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7.0 Review of Research Tools and Instruments Grant Applications

NSERC has decided to extend its [moratorium](#) on Research Tools and Instruments – Categories 2 and 3 Grants for another year. These categories normally cover equipment costing more than $150,000. Only applications for Research Tools and Instruments – Category 1 will be accepted in the 2007 competition.

7.1 Contact Points

- For eligibility and missing documents: Program Officer
- For application assignments and review process: GSC Chair/Program Officer

7.2 Objectives

Research Tools and Instruments (RTI) Grants foster and enhance the discovery, innovation and training capability of university researchers in the natural sciences and engineering by supporting the purchase of research equipment and installations.

7.3 Description

RTI Grants are one-year awards that assist in buying or developing research equipment that costs more than $7,000. In exceptional cases, multiple-year requests will be accepted. The onus is on the applicant to clearly explain the rationale. Items costing less than $7,000 each can be purchased with Discovery Grant funds or be included as a complement to a main piece of equipment being requested. Applications for the purchase of several pieces of equipment costing less than $7,000 each are also acceptable.

RTI grants are divided into three categories according to the total net cost of the equipment, i.e., excluding taxes, shipping, and handling. These categories are:

- RTI – Category 1: $7,001 to $150,000;
- RTI – Category 2: $150,001 to $325,000; and
- RTI – Category 3: more than $325,000.

A moratorium on Categories 2 and 3 is in effect.* During this moratorium, NSERC will accept applications under Category 1 for equipment whose total net cost, i.e., excluding taxes, shipping, and handling, is up to $250,000, provided that the applicant is able to secure funding from other sources to bring the amount requested from NSERC to $150,000 or less. Such sources may include contributions from NSERC Discovery Grants held by the applicant or co-applicants. The use of other types of NSERC grants is permitted, provided that prior written authorization is obtained by NSERC.

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** This moratorium does not apply to applications in subatomic physics; these are
evaluated with the subatomic physics envelope, and applications in Categories 2 and 3
will still be accepted.*

*NSERC will pay part or all of the applicable taxes, as well as part or all of the shipping
and handling expenses, as long as the overall grant does not exceed $150,000. The
applicant will be responsible for any amount in excess of $150,000.*

The eligibility of specialized facilities such as large environmental chambers and mobile
laboratories is considered on a case-by-case basis. Applicants or Research Grants
Officers should contact NSERC before submitting proposals.

NSERC recognizes that equipment may have to be purchased at any time during the year
to avoid an unnecessary delay in a research program. Grantees should explore all possible
avenues, such as the institution's General Research Fund, to cover the cost of replacement
(refer to the paragraph on *Residual Balances in Agency Accounts* under Administrative
Matters in the Financial Administration section of the *Program Guide for Professors*).

NSERC will accept applications only for equipment that has not yet been purchased, or
that has been purchased within the one-year period immediately prior to the current
deadline for receipt of applications. All applications are reviewed on a competitive basis.

NSERC will not accord any preferential treatment for equipment already purchased at the
time of application and is under no financial obligation should such an application be
unsuccessful in the competition. The applicant must indicate whether equipment has
already been purchased and justify why a purchase prior to the application was necessary.

7.4 Conflict of Interest

Note: The conflict of interest guidelines found in Section 6.6 also apply to RTI Grant
applications.

When less than one third of the committee members have RTI applications in the
competition, the following suggestions are made in an attempt to reduce the possibilities
of conflict of interest:

- When GSCs form subcommittees to evaluate RTI applications, members with
  RTI applications in the current competition should not be part of the
  subcommittee.
- Members with RTI applications in the competition must be excluded from the
  process of final ranking of RTI applications. When the subcommittee rankings are
  discussed by the full committee, members with applications in the competition
  must not be present.
- When committees do not form RTI subcommittees, but the whole committee
  evaluates and priority ranks applications, the final ranking of the RTI applications

must be done in the absence of committee members with applications in the competition. This will allow members with applications in the competition to contribute their input on other applications, but not be involved in the final ranking.

When more than one third of the members in a GSC have RTI applications in the competition, the preferred mechanism is to strike a special subcommittee to review and priority rank the applications. Membership on the subcommittee should not include members with applications in the competition. If this approach is not feasible, the GSC must establish a procedure to ensure that internal reviewers cannot influence the outcome of their own application. One option for the committees who pre-rate their applications would be to implement a forced ranking procedure.

Some GSCs use a system in which all members give an initial rating or ranking of all RTI applications (for which they are not in a conflict of interest). These ratings are used to establish a priority order for funding. During the competition meetings, the GSC may discuss only the applications that are near the cut-off point corresponding to the budget available. In such a system, members with applications in the competition must be excluded from any discussion or re-ordering of the applications.

