

## Call for Research and Innovation Projects in the Field of Advanced Materials – R21

**Deadline for submission of applications: December 11, 2020 at noon**

### 1. Objectives

This call for projects seeks to support innovation in the field of advanced materials by funding research projects designed to accelerate the development of advanced materials as a practical response to some of Québec's major industrial challenges. It has been developed to help establish collaborations between industry and the research sector (universities, CCTT or public research centres<sup>1</sup>).

With a financial envelope of several million dollars, this call for projects involves two types of funding applications according to the project's technology readiness level (TRL<sup>2</sup>) measured at the beginning of the project according to the state of the art in Quebec:

- Application for funding a project with a TRL of 1 to 3 and involving at least two independent companies, one of which is established in Québec where it carries out its in-house or R&D activities, as well as at least one university or CCTT.
- Application for funding a project with a TRL of 4 to 6 and involving at least one company, which is established in Québec where it carries out its in-house production or R&D activities, as well as at least one university, CCTT or public research centre.

### 2. Procedure and schedule

- Letter of intent (page 1-2 of the form, no need to be signed), mandatory before noon, **November 13, 2020**
- Candidates must submit a COMPLETE APPLICATION before **December 11, 2020 at noon**.
- A copy of the request for additional funding must be sent to PRIMA once it has been filed.
- Results will be announced no later than the end of September 2020.

### 3. Recommended themes

In keeping with its strategic plan, PRIMA Québec recommends the submission of files dealing with the development of advanced materials applied to such key Québec sectors as transportation and infrastructure, energy, the environment, electronics, health and chemistry.

Technologies targeted by this call for projects include primarily:

- **New materials:** Polymers, elastomers, biomaterials, metals, innovative fillers, cellulosic filaments, natural and synthetic fibers, nanomaterials, quantum material, etc.

<sup>1</sup> The list of recognized eligible public research centres is available at the [following link](#)

<sup>2</sup> Definitions of different technology readiness levels (TRL) are recapped in Appendix A of this document.

- **Formulated materials or high-performance finished or semi-finished products:** Composites (TD or TP), rubbers, alloys, ceramics, smart textiles, flexible materials, membranes, thin layers, coatings, biocompatible materials, encapsulation, sensors, quantum technologies etc.
- **Implementation processes, scaling and new characterization techniques:** Additive manufacturing and 3D printing, modification and surface treatment, micro/nanofabrication, tools, new characterization tools, modeling and simulation, shaping processes, quantum calculus etc.
- **Use of artificial intelligence with advanced materials for production, integration or implementation processes or characterization technique.**

#### 4. The participants

##### Eligible candidates

Applications must be submitted by Québec research establishments. Universities, CCTTs or public research centers are eligible (If the research center is not on the list please contact a PRIMA advisor to check the status (public or private) with the MEI). They must allow the training of highly qualified personnel (HQP).

##### Eligible company

It is necessary to have at least one company with a presence in Quebec (production or R&D). Hydro-Québec is considered, by default, as a public research center. However, the latter can be considered as an industrialist under certain conditions, see appendix A for details.

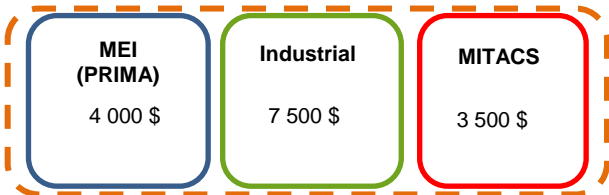
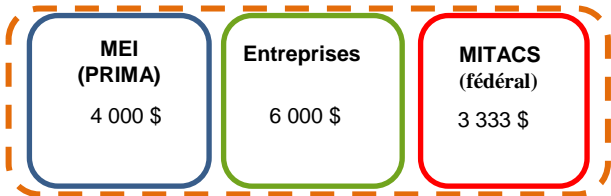
All industrial and academic organizations or public research centres participating in a project **are required to be members of PRIMA Québec at the time the project is submitted** and must remain members throughout the duration of the project.

To become a member of PRIMA Québec: <http://www.prima.ca/en/become-member>.

