review is not possible, or where supplementary expertise is required.

The CFI does not anticipate convening face-to-face meetings between applicants and expert committees; however, such meetings may be required for particularly complex projects. If a face-to-face meeting is deemed necessary, the institution will be advised no later than April 2, 2012.

Multidisciplinary Assessment Committee

The second stage of review involves the assessment of a large group of proposals by one of several Multidisciplinary Assessment Committees (MACs). The specific number of MACs will be determined by the number of submissions. Each MAC receives input from the expert review process and is responsible for assessing the outputs and outcomes from previous CFI awards in the area (LEF only), and for assessing each proposal against all evaluation factors and the overall competition objectives relative to other competing requests. They are tasked with identifying proposals that meet the standard of excellence for the competition and establishing the amount that should be awarded to each proposal.

Each MAC will review proposals in one of the following three categories:

- Category A: Proposals requesting less than \$2 million from the CFI
- Category B: Proposals requesting between \$2 million and \$7 million from the CFI
- Category C: Proposals requesting more than \$7 million from the CFI

The boundaries between these categories are subject to change in order to equally distribute the workload between MACs.

The members of each MAC are chosen for their capacity to assess proposals based on the three CFI criteria, and for their breadth and understanding of the research environment, the niches of innovative excellence in eligible institutions and of the breadth of impacts and outcomes from research investments across the entire landscape of research activity.

MACs are asked to base their assessment on the established criteria and to be selective. For LEF proposals, satisfactory performance of the previous CFI awards is an essential criterion for recommending proposals for funding.

To assist in the next stage of review, the MACs will also be asked to identify a subset of those proposals that are of exceptional merit. Since the MACs are instructed to be extremely selective in the proposals they deem exceptional, each MAC is limited to choosing only a few proposals in this category.

Special Multidisciplinary Assessment Committee

The third stage of review involves a review and integration of the MAC assessments by a Special Multidisciplinary Assessment Committee, the S-MAC. The S-MAC is charged with ensuring consistency among the MACs and, in instances where MAC recommendations exceed the available resources, the S-MAC recommends to the CFI Board of Directors the proposals that most effectively support the CFI's mandate, the objectives of the competition and represent the most effective portfolio of investments for Canada.

The primary role of the S-MAC is to make final funding recommendations based on strategic considerations. In building the suite of proposals, the S-MAC will consider the degree to which each proposal meets the overall objectives of the competition and will give priority to proposals that maximize the use of research infrastructure; enable world-class, multidisciplinary, and multi-sector research and technology development; and that capitalize on areas of regional and national strengths.

In making its funding recommendations to the Board, the S-MAC will be required to ensure that at least two-thirds of the competition budget is awarded to meritorious LEF proposals.

Collaboration with provinces

To coordinate the review processes and avoid duplication of review efforts, the CFI will provide committee reports, along with the names and affiliations of committee members, to relevant provincial and territorial funding authorities. Disclosure of committee reports will be made only in accordance with agreements between the CFI and provincial or territorial authorities, as permissible pursuant to paragraph 8(2)(f) of the *Privacy Act*.

In addition, representatives from the relevant provincial or territorial authorities will be invited to participate as observers throughout the expert review process and will have the opportunity to submit their respective views on proposals for consideration by the S-MAC.

The CFI encourages institutions to work with relevant provincial and territorial funding authorities as a key partner at an early stage in the planning and development of proposals.

Funding decisions

All funding decisions will be made by the CFI Board of Directors at its November 2012 meeting. Following this meeting, the review materials for each proposal will be provided to the applicant institution.

HOW TO APPLY

Institutions will manage the submission of NOIs and proposals to the CFI through the CFI Award Management System (CAMS). Please note that researchers and institutions must use this secure portal to prepare and submit the NOI as well as the proposal to the CFI.

Notice of intent

The LEF/NIF competition requires submission of a notice of intent (NOI) in advance of submission of a full proposal. The NOI is used by CFI staff to plan its assessment processes and start the recruitment of expert committee members who will assess the scientific merit of the proposal. In addition, it is used to assist in avoiding potential conflicts of interest in the review process. Consequently, it should contain accurate information about the infrastructure and its users, the proposed research or technology development as well as the expected outcomes.

The submission deadline for the NOI is January 20, 2012.

Proposal

The submission deadline for proposals is April 26, 2012.