In November, when it is known which members have submitted RTI Grant applications, the Program Officer will propose a process to the GSC Chair that conforms as closely as possible to the procedures outlined above. In designing the process, the following practices will be encouraged:

- Pre-ranking of RTI applications before the competition, with scores being sent in advance of the competition week
- Monitoring of the deliberations by Group Chairs and/or senior NSERC staff
- Designing spreadsheets to protect the identity of internals, and to prevent members from learning the scores given to their own applications
- Using past members or other experts for the adjudication of RTI applications

For large group proposals or large RTI requests involving several departments in several universities, a member from the same institution as one or several of the co-applicants may be allowed to participate in the discussion and vote. The process to be used in such cases is the following:

- Well before the meeting, NSERC staff will attempt to identify potential conflicts of interest to avoid placing members in an uncomfortable position; at the beginning of a session, the Chair will read the list of identified conflicts and will also ask each member in turn to disclose any other relationship to a proposal (positive or negative). If the Chair or NSERC believes that a member should not participate in the review, that member should withdraw from discussion and voting.

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When the GSC (or the Chair) has difficulty dealing with a particular situation, it should be brought to the attention of NSERC staff, who are responsible for making the final decision on compliance measures.

7.5 Criteria for Evaluation

Applications for all categories of RTI are judged on the basis of the following criteria:

- **The excellence of the applicant(s)** (see Section 6.8.1 for additional factors related to this criterion):
    - Scientific or engineering caliber of the applicant and major users
    - Extent to which the applicant or the group have relevant experience and demonstrated ability to fully use the equipment
- **The merit of the proposed research program(s)** (see Section 6.8.2 for additional factors related to this criterion):
    - Overall quality of the research programs of proposed users
    - Recent track record
    - Potential for major advances in the discipline
- **The need and urgency for the equipment, including availability of and access to similar equipment:**
    - What is the impact of a delay in the acquisition of the equipment?
    - Is new equipment moving the research forward or helping to launch new research directions?
    - Will the progress of the research be slowed by lack of access to new equipment?
    - Is there a problem in accessing existing equipment (e.g., is the increased number of users slowing research progress)?
    - Are there other available facilities/services in the vicinity?
    - Is there a limited institutional infrastructure (more likely in small vs. large universities or new vs. established research groups)?
    - Is there a need to upgrade or replace obsolete or failed equipment?

Applicants (and co-applicants) are asked to provide information on other equipment obtained from NSERC funds and other sources within the past four years and on equipment currently applied for from other sources (i.e., Canada Foundation for Innovation [CFI]). They must provide a brief description of the equipment obtained or applied for to enable the committee to evaluate the use of the equipment and its relationship with the proposal. This information should be provided in the budget justification section of Form 101.

- **The suitability of the requested item(s) for the proposed research program(s):**
    - For multi-user applications, is the proposed equipment suitable for a multi-user facility and for the desired applications?

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- Is the equipment essential to do the work, or are there other more cost-effective ways of obtaining the results (e.g., send samples for analysis, use other techniques)?
- What is the probable degree of utilization or accessibility of outside users?
- What is the capability of applicant(s) to fully utilize the equipment?
- How accessible will the equipment be, both in terms of location and the availability of technical support to assist in operations?

When the justification for the equipment is based to some extent on the anticipated use by, or benefit to, other sectors, the applicant should describe the support secured from these sources or demonstrated efforts made to secure it. The GSC should take this information into consideration in assessing this criterion.

- **The importance of the requested item(s) for the training of highly qualified personnel** (see Section 6.8.4 for additional factors related to this criterion):
  - The importance of the equipment for training as well as the value of the training
    - Will this type of training be a marketable skill for students?
  - The quality and extent of training
  - The opportunity for hands-on training

Note: The necessity of the requested item(s) for the completion of student projects and theses should be addressed under the third criterion (need for access to the equipment).

For RTI – Categories 2 and 3 only – Organizational structure, accessibility and synergy:

An important consideration in the RTI – Categories 2 and 3 is the presence of a clearly defined organizational structure to ensure that the equipment can be operated and maintained efficiently and effectively, as well as providing ready access for other users. In addition, the synergy of the proposed equipment or installation with existing ones should be considered. Synergy is defined as the extent to which a grouping of equipment and staff enhances the value and capability of each piece of equipment and enables researchers to obtain results or carry out studies that would otherwise be very difficult or impossible. Synergy is viewed as a positive factor, but is not a necessary requirement for funding.

