

ONTARIO RESEARCH FUND - RESEARCH EXCELLENCE

ROUND 9 PROGRAM GUIDELINES

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OVERVIEW

The Ontario Research Fund Research Excellence (ORF-RE) program promotes research excellence of strategic value to Ontario by supporting new leading-edge, transformative, and internationally significant research.

The ORF-RE focuses on research excellence and strong benefits to Ontario. Applications are reviewed against the following criteria:

- **Research Excellence:** Scientific merit, quality of research, and expertise of research team
- **Research Impact:** Anticipated value to Ontario in the following three categories:
 - **Commercialization**
 - **Economic Benefits**
 - **Societal Benefits**
- **Achieving Impact:** A Plan for achieving Research Impact
- **Development of Research Talent:** A clear plan for the training of highly qualified personnel
- **Project Management and Governance:** Management of the project, including governance structure, sustainability, budget, and milestones

PURPOSE OF ROUND

ORF-RE Round 9 consists of three application streams. Institutions must select one stream for each Notice of Intent (NOI) form and application form. Applications can only be submitted to one stream. The three application streams are:

1. General: Open to all disciplines.

2. Disruptive Technologies: Open to proposals focused on Clean Technologies (cleantech).

The term “cleantech”, for the purposes of this funding round, is defined as any process, product, or service that reduces environmental impacts through:

- environmental protection activities that prevent, reduce, or eliminate pollution or any other degradation of the environment;
- resource management activities that result in a more efficient use of natural resources, thus safeguarding against their depletion; or
- the use of goods that have been modified or adapted to be significantly less energy or resource intensive than the industry standard.

‘Disruptive technologies’, for the purposes of this round, are those technologies that have the potential to transform or disrupt current societal behaviour and market by displacing it with a new emerging technology. Proposals submitted to the Disruptive Technologies stream, if relevant, should address any linkages between the proposed research and [Ontario’s Climate Change Action Plan](#).

3. Social Sciences, Arts and Humanities (SSAH): Open to proposals in the arts, the humanities and social sciences.

For example:

- **Social Sciences** - including economics and law - provide essential body of knowledge, necessary for proper functioning of businesses as well as for political, regulatory and socio-economic wellbeing of society;
- **Arts** - including the visual and performing disciplines, design, architecture, film, music or literature - contribute to cultural identity, enjoyment of life and quality of place, the key factors in retaining and attracting the best and the brightest minds;
- **Humanities** - including history, languages and philosophy - are essential disciplines in understanding cultural identity and proper functioning of a more ethical and democratic society.

The Ministry encourages applicants to the SSAH stream to, where applicable, address the ethical, environmental, economic, legal and/or social implications of effectively integrating and adapting disruptive technologies, as defined in this guidelines. For example: artificial intelligence and advanced software, bioengineering and genomics, advanced computing and electronics (including quantum), Internet of Things and network connectivity, and renewable resources and energy storage.

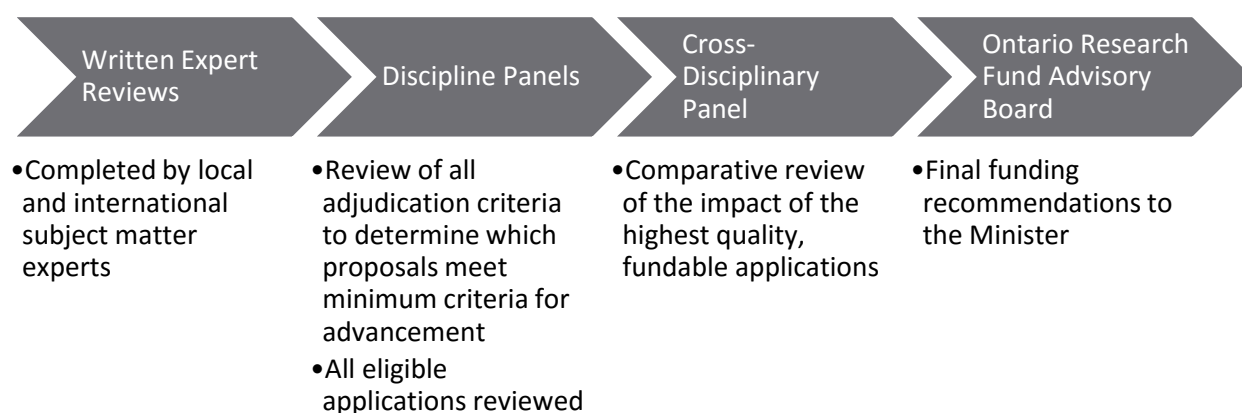
The minimum support that will be provided by the ORF-RE to a project in the General and Disruptive Technologies (cleantech) streams is \$1 million. The maximum support provided is \$4 million.

Proposals in the Social Sciences, Arts and Humanities stream are eligible to receive a minimum of \$200,000 and a maximum of \$1 million.

APPLICATION PROCESS

- Institutions submit Notices of Intent (NoIs) by May 2, 2017.
- NoIs are posted on the Ministry website to help institutions identify opportunities for meaningful collaboration on projects with similar research topics or objectives.
- Institutions submit full applications by September 25, 2017

REVIEW STAGES



There are four stages of adjudication review.

WRITTEN EXPERT REVIEWS

The first stage of review is written reviews provided by three experts, who may be located in Canada, or internationally. As much as possible, the Ministry will recruit one expert recommended by the applicant.

No applications are removed from the competition at this stage of review; the written reviews provide input to the next stage of panel review.

DISCIPLINE PANELS

The second stage of review is composed of multiple panels based on research discipline. These panels review all aspects of proposals, with an emphasis on Research Excellence and Research Impact.

In order to progress to the next stage of review, applications must demonstrate excellence in both the quality and impact of the research proposed. In addition, applications must also demonstrate a sufficient Plan for Achieving Impact, Development of Research Talent and Project Management and Governance to show that the research team is able to execute the Research Excellence and Impact innovations described, and provide an appropriate training environment.