ADMINISTRATIVE REGULATIONS AND CONDITIONS OF FUNDING

For more information on administrative regulations and conditions of funding, please see the CFI [Policy and program guide](#).

APPENDIX 1

Institutional envelopes

Given the limited resources available for this competition and the significant time and effort required by institutions to design major projects and prepare proposals, the CFI will place an upper limit on the total value of the funding that an eligible institution may request from the CFI for LEF and NIF proposals combined. Although at least two-thirds of the available budget will be awarded to meritorious LEF proposals, there is no pre-set allocation for institutional envelopes between the two funds.

The envelopes are calculated in the following manner:

- The overall envelope allocation will be three times the available budget of \$155 million (i.e., \$465 million).
 - Each institution's envelope is calculated based on its average share of research sponsored by the three federal funding agencies over the period 2007-08 through 2009-10.
- CFI-eligible institutions will have a minimum envelope of \$1 million.

Institutional envelopes include affiliated research hospitals.

Multi-institutional projects

Two or more institutions may enter into agreements to share project costs among institutional envelopes. By the NOI deadline and again by the proposal submission deadline, the lead institution must communicate to the CFI the dollar value of its share of a multi-institutional proposal as well as the names of the other participating institutions and the value of each institution's share.

Deadline to adhere to institutional envelope limits

By the NOI deadline, January 20, 2012, institutions must ensure that the total value of the NOIs being submitted is no higher than ten percent (10%) above its total envelope. Note: There will not be an online control or calculation of envelopes. At the time of submission of the proposals, April 26, 2012, the CFI will ensure that the total value of the requested CFI funding at each institution is within its envelope.

Exceptions for adhering to the institutional envelope

Should an institution choose to submit a single proposal to the competition, it will not be required to respect its institutional envelope.

Envelopes by institution

| <i>Institution</i> | <i>Envelope</i> |
|---|-----------------|
| University of Toronto (and affiliated hospitals) | \$67,600,000 |
| University of British Columbia (and affiliated hospitals) | \$46,825,000 |
| McGill University (and affiliated hospitals) | \$43,900,000 |
| Université de Montréal (and affiliated hospitals) | \$28,750,000 |
| University of Alberta (and affiliated hospitals) | \$28,400,000 |
| Université Laval (and affiliated hospitals) | \$21,950,000 |
| University of Calgary (and affiliated hospitals) | \$19,675,000 |
| University of Ottawa (and affiliated hospitals) | \$19,200,000 |
| McMaster University (and affiliated hospitals) | \$18,750,000 |
| University of Western Ontario (and affiliated hospitals) | \$17,225,000 |
| University of Waterloo | \$13,175,000 |
| Queen's University (and affiliated hospitals) | \$12,975,000 |
| University of Manitoba (and affiliated hospitals) | \$12,250,000 |
| Dalhousie University (and affiliated hospitals) | \$12,000,000 |
| Université de Sherbrooke (and affiliated hospitals) | \$9,700,000 |
| Simon Fraser University | \$8,950,000 |
| University of Saskatchewan (and affiliated hospitals) | \$8,825,000 |
| University of Guelph | \$8,375,000 |
| University of Victoria | \$7,425,000 |
| York University | \$6,025,000 |
| École Polytechnique de Montréal | \$5,525,000 |
| Concordia University | \$5,250,000 |
| Université du Québec à Montréal | \$5,025,000 |
| Memorial University of Newfoundland | \$4,925,000 |
| Carleton University | \$4,825,000 |
| Institut national de la recherche scientifique | \$4,050,000 |

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|---|-------------|
| University of New Brunswick | \$3,400,000 |
| University of Windsor | \$2,525,000 |
| Ryerson University | \$2,175,000 |
| University of Regina | \$1,600,000 |
| Brock University | \$1,575,000 |
| University of Lethbridge | \$1,475,000 |
| Lakehead University | \$1,450,000 |
| Wilfrid Laurier University | \$1,400,000 |
| École de technologie supérieure | \$1,350,000 |
| Trent University | \$1,350,000 |
| Université du Québec à Trois-Rivières | \$1,325,000 |
| University of Northern British Columbia | \$1,325,000 |
| Université du Québec à Rimouski | \$1,300,000 |
| Laurentian University | \$1,175,000 |
| All other CFI eligible institutions | \$1,000,000 |