- Provisions for the maintenance and upgrading of equipment
- Operation of the equipment
  - Efficiency, effectiveness and accessibility for other users
- Appropriateness of proposed plan and budget for maintenance and upgrading
- Suitability of the director and users' committee
- Value and capability of each piece of equipment
  - Does it enable researchers to obtain results or carry out studies that would otherwise be very difficult or impossible?

7.6 Eligible Expenses

RTI grants are one-year awards that assist in buying or developing research equipment that costs more than $7,000. In exceptional cases, multiple-year requests will be accepted. The onus is on the applicant to clearly explain the rationale. Items costing less than $7,000 each can be purchased with Discovery Grant funds or be included as a complement to a main piece of equipment being requested.

In addition to the equipment cost, eligible expenses for RTI include:

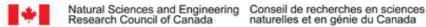| Type of Expenditure	RTI – Category 1	RTI – Categories 2 & 3
Salaries and benefits	Not eligible	Salaries and training costs of technical support personnel for the initial phase-in period of operations (up to two years)
Equipment or facility	Purchase or rental	Purchase or rental
Travel	Not eligible	Travel costs to visit manufacturers to select major equipment purchases
Others (shipping costs for purchased equipment, extended warranty, brokerage and customs charges for the importation of equipment and supplies)	Eligible	Eligible

Costs that are not eligible for all categories of RTI include:

- insurance costs for equipment and research vehicles;
- costs of the construction, renovation or rental of laboratories or supporting facilities; and
- software licensing or upgrades for subsequent years.

7.7 Policies and Guidelines

GSCs are asked to give particularly careful and sensitive evaluation to requests for equipment from new researchers. NSERC is concerned if a Discovery Grant is provided without the availability of associated tools. In fields where any real advance requires access to sophisticated equipment that is not available on site, selection committees are asked to place special weight on the "need and urgency" criterion in the case of new researchers. The "calibre and relevant experience" criterion must be assessed in the context of the pool of relatively young researchers who do not yet have extensive research experience. A new applicant should be provided with the resources to

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demonstrate within a reasonable period of time (for example, three to five years) that he/she can make significant advances in the field. However, new applicants, like all applicants, have to provide sufficient justification for the equipment requested in light of other equipment funding that they may have received from NSERC and other sources, including the Canada Foundation for Innovation (see Section 7.3 above).

Applications for RTI – Categories 2 and 3 that involve new researchers in a leadership role have more difficulty succeeding in the peer review system. Here it is reasonable to expect a very strong track record and extensive linking with other established researchers. It also may be appropriate to acquire equipment in stages over time or to make use of other equipment, for example, at regional centres.

While NSERC is concerned that new researchers may not get an appropriate opportunity to build a strong research program, responsibility for this does not rest solely with NSERC. The university is expected to assist in launching a young researcher's program.

Award quotas by department or university are not permitted. The GSC cannot establish policies whereby, for example, RTI applications from a given applicant could only be recommended every two years.

Only applications from researchers who currently hold or are applying for an NSERC research grant (e.g., Discovery Grant, Strategic Grant, Research Partnerships Program Grant), at the time of application will be accepted.

RTI awards should normally be for the full cost of the recommended items (including tax, transportation and eligible installation costs). GSCs may recommend partial funding but the amount recommended must be sufficient to allow for the purchase of a functional unit. The GSC must provide staff with a written justification indicating the components to be funded. If your GSC receives many applications for computing equipment and lacks detailed expertise to consider these requests, consult your Program Officer. Some committees use experts in computing systems to help them assess the requests.

It may be appropriate in certain cases to provide applicants with specific comments on Research Tools and Instruments applications. Also, some GSCs also ask applicants, through a general comment or through university information sessions, to provide, if possible, two or three different configurations in their RTI applications. This sometimes allow GSCs to recommend funding for a somewhat smaller, less expensive configuration in times of severe budgetary constraints.

NSERC asks GSCs to provide a ranked RTI list in cases where the budget situation changes after the competition. It is important that the final ranked RTI list, both within or exceeding the expected budget, truly reflect the order in which a GSC wants RTI to be funded. Last-minute revisions to the RTI budget may result in more or fewer awards being made and NSERC staff relies on the GSC rankings to make these adjustments.

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7.8 Deliverables

Internal reviewers use a spreadsheet to submit ratings (for all applications assigned to them) to the Chair or Program Officer in advance of the competition session. These ratings are tabulated and applications sorted by priority. The prioritized list is distributed at the competition session and a subset of the applications is discussed in depth at that time. These are applications that are near the cut-off, for which ratings from different internal reviewers differ significantly, or for which a member questions the priority assigned to the application. The exact process may take different forms, e.g. straight ranking of all applications, a rating on a 5- or 10-point scale either with quotas on the distribution (equal numbers of 1, 2, 3, etc.) or a normal distribution. Your Chair or Program Officer will brief you on your GSC's procedures.