CROSS-DISCIPLINARY PANELS

All proposals that reach this stage have demonstrated world-class Research Excellence and Research Impact in accordance with the objective of the ORF-RE program.

This panel will be tasked with recommending a portfolio of research projects with the strongest potential to support Ontario's economy and society and maximize the likelihood of positive benefit to Ontario.

ONTARIO RESEARCH FUND ADVISORY BOARD

The Ontario Research Fund Advisory Board (ORFAB) reviews the recommendations of both the Discipline Panels and the Cross-Disciplinary Panel and makes a recommendation to the Minister of Research, Innovation and Science on the portfolio of projects to fund.

The Minister of Research, Innovation and Science makes the final decisions at his/her sole discretion.

Decisions are communicated to institutions by letter to the institution's Vice President of Research or equivalent, the lead institutional contact and the Principal Investigator.

Given that ORF-RE is a discretionary, non-entitlement program, funding decisions are final and there is no appeal process.

DEADLINE DATES

The closing date for submitting a Notice of Intent (NoI) for Round 9 is May 2, 2017. This is a mandatory step, for applicants submitting a full application to any of the streams in this round of the program.

The closing date for submitting a proposal for Round 9 is September 25, 2017.

Refer to the Application Form and Appendix A of the Round 9 Program Guidelines for instructions related to preparing and submitting an application.

FUNDING

The ORF-RE program will fund eligible direct operating costs (including salaries and benefits and limited costs for facilities and equipment, management and administration), as well as a portion of indirect (overhead) costs. The program's 1/3 contribution is inclusive of both direct and indirect cost support.

The program will contribute towards eligible operating costs of an approved research project to a maximum of 1/3 of the total project costs, with 1/3 of the remainder coming from the applicant institution(s) and 1/3 from the private sector.

The Ministry may consider a "blended" funding formula in cases where the institution and its private sector partners, in combination, make up 2/3 of the required funding. This funding flexibility would be provided based on the opportunity for success and the quality of the partnership between the applicants and their private sector (other) partners and should be clearly outlined on the application.

Should the institution and its private sector partners fail to raise the needed 1/3 each or in the case of a blended formula, the required 2/3 of the total project value, the ORF-RE grant may be reduced proportionately. The ORF-RE grant will not exceed the absolute dollar value of the approved amount, even if this ends up being less than 1/3 of the total project value.

ELIGIBILITY

ELIGIBLE APPLICANTS

Funding is open, on a competitive basis, to the following Ontario institutions:

- publicly assisted universities
- colleges of applied arts and technology
- hospital research institutes
- consortia of the above, with one institution as lead applicant, assuming responsibility and accountability for the consortium

Other Ontario not-for-profit research institutes may apply to the Ministry for eligibility. All decisions regarding eligibility will be made by ORFAB. Institutions seeking eligibility for the ORF-RE Round 9 should contact the Ministry for additional information as soon as possible. In order to allow for sufficient time for the Ministry to process the request, applications for eligibility must be received at the Ministry by April 12, 2017.

For-profit organizations and agencies of for-profit entities are **not** considered eligible and cannot apply for, or receive, ORF funding.

If you are a researcher employed at a non-eligible institution and wish to apply, you must hold an academic appointment at an eligible institution and apply through that institution.

Funds contributed by the ORF-RE for approved projects are disbursed to the lead applicant institution. All research supported by ORF funds, including international initiatives, must be conducted in Ontario at an eligible institution.

ELIGIBLE DIRECT COSTS

The ORF-RE grant can be used for the following direct costs of conducting research:

- **Salaries and benefits:** claimed in proportion to the time spent working on the project
- **Facilities and equipment:** up to 10% of total direct costs
- **Other direct research costs:** including, but not limited to, materials, fieldwork expenses, and dissemination of research. Some hospitality costs may be eligible where essential for networking purposes but must adhere to the Broader Public Sector Accountability Act – 2010.
- **Management and administration:** up to 10% of total direct costs

ELIGIBLE INDIRECT COSTS

Indirect costs are overhead costs associated with conducting the research project.

Applicants can budget up to—but not more than— 40% of direct costs toward indirect costs, in line with the institution's policy on overhead charges. The ORF award is inclusive of both direct and indirect costs.

INELIGIBLE PROJECTS AND COSTS

ORF-RE will not accept applications for the following:

- contract (fee for service) research
- clinical trials
- endowed research chairs or any other endowments
- national research facilities (SNOLAB, high performance computing platforms, etc.) funded by the Canada Foundation for Innovation's Major Science Initiatives Fund
- applicants to Genome Canada's LSARP 2017 Large-Scale Applied Research Project Competition – Genomics and Precision Health

Note: specific research projects that utilize national research facilities are eligible to apply to the ORF-RE provided other eligibility criteria are met.

In addition, the ORF-RE grant is not to be used for the following:

- costs related to proposal development
- fees for use of equipment owned by the institution unless such fees are charged to all institutional users based on a published schedule
- costs related to existing facilities infrastructure improvements, not specifically related to the proposal and/or not included in the original application
- opportunity costs
- any items or services not directly related to the project
- alcohol costs at hospitality events.

ADJUDICATION CRITERIA

Applications will be reviewed against five criteria:

- Research Excellence
- Research Impact
- Plan for Achieving Impact
- Development of Research Talent
- Project Management and Governance

RESEARCH EXCELLENCE

- Scientific merit
- Proposed innovation
- Credentials and appropriateness of the research team
- Where applicable, degree of inter-institutional and international research collaboration

The application should describe what is new and significant about the proposed research and how the project compares with state of the art research in the field locally and internationally as appropriate. It should also include detail about the relevance of the research proposed, both within the national/international context and, if applicable, within the context of previous Ontario government funding or ongoing Ontario research initiatives.