0-50 employees	280 CAD
51-249 employees	450 CAD
250-499 employees	650 CAD
500 employees and (+)	1 000 CAD
Universities	2 000 CAD
CCTT – Public Laboratory	1 000 CAD
Partners	380 CAD

**5. Financing Program Standards**

TRL	1 to 3	4 to 6
Minimum number of industrial partners	2 including at least 1 in Québec	1 in Québec
Eligibility of industrial partners from outside Québec	Yes, as a 2 <sup>nd</sup> company An industrial partner may not own more than 50% of another industrial partner in the project.	Yes, as a 2 <sup>nd</sup> company An industrial partner may not own more than 50% of another industrial partner in the project.
Minimum number of Québec academic partners (university or CCTT or public research centres)	1	1
Eligibility of public research centres alone	NO The public research centre must collaborate with a university or CCTT	YES provided the project involves the training of HQP
PRIMA Québec financing maximum, in %, of eligible R&D costs	40%	20%
Minimum industrial financing	20% <u>in cash</u> The cash contribution of any of the partners <u>cannot exceed 80% of the total industrial contribution.</u>  The contribution of a company that has been paid to it as part of a government grant will not be considered an industrial contribution.  Money from another government agency is not accepted.	40% including <u>maximum 20% in-kind</u>  The contribution of a company that has been paid to it as part of a government grant will not be considered an industrial contribution.  Money from another government agency is not accepted.
Maximum cumulative public financing	80%	
Complementary financing encouraged	NSERC (ALLIANCE, ARD, Canada Research Chairs, etc.), NRC-IRAP, other municipal, provincial or federal funding sources. Any additional funding must be added to the PRIMA request (thematic and budget) once the additional funding has been deposited.  <u>It is necessary to specify in the request for additional funding that an application to PRIMA has been submitted and the supplementary financing budget must include funding from PRIMA.</u>  <b><u>Only new industrial contributions for new projects will be recognized as consideration.</u></b> OR MEI aid must be granted in return for new industrial inputs (not already committed as co-financing in other programs or	

TRL	1 to 3	4 to 6
	<p>projects).</p> <p>Supplementary financing:</p> <ul style="list-style-type: none"> <li>• Cannot be financial aid from another MEI program, or a contribution already matched by the MEI.</li> <li>• Cannot be funding already committed for research activities that are distinct from those that are the subject of PRIMA's application.</li> <li>• Cannot be a contribution provided by the public research centre that is carrying out the project as support for the project.</li> <li>• Could be an aid from another department or municipality, or public entity. If you plan to use municipality fund contact a PRIMA advisor</li> <li>• For the use of MITACS or NRC-IRAP as complementary funding please contact a PRIMA advisor.</li> <li>• <u>MITACS funding can not exceed 50% of the research budget and must be divided into its components.</u> The MEI part enters in the PRIMA funding, the industrial part in the industrial funding, the MITACS part in the complementary funding.</li> <li>• <b><u>The scientific evaluation of PRIMA serves as a scientific evaluation for MITACS internships</u></b></li> </ul> <p>Division of a MITACS internship unit</p>  <p>Division of a unit of a MITACS internship cluster</p> 	
Maximum duration of projects	3 years	3 years
Maximum PRIMA Québec financing in \$ per project. <u>including indirect research expenses and management fees of the MEI</u>	\$1.5 M (\$500 K/year)	\$1.5 M (\$500 K/year)

### **Eligible Expenses**

Eligible expenses are the direct project costs (research mandate) that are incurred by public research institutions in Quebec. The salaries of university researchers who are currently paid by their institution or by a government granting agency are not eligible expenses.

### **The projects are cost-shared, and the support of the MEI covers the entire project and not just a portion of the project's research activities.**

List of eligible expenses:

1. Wages, salaries and benefits that are not the subject of any other public financial support (students, postdoctoral fellows, assistants and research professionals, technicians, etc.);
2. Scholarships;
3. Consumables and supplies specific to the project (maximum 15% of total eligible expenses);
4. Purchase (less \$ 15k per equipment) or equipment rental (maximum 25% of total eligible expenses);
5. Intellectual property management fees;
6. Fees of professionals and subcontractors;
7. Travel and subsistence expenses<sup>3</sup>;
8. Monetary compensations for project participation;
9. Dissemination fees;
10. 10. Animal and platform fees;
11. Costs related to subcontracts.

### **Indirect research expenses**

For all funded projects, PRIMA Québec will grant to the university, in addition to the research grant, a subsidy for indirect costs of research for a maximum of 27% of the grant awarded by PRIMA Québec on the following items of expenditure: salaries, student grants, small equipment, equipment rental, material, consumables and supplies, as well as travel expenses.

Note: The other financial contributors to the project must pay an indirect research expenses rate on their contribution at least equivalent to that of the MEI for the project (27%). In other words, all the funders must pay the full costs of the research, notably by paying the indirect research expenses.

### **Management costs**

It is the responsibility of the grant applicant to inform the industrial partners of the management fees of PRIMA Québec.

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<sup>3</sup> See Annex B for standards

For TRL 1-3 projects

- The industrialists involved in the project must contribute to the management fees of PRIMA Québec for a total amount of **2.4%** of the amount of research mandate.
- The management fees of the MEI are 1.6%

For TRL projects 4-6

- The industrialists involved in the project must contribute to the management fees of PRIMA Québec for a total amount of **1.2%** of the amount of research mandate.
- The management fees of the MEI are 0.3%

### **Intellectual property management**

An agreement governing conditions for the management of intellectual property must be concluded among all partners (companies, universities, research centres) before financing is awarded.