As mentioned above, it may be appropriate in certain cases to provide applicants with written comments on an RTI – Category 1 application. Recommendations for partial funding must specify which components of the equipment are recommended.

Deliverables – Ranked list or ratings depending on GSC modus operandi.

7.9 Review of RTI – Categories 2 and 3 Applications
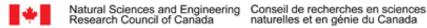
Review Procedures

Members who will be participating in the review process will be told in November and more detailed procedures will be sent at a later date.

Normally, there are two types of Categories 2 and 3 grants:

- Category 2 and possibly Category 3 applications involving a single discipline, which will be reviewed by a single GSC or a discipline-based subcommittee. In some cases, GSCs or discipline-based subcommittees will make final recommendations when there is a sufficient number of applications.
- Multidisciplinary and very large Categories 2 and 3 applications, which will be reviewed by the Committee on Grants and Scholarships (COGS).

The Categories 2 and 3 applications reviewed by COGS require discipline-based input. This is provided in the form of comments from one or several individual GSCs or a subcommittee representing a discipline-based group of GSCs (which usually involves at least two GSCs in areas where discipline boundaries are vague, such as in the Life Sciences). Examples of discipline-based subcommittees are: Earth Sciences (GSCs 08, 09), Life Sciences (GSCs 03, 12, 18, 32, 33, 1011), Chemistry (GSCs 24, 26), Physics (GSCs 28, 29), and Engineering (GSCs 04, 06, 13, 20, 334, 335). In other cases, individual GSC members may be selected to provide a formal consultation on behalf of their committee or discipline-based subcommittee.

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Normally, the cost of Category 3 applications reviewed by subcommittees will not exceed $500,000. The amount requested in any one application reviewed by a GSC or an ad hoc discipline grouping committee should not normally exceed 30 per cent of the budget available to that committee.

Site visits may be organized for new Category 3 applications requesting more than $750,000. For all other Category 3 applications, external referees are normally consulted. External reviews may also be sought for Category 2 applications. Review material and recommendations from site visit committees and external referees form part of the input to the GSCs or subcommittees and SCORG.

Policies and Guidelines

In addition to the policies and guidelines outlined in Section 7.7, take into account the following points when reviewing Categories 2 and 3 applications.

Quotations – For items costing more than $25,000, the applicant must provide two recent cost quotations, clearly summarize the differences between them (in table format if necessary) and justify the one chosen.

Letters of Support – For all RTI categories, if a cash contribution toward the purchase of the equipment is provided by an organization, a letter is required from the organization confirming this commitment.

A letter from the department must accompany every Category 2 application. The letter must indicate the importance and priority that the department places on the proposed equipment and the extent to which the department proposes to provide support.

A letter from the university president must accompany every Category 3 application. The letter must indicate the importance and priority that the university places on the proposed equipment or facility. The letter should explain the support the university will provide, such as the provision of space, financial contributions to the purchase and installation, the purchase of ancillary equipment, funding of technical support staff, etc.

Letters from supporting organizations, if submitted, should clearly explain the support that the organizations will provide, such as their involvement in the research, financial contribution (cash or in-kind) to the purchase and installation of the equipment, etc. If a cash contribution toward the purchase of the equipment is provided by an organization, a letter is required from the organization confirming this commitment.

These letters are useful and indicate the degree of university and/or supporting organization involvement and commitment. In-kind and financial contributions should be taken into account, although the level of financial contribution is not a criterion for evaluation for RTI applications. If the application contains information that is not reflected in the university support letter, it should be taken at face value.

Shopping Lists – Applications containing several equipment pieces that could be purchased individually must be justified, in terms of the need and urgency of the equipment and the research to be supported. Questions such as the following should be addressed in the application:

- Why must all the items be purchased at once?
- Can they be purchased separately as part of a Discovery Grant application or a Research Tools and Instruments application?

RTI awards should normally be for the full amount requested for the recommended items (including tax, shipping and eligible installation costs and operating costs for phase-in). Partial funding may be recommended for Categories 2 and 3 awards based on the recommendations of referees or the Site Visit Committee, but the amount recommended must be sufficient to allow the purchase of a functional unit. Staff must be provided with a written justification indicating the components to be funded.

7.10 Use of Rating Form

Using the rating forms provided by NSERC to review RTI applications (see sample of the RTI rating form) will help to ensure that you take all criteria into account when formulating your recommendations.

7.11 Rating Form – Research Tools and Instruments Grant Application