The description should situate the research within the context of current advances in the discipline and explain why the research is leading edge. The application should outline how the research goals, theory and hypothesis contribute to the field from a national and/or international perspective. The applicant should describe unique features of the research environment and how these may contribute to the probability of success.

In addition, the applicant should outline how the proposed research builds on existing research capacity of the institution(s) and describe features of the proposal that build on institutional capacity and enhance research strengths the institution(s) is/are recognized for provincially, nationally or internationally. The applicant should address how the proposal aligns with current [Strategic Mandate Agreements](#) and/or direction of new SMAs for the institution(s).

If the project being proposed is a continuation of previous ORF-RE funding, detail should be provided about how the new work being proposed is different and/or builds on the previous funding. In the event that the investigator is also working on another project submitted to or currently being funded by the ORF-RE program, indicate the project's name and lead institution and specify the distribution of the investigator's involvement, should all projects be approved for funding.

For proposals that include multiple sub-projects and/or multiple research topics, a plan should be included that describes how they will be integrated and how and why the various parts of the project are relevant and necessary to the project as a whole.

RESEARCH IMPACT

- The examples of each type of value are illustrative, not exhaustive.
- Anticipated value to Ontario as demonstrated by the applicant in the three categories below. No category is considered more favourably than the others.
- Applicants may address all three categories, however applicants should emphasize those categories which are most relevant to their project.
- In all cases, impacts may be short- or long-term but timeframes for achieving impact should be specifically addressed.
- Institutions may consult their institution's industry liaison office, knowledge mobilization unit, or equivalent as well as their external partners in the completion of this section and demonstrate this engagement where appropriate.
- Applicants are encouraged to document all benefits, particularly to Ontario, associated with their proposal.

Commercialization

- Commercialization potential
- Ability to produce spin-off products and/or firms
- Likelihood of patent and licensing opportunities
- Knowledge transfer to industry
- Benefits for Ontario pertaining to above
- Market analysis if appropriate (qualitative/quantitative)
- Technology (product or process) that would be developed and how potential customers would use this invention

Economic Benefits

- Improvements to Ontario's productivity and competitiveness
- Creation of jobs
- Strategic investment in human capital
- Sustainable use of natural resources
- Improving efficiency in private and/or public sector
- Regional economic development
- Trade growth
- Enhancement to Ontario's international reputation as an innovation hub
- Expanding access to valuable data assets
- Improvements beyond the private sector partners and beyond traditional IP and commercialization agreements

Societal Benefits

- Improvements to health and well-being of Ontarians
- Improvements to/preservation of environmental quality
- Will the proposal generate GHG reductions? If so, provide details on the methodologies used to estimate potential GHG reductions (see link to Ontario's Climate Change Action Plan on page 4 of this guide)
- Reducing poverty
- Engagement and mentorship with youth

- Improving public policy
- Effecting a profound shift in the understanding of a given discipline
- Placing Ontario at the forefront of a particular research discipline from an international perspective

PLAN FOR ACHIEVING IMPACT

- A clear and tangible strategy for achieving Research Impacts.
- Engagement of private sector and/or community partners to encourage the adoption of innovative technologies, practices, procedures, and/or policies.
- The extent to which the project will ensure the next-stage recipients or end-users of the research have been and will be engaged (include letters of support as appropriate).
- Next-stage recipients and end-users may include but are not limited to:
 - Firms
 - Trade associations
 - Clinicians
 - Researchers in the scientific community
 - Non-profit organizations
 - Community/patient groups
 - Government and agencies
 - Inter-institutional partnerships between Universities and Colleges of Applied Arts and Technology
- Track record of collaboration with next-stage recipients and end-users.
- Strength and commitment of interested recipient partners, demonstrated through financial contributions and/or strong evidence of vested interest in the research outcomes.
- Plan for mitigating potential risks and limitations which may impede the ability to achieve impacts.

DEVELOPMENT OF RESEARCH TALENT

- Recruitment, retention and training of highly qualified personnel (HQP).
- Meaningful engagement of graduate and post graduate students and post-doctoral fellows.

The government has committed, through the [Highly Skilled Workforce Strategy](#), to expanding experiential learning and the strategic investment in human capital. Briefly outline your plan for strategically investing in the human capital of Ontario through the development of Highly Qualified Personnel (HQP) and use the proposal budget to support it. HQP include undergraduate students, graduate students, and post-doctoral fellows.

The plan should include the total number of HQP you plan on training over the life of the project (consistent with proposed budget and milestones) and the planned learning outcomes for HQP. Identify the expected impact that this training may have on academic research, industry, and/or society and how the meaningful engagement of HQP is integral to the project. Where possible, include examples of experiential learning, such as thesis/project topics derived from a company problem; soft skills training; first

job/internships; entrepreneurship training; collaborative research; and/or co-op placements.

PROJECT MANAGEMENT AND GOVERNANCE

- Business plan for the management of the project, including governance structure (i.e. management team, arm's length advisory board, scientific advisory committee, etc.)
- Identify the role and function of the project manager and other key project management staff
- Describe the desired or established governance structure to manage the project; e.g. independent academic committee, Board of Directors, with a manager or executive director. Provide a resume of the project manager, if known at the time of application
- Ensure the proposed governance structure is commensurate with the size, scope and complexity of the proposed project
- Include detail and confirmation that the management of the project will be accountable and will have sufficient authority and independence to ensure that public funds are used appropriately
- A sustainability plan for the research capacity that is created
- Describe the project budget, budget justification and method for ensuring accurate forecasts
- Include clear, specific and measurable milestones and deliverables and if applicable, a data management plan
- A visual of the structure is encouraged

OTHER PROJECT REQUIREMENTS

INTELLECTUAL PROPERTY (IP)

The Ministry does not claim any ownership or rights to any IP resulting from ORF-RE funded projects. Such rights are to be determined by the lead institution in accordance with its current IP policy. In cases where a consortium of applicants exists, the policy, as dictated in the Inter-Institutional Agreement (IIA) between the consortium members, will dictate the IP policy.