Application files will be accepted for evaluation even if an intellectual property agreement is not available at the time the proposal is submitted. Nonetheless, the application file must present a broad outline of the sharing of intellectual property under consideration.

## 6. Evaluation criteria

For each of the “TRL 1-3” and “TRL 4-6” facets, files will be selected by an independent jury based on the following criteria and in the proportions shown:

### TRL 1-3 projects:

- A. Scientific component (80% of the overall mark)
  - Scientific quality and feasibility of the project (40%)
  - Training and knowledge transfer (20%)
  - Innovation and impact of the project in the medium term (40%)
  
- B. Economic relevance component (20% of the overall score)
  - Relevance and adequacy between the project and the industry as well as the quality of the team (50% of the economic component)
  - IP strategy and economic spinoffs for industry and Quebec (50% of the economic component).

### TRL 4-6 projects:

- A. Scientific component (70% of the overall mark)
  - Scientific quality and feasibility of the project (30%)
  - Training and knowledge transfer (30%)
  - Innovation and impact of the project in the medium term (40%)
  
- B. Economic relevance component (30% of the overall score)
  - Relevance and adequacy between the project and the industry as well as the quality of the team (50% of the economic component)
  - IP strategy and economic spinoffs for industry and Quebec (50% of the economic component).

**To be eligible for funding, a project must obtain a score greater than 70% on the scientific part and on the overall score.**

## **7. Contact person**

For further information or assistance in the drafting of the application file, do not hesitate to contact an advisor:

- Michel Lefèvre : 514 284-0211, ext. 227, [michel.lefevre@prima.ca](mailto:michel.lefevre@prima.ca)
- Sébastien Garbarino : 514 284-0211, ext. 226, [sebastien.garbarino@prima.ca](mailto:sebastien.garbarino@prima.ca)
- Stéphane Ruggeri : 514 284-0211, ext. 231, [stephane.ruggeri@prima.ca](mailto:stephane.ruggeri@prima.ca)

Applications must be sent in one file in PDF format (Adobe Acrobat) by email to: [sylvie.dufort@prima.ca](mailto:sylvie.dufort@prima.ca).



## **APPENDIX A**

### **Hydro-Québec**

Hydro-Québec is considered by default to be a public research center.

However, Hydro-Québec plays an extremely structuring role in the innovation ecosystem in electricity production and distribution, a sector where it is a major client in a context of monopoly. Because of this unique situation, the MEI authorizes Hydro-Québec to be considered as an industrial partner in research projects in partnership with InnovÉÉ, PRIMA and PROMPT if the following criteria are met.