The applicant should describe how ownership and disposition of IP generated from the project will be determined. The Ministry may request a copy of the institutional and/or relevant IP policy.

YOUTH ENGAGEMENT AND OUTREACH

Successful applicants will be required to connect youth with researchers and may use up to 1% of the ORF grant to undertake annual youth science and technology outreach activities directly pertaining to the ORF-funded research project. The primary target audience is elementary and high school students, as they are most receptive to in-depth mentorship experiences.

Researchers can:

- engage youth audiences as well as educators and the general public both on-campus and in the local community
- expand on current outreach activities, or start new initiatives with an emphasis on activities that are free to youth and the public
- partner with other researchers in their institution(s) to undertake a broader outreach initiative
- participate in outreach activities operated by other organizations, such as science awareness organizations
- involve graduate students in outreach program design and delivery
- apply provincial contributions to expenses incurred in developing and delivering the outreach activity, e.g. consumable supplies, development of working models, mileage
- Outreach activities can also include speaking opportunities, lecture series, workshops and demonstrations, student competitions and lab mentorship

COLLABORATING INSTITUTION(S)

If applicable, name other institution(s) that will be collaborating on the project. If approved for an award, multi-institutional projects must have an Inter-Institutional Agreement (IIA) in place as soon as practically possible.

The IIA must identify and address:

- The lead institution
- Governance structure
- Intellectual Property (IP) ownership and disposition
- Control and ownership of research equipment
- Financial arrangements, including allocations of contributions, expenditures and indirect costs

RESEARCHERS' INTEREST IN PRIVATE SECTOR PARTNERS

All researchers are required to fully declare any interest they have in any of the private sector partners named in the proposal. In some cases, there may be less than arm's length relationships among certain private sector partners, institutions and researchers participating in the project (e.g. where the researcher is a part owner).

Such relationships will be reviewed on a case-by-case basis and may be acceptable, provided the partner:

- has its own physical facilities, separate from that of the researcher;
- employs its own technical staff; and
- is under the management of someone other than the researcher.

Where such relationships arise, they must be fully disclosed to the Ministry in the application.

The applicant must provide all information on the degree of ownership of researchers involved in the project and their role in the private sector company to ensure that the commercial activity is consistent with the lead institution's established policies on disclosures of commercial interests, as well as with its conflict of interest guidelines. The lead institution may be required to confirm this capability at the time of contract negotiation against criteria determined by the Ministry.

MILESTONES AND DELIVERABLES

Using simple, non-technical language, list major milestones, the significance of these milestones (where appropriate) and expected project year (year 1 through 5) of completion in the following categories:

- project management,
- research capacity building,
- research excellence,
- achieving research impacts,
- youth outreach, and
- other milestones.

Milestones will be used to monitor and determine the project's progress against a specific project work plan from the date of ORF Research Excellence funding to the project term-end date.

A milestone is defined as a significant expected event or accomplishment in the life of the project resulting from research activities or a point at which an important change or resolution occurs. Please use brief and succinct statements when describing the justification for the milestone. This may not apply to all milestones. Areas of significance to consider when building milestones include:

- Significance in advancing the science, discipline or current state of knowledge in the field of study.
- Significance to the institution's research capacity building. Will it attract, train and retain highly qualified personnel?
- Significance to the private sector partners on the project. Does it create a commercialization path/potential?
- Significance to Ontario. Will it create jobs? Will it brand Ontario as a leading jurisdiction for conducting research in the discipline/focus/area? Will it improve quality of life for Ontarians? How else will it affect the economy and society of Ontario?

In projects that have sub-projects, list milestones in chronological order under their respective sub-project. Where appropriate, a brief statement should be included which justifies the milestone in terms of the overall research project.

PROJECT BUDGET

It is essential that applicants provide their best forecast of project expenditures and contributions in the budget template. Applicants should pay particular attention to whether their timelines are realistic. The decision to allow a grant extension will be viewed in the context of the Ministry's fiscal plan, and will be reviewed on a case by case basis. Projects should not assume that extensions will be granted.

Please also note that the 'amount requested from ORF' is not necessarily the amount that will be received in that year. Projects will be subject to a final holdback amount and the actual payment will be determined based upon actual project revenue and expenses submitted through the Request for Payment process.

ANNUAL BUDGET TABLES

Applicants are required to provide a zero-based budget that details all expenses and revenue sources that will support the operating needs of the proposed project. All 'Totals' will be calculated automatically in the budget table.

EXPENSES

Please provide the amount for each category of eligible expenses that is anticipated in each year of the project. The ORF-RE grant can be used for the following eligible direct costs.

PERSONNEL

In all cases, salary and benefit expenses can only be claimed in proportion to the time spent working on the project.

Personnel costs can include salaries, stipends and related non-discretionary benefits of researchers, technical staff and management and administrative staff and assistantships for students.

The ORF funding can be used to cover up to \$20,000 for graduate student research assistants (MSc and PhDs) and \$50,000 for postdoctoral fellows (PDF). Institutions may top up the stipends extended to students and postdoctoral fellows at their discretion using other project funds.

FACILITIES AND EQUIPMENT

Up to a maximum of 10% of total direct costs may be allocated to facilities and equipment that is critically and explicitly needed to carry out the project and can include:

- Research equipment - Supplies, computer and communication equipment as well as software required for the research, including costs of purchase, refurbishment, transportation, extended warranties, importation costs, staff training for use,

maintenance and operating costs (not including indirect costs such as power, insurance, etc.)