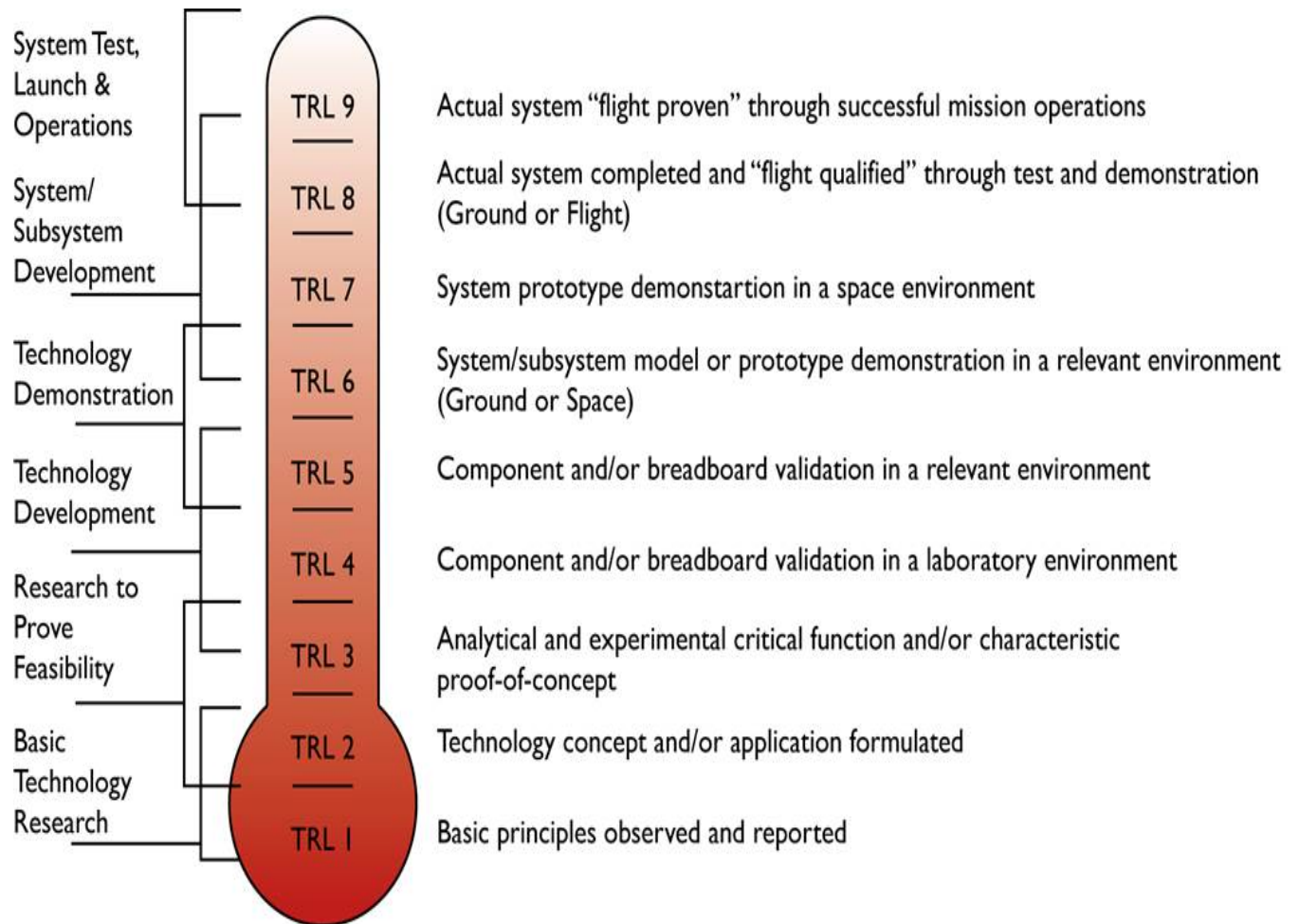
1. Themes:
  - Field of production, transport and distribution of electricity.
2. Partnership:
  - At least one Quebec company other than Hydro-Quebec must be involved in the project.
  - The Quebec company must derive significant benefits from the partnership, notably an equitable sharing of the IP.
3. Structuring and strategic nature of the projects:
  - To be eligible, projects involving Hydro-Québec must be “structuring” and aim at “solving problems of a strategic nature for Québec”. In this sense, projects whose spin-offs will allow above all the continuous improvement of Hydro-Québec operations are not eligible.

These project eligibility criteria must be analyzed by the evaluation committee and appear in the report submitted to MEI.

**Apart from this exception, all other PSov2b standards must be respected.**

**APPENDIX B**

**Definition of different technology readiness levels (TRL)**



Graphic inspired by the document: Space Systems - Definition of Technology Readiness Levels (TRL) and their criteria of assessment, ISO 16,290.

The ISO16290 standard is available for consultation at the offices of PRIMA Québec.

**APPENDIX C:**

**Details on certain eligible expenses relating to travel expenses**

**TRAVELLING EXPENSES**

Travel expenses correspond to the expenses incurred when a person travels outside his usual place of work.

This appendix relates to travel expenses related to certain modes of transport, accommodation in hotel establishments as well as meals. Other travel expenses or reimbursements higher than those established may also be deemed necessary. In all cases, unless there are exceptional circumstances, the approach adopted must demonstrate a concern for economy.

**TRANSPORT**

The use of public transportation should be preferred as it is more economical than using a personal vehicle.

When using a personal vehicle, the following rates are admissible depending on the applicable mileage:

Annual mileage	Rate
1st : from 1 to 8,000 km	0,455 \$/km
2nd : more than 8,000 km	0,410 \$/km

If an appropriate form of public transportation is available and a personal vehicle is used, the eligible rate is reduced to \$ 0.145 per kilometer traveled.

**ACCOMMODATION IN HOTEL ESTABLISHMENTS**

The maximum daily allowances are as follows for accommodation in a hotel establishment:

City	Maximum allowances	
	Low season <sup>4</sup>	High season <sup>5</sup>
City of Montreal territory	126 \$	138 \$
Quebec City Territory	106 \$	
Cities of Laval, Gatineau, Longueuil, Lac-Beauport and Lac-Delage	102 \$	110 \$
Establishments located elsewhere in Quebec	83 \$	87 \$
Any other establishment	79 \$	

<sup>4</sup> From November 1 to May 31.

<sup>5</sup> From June 1 to October 31.

**MEALS**

The maximum daily allowances are as follows for meals:

	<b>Applicable rates</b>
Breakfast	10,40 \$
Lunch	14,30 \$
Supper	21,55 \$
<b>Total</b>	<b>46,25 \$</b>

The above rates include taxes and tips.