- Cost of renovations and alterations of existing space where essential for the research
- Leased space - Or institutional contributions of space when that space is newly developed, renovated, refurbished or leased

OTHER DIRECT RESEARCH EXPENSES

Other direct research expenses can include, but are not limited to:

- Commercially-available consumable supplies, reagents, etc.
- Costs for dissemination of research results
- Costs related to ensuring open access of research results
- Costs of holding a workshop or seminar, including hospitality costs of networking purposes for research related activities (note: Alcohol is not an eligible ORF expense under any circumstance)
- Consulting services provided by any individual unrelated to any of the project partners and subcontracted to provide service or knowledge of a highly specialized nature for up to one quarter per fiscal year. They must be essential to the research and demonstrate they save the project time and money. Their fees should reflect reasonable market rates
- Honoraria for guest lecturers
- Safety related expenses for field work, including immunizations, protective gear, etc.
- Reasonable out-of-pocket expenses for fieldwork, conferences and collaborative trips
- Reasonable travel costs to visit collaborating universities/colleges or business partners for the purpose of the project (amount may be limited at the discretion of the Ministry)
- Air travel costs - not to exceed full economy fares (amount may be limited at the discretion of the Ministry)

MANAGEMENT AND ADMINISTRATION

Management and administration costs may account for up to 10% of total direct costs and can include:

- Salaries and benefits of management staff/personnel directly involved with the project
- Management and administration costs, including reasonable justifiable office supplies (amount may be limited at the discretion of the Ministry)
- Other costs, which can include items such as external financial audits of the project as defined in the grant agreement

CONTRIBUTION SUMMARY

The ORF-RE program will fund eligible direct operating costs, as well as a portion of indirect (overhead) costs. Up to an additional 40% of direct costs may be included as indirect costs. The program's 1/3 contribution is inclusive of both direct and indirect cost contributions. The maximum amount of the ORF grant that can be applied to indirect cost is 40% of the portion of the grant applied to direct costs.

As such, on a \$1M grant, the institution can take a maximum of \$285,714 from the grant toward indirect costs ($\$1,000,000/1.4 \times 0.4 = \$285,714$).

INSTITUTIONAL CONTRIBUTIONS SUMMARY

Applicants must be prepared to disclose the sources of their institutional contributions, which can include:

- Federal granting council (Canadian Institutes of Health Research [CIHR], Natural Sciences and Engineering Research Council [NSERC] and Social Sciences and Humanities Research Council [SSHRC]) awards directed to researchers of the institution where the funded research is a component of the overall ORF-funded project. The industry portion of an NSERC CRD and an NSERC Industrial Research Chair will be considered as an eligible private sector contribution.
- The non-infrastructure portion of a Canada Research Chair award to an institution if the Chair is working on the project.
- Any research funding, philanthropic gift, or grants and gifts directed in general to the research institution and earmarked by the institution to an ORF-RE project or directed to the project itself.

Note: grants received for a specific purpose from the Ontario government or from an Ontario government agency, or funding which has already fully leveraged Ontario government funding, cannot be used as an institutional contribution toward the project.

PRIVATE SECTOR PARTNER CONTRIBUTIONS SUMMARY

Applicants are required to disclose all revenue sources for their project, including all private sector contributions.

- Private Sector Cash Contributions - Cash contributions must be fully detailed in the letter of support (LoS) from the Private Sector Partner (PSP). Letters of support should be a maximum of two (2) pages in length.
- Private Sector In-Kind Contributions - In-kind contributions need to be crucial to the project (i.e. if not contributed by the private sector, the institution would need to acquire the resources with institutional cash) and can include equipment or related warranties, materials and expendable supplies, software and databases/datasets, use of space or facilities, salaries (including benefits) of professional, technical, analytical, or project-specific administrative personnel and access to unique databases, high performance computing services and travel costs (may be limited) for essential time limited off-site work related to the project. When a private sector

partner provides personnel with specialized knowledge or skills, ORF-RE will regard this as an in-kind contribution to be valued at that personnel's salary and benefit level in proportion to the time spent on the project. Such personnel will not be considered consultants.

- Private Sector In-Kind contributions must be detailed in the appropriate letter of support. These must describe how the value of the contribution was determined (e.g. pro-rated salary, best customer price, academic discount, published prices, etc.). Letters of support should be a maximum of two (2) pages in length.
- These values must correspond with the values described in the budget breakdown and private sector partner tabs.

PRIVATE SECTOR PARTNER CONTRIBUTION DETAILS

Ensure that each partner and associated contribution is supported by a corresponding letter of support and that the totals correspond to the amount declared in the Contributions Summary. The Private Sector letters of support should be included as an attachment as instructed in the application.

PRIVATE SECTOR PARTNER(S)

For the purposes of assessment, private sector partners can include:

- For-profit businesses
- Business organizations and/or not-for-profit research institutes funded primarily by relevant businesses

While private sector partners do not need to be located in Ontario, the lead institution must demonstrate that the project will make a positive impact on Ontario's research and commercialization capabilities.

In assessing the strength of the private sector commitment, researcher-owned sole proprietorships are not considered eligible private sector partners on a project in which the researcher is a named investigator or collaborator.

Contributions from charities, foundations and private philanthropists cannot be used as part of the private sector contribution but may be included as institutional contributions.

ORF REQUEST

Note that this amount will be automatically calculated as the difference between the total project expenses and the contributions from other sources detailed in the contribution summary.

BUDGET JUSTIFICATION

The application should include a high level justification for the amount requested in each expense category.

For the purposes of the application, outline the total costs in each category, the number of people and the percentage of their time that will be dedicated to the project. Please ensure you follow program guidelines in terms of limits related to salary expenditures etc.

EXPERT REVIEWERS

RECOMMENDED EXTERNAL EXPERT REVIEWS

The suggested experts should not have a conflict of interest (CoI) with the proposal or the PI. Please see *CoI Policy for Expert Reviewers* for additional information. It is recommended that you speak to potential reviewers listed on your application and alert them to the fact that they may be contacted to review your application. DO NOT provide more than three names in this section. A maximum of one out of the requisite three expert reviews will be obtained from a reviewer recommended by the applicant.

Note: the Ministry reserves the right to choose reviewers and will choose additional reviewers to bring the total reviews to three.

EXCLUDED EXPERT REVIEWERS

In this section, if desired, you may also provide up to **FIVE** names of experts you do not want selected as reviewers.

ATTACHMENTS

LETTERS OF SUPPORT

All letters should be a maximum of two **(2) pages in length** including Institutional Letters, Private Sector Partners Letters and End User letters of support.

INSTITUTIONAL LETTERS OF SUPPORT

Each application must be accompanied by a Letter of Support (LoS) from the lead institution, indicating whether the goals of the proposed research are consistent with the institution's overarching research strategy. The letter must be signed by the Vice-President of Research or any other officer of the institution with authority to bind the institution. In the case of applications involving more than one institution, a letter of support should also be included from each collaborating institution, signed by the Vice-President Research or any other office of the institution with authority to bind the institution. All institutional letters of support should be compiled into a single pdf file with a cover page listing the documents contained within. The file should be named according to the following convention: **Institution Name_PI Last Name_Ins LoS**.

PRIVATE SECTOR PARTNER (PSP) LETTERS OF SUPPORT

All PSP letters of support should clearly articulate the amount being committed, the timeframe of the commitment and for in-kind support, how the value was determined. PSP

letters should be compiled into a single pdf file with a cover page listing the letters contained within. The file should be named: **Institution_PI Last Name_ PSP LoS**. Please note that, for projects successfully funded, the Ministry reserves the right to request a revised letter of support from a PSP during the contract negotiations.

END USER LETTERS OF SUPPORT

Include appropriate Letters of Support as a single pdf file with a cover page listing the letters contained within. The file should be named: Lead **Institution_PI Last Name_User LoS**.

CVS OF NAMED INVESTIGATORS AND KEY PROJECT STAFF

For each investigator or key project staff, please attach a CV (**maximum 2 pages per CV**) to the application, highlighting his/her recent contributions to research and capacity-building, including:

- Other research support currently held or applied for
- Training of highly qualified personnel, i.e. training of undergraduate students and technical/professional assistants
- Other significant achievements (peer-reviewed publications, patents, significant presentations, awards, honours, membership on committees etc.)

All CVs should be compiled into a single pdf file with a cover page listing the CVs contained within and named: **Lead Institution_PI Last Name_CVs**

GRANT AGREEMENT

When funding for a proposal is approved, the successful applicant institution will sign a grant agreement (contract) with the Ministry.

The "Start-date" for the project is generally the date of the Award Notification Letter or later. The Ministry may negotiate an earlier "Start-date" which will not be any earlier than the date of the call for proposals for that round of competition. For ORF-RE Round 9, this date is March 14, 2017.

The agreement will address terms and conditions for the disbursement of the grant funds that could include, but are not limited to, the following:

- milestones, deliverables and performance measures
- project budget
- project management
- mode and schedule of payments
- accountability framework
- IP ownership and disposition
- communications strategies
- contract termination clauses
- monitoring and reporting requirements, including annual progress reporting, financial audits and Request for Disbursement and other reports as stipulated

The Ministry will monitor the project in relation to:

- governance
- timely submission of annual progress reports, including success stories
- project milestones, deliverables and performance measures
- cash flow and accuracy of cash flow forecasting
- financial reporting and audits
- youth outreach
- IP arrangements
- other requirements as set out in the contract

The Ministry, at its discretion and upon reasonable notice, reserves the right to undertake periodic site visits and scientific reviews of projects.

APPLICATION SUBMISSION REQUIREMENTS

PROPOSAL COPIES

- Submit one original paper copy of the completed Application Form (including all associated attachments such as letters of support and CVs).
- The original must be signed by the Vice-President of Research or any other officer of the institution with the authority to bind the institution.
- The original application should not be bound or stapled (binder clips are acceptable and preferred).
- Electronic document - a PDF version of the complete application (including all attachments).

SUBMITTING APPLICATIONS

All completed applications must be received by the Ministry and/or postmarked no later than September 25, 2017. Late or incomplete applications will not be accepted.

- Electronic applications will not be accepted as placeholders for late or pending original paper applications.
- Faxes and/or email attachments will not be accepted in place of the originals.
- On the application cover letter, provide the title of the project included in the Notice of Intent (NOI) submitted to the Ministry and the name of the Private Investigator in the NOI. If there is a change, please include both.
- Applications and supporting documents (including ALL letters of support for the application*) must be addressed and sent to:

Katherine Kelly Gatten, Director, Science and Research Branch
Ontario Research Fund – Research Excellence Applications
Ministry of Research, Innovation and Science
56 Wellesley Street West, 11th Floor
Toronto, Ontario M7A 2E7

* All letters of support should be included in the application package, NOT sent separately to the Ministry.

PAPER APPLICATIONS GENERAL FORMAT

- The application should be printed, single sided, on 8 ½" by 11" white paper.
- Text for attachments must be in black and of letter quality.
- Font for all attachments should be Arial 12pt. Condensed font is not acceptable.
- Where possible, ensure that all pages in attachments are numbered.

ELECTRONIC APPLICATIONS

- Use the template provided to prepare the body of the application.
- The application form supports rich text formatting.
- Electronic attachments should be clearly named in the following format:
 - Institution Name_PI Last Name_Attachment Type
- All attachments of a single type should be compiled into one file with a cover page listing the sub-documents included (e.g. all CVs in one document with a list on the front of all of the CVs and the order in which they appear).
- All attachments must be submitted as a PDF file.

PREPARING APPLICATIONS

- Adhere to the restrictions on characters and number of pages provided for in the section of the Application Form where appropriate.
- Avoid technical jargon in abstracts and milestones.

COMMUNICATIONS

- To ensure continuity, consistency and open communication between the applicant and the ORF, all inquiries/discussions during the application, review and post-award processes are to be coordinated by the lead institution's named contact and the assigned Ministry staff.
- Applicants needing additional information or clarification regarding their application to ORF-RE may reach the ministry at: ORF.Excellence@ontario.ca

COMMON APPLICATION ERRORS AND WEAKNESSES

Common weaknesses of applications identified in previous ORF rounds include:

- failure to meet research excellence criterion
- failure to indicate how the proposal relates to or differs from the current state of the art research in the field, within the Ontario context as well as nationally and internationally
- failure to indicate how the proposed research differs from research previously funded by the Ontario government
- proposed research lacks focus (numerous, unrelated or loosely related projects)
- failure to "make the case", i.e. to explain the steps that led to the proposed research concept
- failure to demonstrate the impact of the research
- 'overselling' of research impact (eg. inflated market values do not convince panels, rather they demonstrate the applicants' lack of understanding of the true market)
- failure to clearly explain the steps that will be taken to maximize the likelihood of achieving the research impacts
- failure to clearly engage next-stage recipients and end-users of research

- proposed research is not ground-breaking or innovative (e.g. small scale, single experiment focused)
- the budget appears inflated and/or expenses are not adequately justified
- the management structure is poorly defined
- the governance structure lacks autonomy
- sustainability is questionable beyond government funding

SERVICE STANDARD

The Ministry of Research, Innovation and Science is committed to making timely decisions on all complete applications once submitted. The Ministry will use its best efforts to notify applicants of decisions within 154 business days of the application deadline.

The Ministry expects to notify applicants of the outcome in February/March 2018.

ETHICAL, SAFETY AND INTEGRITY REQUIREMENTS

Institutions must undertake the responsibility to ensure any experimentation will be acceptable on ethical and safety grounds.

- Research involving human subjects or human stem cells must comply with the Tri-Council Policy Statements: Ethical Conduct for Research Involving Humans (TCPS 2 2014)
- In the case of laboratory animal experimentation, the institution must comply with the guidelines and policies of the Canadian Council on Animal Care.
- Institutions must ensure that any research involving databases containing personal information adheres to ethical and legal requirements relating to privacy, confidentiality and security of the database information.
- Any research involving biohazards must adhere to the standards outlined in the Public Health Agency of Canada's Laboratory biosafety guidelines.
- Research involving radioactive materials must comply with Canadian Nuclear Safety Commission regulations.

The Ministry expects researchers and participating research institutions to maintain the highest standards of research integrity. Research institutions are expected to have and abide by policies and procedures that govern research integrity.

OWNERSHIP AND CONTROL OF RESEARCH EQUIPMENT

Ownership and control of research equipment related to a funded ORF-RE project must remain with the institution for a period of five (5) years after acquisition and/or installation. In the case of a project with a multi-institutional composition or consortium, the IIA should dictate the arrangements made with regard to the ownership, control and disposal of research equipment.

Research equipment must be located at an eligible research institution(s), or outside an eligible research institution when it can be shown that this is the most effective placement of the equipment. Any change in location requires notification in writing to the Ministry and may require the Ministry approval.

CONTACT INFORMATION

If you have questions about the ORF-RE contact: ORF.Excellence@ontario.ca

USE OF INFORMATION

The Ministry of Research, Innovation and Science is subject to the *Freedom of Information and Protection of Privacy Act*. The information and documentation provided to the Ministry of Research and Innovation may be shared with members of the ORF Advisory Board, the Review Panels, external expert reviewers and others for the purposes of administering the ORF program.

APPENDIX A: RESEARCH CODES

Use the Canada Foundation for Innovation research codes found below.

RESEARCH DISCIPLINE CODES

MULTIDISCIPLINARY

5000 Multidisciplinary

NATURAL SCIENCES AND ENGINEERING

10001 Multidisciplinary in NSE
10100 Civil Engineering
10200 Structural Engineering
10300 Agricultural Engineering
10400 Forest Engineering
10500 Mining and Mineral Processing
10600 Environmental Engineering
10700 Industrial Engineering
10800 Design and Manufacturing
10900 Chemical Engineering
11000 Biomedical Engineering
11100 Materials Science and Technology
11200 Mechanical Engineering
11300 Fluid mechanics
11400 Fuel and Energy Technology
11500 Nuclear Engineering
11600 Electrical and Electronic Engineering
11700 Robotics
11800 Information Technology
11900 Artificial Intelligence
12000 Pure Mathematics
12100 Applied Mathematics
12200 Statistics and Probability
12300 Physics
12400 Theoretical Physics and Chemistry
12500 Astronomy and Astrophysics
12600 Space Science
12700 Condensed Matter Physics
12800 Physical Chemistry
12900 Analytical Chemistry
13000 Inorganic Chemistry
13100 Organic Chemistry
13200 Polymer Chemistry
13300 Earth Science
13400 Geographical Information
13500 Physical Geography
13600 Geochemistry and Geochronology
13700 Geophysics

13800 Atmospheric Science
13900 Hydrology
14000 Oceanography
14100 Evolution and Ecology
14200 Soil Science
14300 Plant and Tree Biology
14400 Genetics
14500 Cell Biology
14600 Microbiology
14700 Molecular Biology
14800 Biochemistry
14900 Animal Biology
15000 Food Science and Technology
15100 Psychology
15200 Life Sciences Related to Human Health and Disease
18000 Other

SOCIAL SCIENCES AND HUMANITIES

20001 Multidisciplinary in SSH
20100 Anthropology
20200 Archival Science
20300 Fine Arts
20400 Archeology
20500 Library and Information Science
20600 Communication and Media Studies
20700 Criminology
20800 Demography
20900 Law
21000 Education
21100 Classics, Classical and Dead Languages
21200 Mediaeval Studies
21300 Interdisciplinary Studies
21400 Religious Studies
21500 Folklore
21600 Geography
21700 History
21800 Modern Languages and Literature
21900 Linguistics
22000 Philosophy
22100 Psychology
22200 Industrial Relations
22300 Management, Business, Administrative Studies
22400 Economics
22500 Political Science
22600 Sociology
22700 Social Work
22800 Urban and Regional Studies, Environmental Studies
22900 Other

ARTS AND LETTERS

30001 Multidisciplinary in AL
30100 Architecture
30200 Visual Arts
30300 Arts and Crafts
30400 Theatre
30500 Music
30600 Dance
30700 Literature
30800 Media Arts
30900 Varieties
31000 Multidisciplinary and Multimedia Arts
31100 Other

HEALTH SCIENCES

40001 Multidisciplinary in HS
40100 Infectious and Parasitic Diseases
40200 Neoplasms
40300 Endocrinology
40400 Thyroid
40500 Diabetes Mellitus
40600 Metabolism and Nutrition
40700 Blood
40800 Mental and Behavioural Disorders
40900 Drugs - Pharmaceutical Science, Chemistry and Nonmedical Use of Drugs
41000 Central Nervous System Organic
41100 Diseases Affecting Speech/Vision/Hearing
41200 Cardiology
41300 Respiration
41400 Gastro Intestinal Disease
41500 Dental Diseases (Including Oral Biology)
41600 Genito-Urinary System
41700 Pregnancy/Childbirth
41800 Musculo-Skeletal
41900 Congenital Anomalies
42000 Perinatal
42100 Ill-defined Conditions
42200 Accidents, Poisoning, Violence
42300 Multidisciplinary Health Research
42400 Population Health - General
42500 Health Services Research General
42600 Psychosocial Behavioural Research - General
42700 Multiple Disease Relevance
42800 Other

AREA OF APPLICATION CODES

1. EXPLORATION AND EXPLOITATION OF THE EARTH

- 1.1 Mineral, oil and natural gas prospecting
- 1.2 Exploration and exploitation of the sea-bed
- 1.3 Earth's crust and mantle excluding sea-bed and studies of soils for agriculture (6)
- 1.4 Hydrology - excludes research on: water supplies and disposal (2.6) and water pollution (3.4 and 3.5)
- 1.5 Seas and oceans
- 1.6 Atmosphere
- 1.7 General and other research on the exploration and exploitation of the earth

2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE

- 2.1 General planning of land-use
- 2.2 Construction and planning of building
- 2.3 Civil engineering - excludes research on building materials and industrial processes (area 7)
- 2.4 Transport systems
- 2.5 Telecommunication systems
- 2.6 Water supply
- 2.7 Development of the North
- 2.8 General and other research on the infrastructure and general planning of land-use

3. POLLUTION AND PROTECTION OF THE ENVIRONMENT

- 3.1 Protection of atmosphere and climate
- 3.2 Protection of ambient air
- 3.3 Solid waste
- 3.4 Protection of ambient water
- 3.5 Protection of soil and groundwater
- 3.6 Noise and vibration
- 3.7 Protection of species and habitats
- 3.8 Protection against natural hazards
- 3.9 Radioactive pollution
- 3.10 General and other research on the environment

4. HEALTH

- 4.1 Medical research, hospital treatment, surgery
- 4.2 Preventive medicine
- 4.3 Biomedical engineering and medicines
- 4.4 Occupational medicine
- 4.5 Nutrition and food hygiene
- 4.6 Drug abuse and addiction
- 4.7 Social medicine
- 4.8 Hospital structure and organization of medical care
- 4.9 General and other health research

5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILIZATION OF ENERGY

- 5.1 Fossil fuels and their derivatives
- 5.2 Nuclear fission
- 5.3 Radioactive waste management including decommissioning
- 5.4 Nuclear fusion
- 5.5 Renewable energy sources
- 5.6 Rational utilization of energy
- 5.7 General and other research on production, distribution and rational utilization of energy

6. RENEWABLE RESOURCE PRODUCTION AND TECHNOLOGY

- 6.1 Agriculture
- 6.2 Fisheries and aquaculture
- 6.3 Forestry
- 6.4 General and other research on renewable resource production and technology

7. INDUSTRIAL PRODUCTION AND TECHNOLOGY

- 7.1 Increasing economic efficiency and competitiveness
- 7.2 Manufacturing and processing techniques
- 7.3 Extraction and processing of non-energy minerals and derived products, including building materials
- 7.4 Products of the chemical industry
 - 7.4.1 Petrochemical and coal by-products
 - 7.4.2 Pharmaceutical products
- 7.5 Manufacture of motor vehicles and other means of transport
 - 7.5.1 Aerospace equipment manufacturing and repairing
 - 7.5.2 Manufacture of motor vehicles and parts
 - 7.5.3 Manufacture of other modes of transportation
- 7.6 Electronic and related industries
 - 7.6.1 Manufacture of office machinery and data processing equipment
 - 7.6.2 Manufacture of radio, television and communications equipment and apparatus
 - 7.6.3 Software development
- 7.7 Manufacture of electrical machinery and apparatus
- 7.8 Manufacture of non-electronic and non-electrical machinery
- 7.9 Manufacture of instruments
 - 8.1 Manufacture of medical and surgical equipment and orthopaedic appliances
- 7.10 Manufacture of food products and beverages
- 7.11 Manufacture of clothing and textiles and leather goods
- 7.12 All other manufacturing products, including wood and paper products
- 7.13 Recycling
- 7.14 General and other research on industrial production and technology

8. SOCIAL STRUCTURES AND RELATIONSHIPS

- 8.1 Education, training, recurrent education and retraining
- 8.2 Cultural activities
- 8.3 Management of businesses and institutions
- 8.4 Improvement of working conditions

- 8.5 Social security system
- 8.6 Political structure of society
- 8.7 Social change, social processes and social conflicts
- 8.8 General and other research relating to social structures and relationships

9. EXPLORATION AND EXPLOITATION OF SPACE

- 9.1 Exploration and understanding of space
- 9.2 Satellites
- 9.3 Launch systems
- 9.4 Space laboratories and space travel
- 9.5 General and other research on the exploration and exploitation of space

10. OTHER RESEARCH

This code covers research which cannot be classified according to one of the other codes.