

NSF 06-501: Frequently Asked Questions for High Performance Computing System Acquisition: Towards a Petascale Computing Environment for Science and Engineering ([NSF 05-625](#))

This page provides clarification and pointers to additional material that might be of interest to people and institutions considering submitting a proposal in response to the solicitation named above. The full text of the solicitation may be found at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf05625.

(1) What are some additional sources of information that might be helpful to prospective resource providers?

Prospective resource providers might find the following to be useful sources of background information:

Information about usage of existing NSF-funded major HPC centers.

http://www.sdsc.edu/user_services/allocations/past/ - LRAC, MRAC and NRAC allocations

<http://www.scd.ucar.edu/csl/alloc.2004.html> - Resource allocations at NCAR's Climate Simulation Lab.

General information about TeraGrid

<http://www.teragrid.org/> - TeraGrid home-page

Information about TeraGrid and how a center's personnel might participate in TeraGrid activities.

<http://www.teragrid.org/basics>

Information about NSF awards

<http://www.nsf.gov/awardsearch/> - search for project abstract by investigator name, project title or award number.

(2) How will the benchmark data be used?

All of the proposal contents, including actual or estimated benchmark data included with the proposal, will be provided to reviewers. Reviewers will also have access to a copy of the solicitation and to information about the benchmarks that proposers were asked to run. Reviewers will be asked to evaluate proposals based on consideration of both the qualitative and quantitative information supplied in the proposals. NSF will consider both the proposals themselves and the reviewers' evaluations of the proposals in selecting proposal(s) for award. NSF's decision-making will also take account of both the quantitative and qualitative information in the proposal. NSF views the benchmark data as information that is important but not the sole determinant in funding decisions.

As indicated in the solicitation, performance indicated by benchmark results may be used as the basis of performance measures included in award documents as acceptance criteria or other conditions of full funding.

(3) Does the limit of two proposals mean to each deadline date or to all of the deadline dates as a whole?

An organization may submit up to two proposals to each annual competition (or deadline date). Thus, an organization may submit up to two proposals on or before February 10, 2006 for consideration in the FY 2006 competition, and an additional two proposals on or before November 30, 2006 for consideration in the FY 2007 competition, and so on.

(4) If I am interested in proposing the acquisition of a highly experimental computing system, will it fit within this solicitation?

The emphasis of this solicitation is on providing resource(s) that maximize scientific and engineering research productivity in a broad range of areas. Proposals for systems for which the risk of failing to meet this goal seems unacceptably high, to the reviewers or to NSF, are not likely to be competitive.

(5) Proposing organizations are required to ensure open access for researchers; what does this mean?

Awardees will be required to provide system access to personnel associated with projects that receive HPC allocations through the national Resource Allocation committees, the Large Resource Allocation Committee and the Medium Resource Allocation Committee. This is not intended to curtail the right of an awardee to restrict access for personnel who have misused their access privileges. Nor should it be interpreted as requiring awardees to provide users with physical access to the HPC systems.

(6) The solicitation says that, "Proposals that request support for HPC research will be deemed ineligible and returned without review." What is meant by "HPC research"?

Awards made under this solicitation are intended to fund the acquisition or upgrade and subsequent operation of an HPC system. Proposers should not request funds to directly support research activities, such as 1). research where high performance computing is the subject of investigation or 2). scientific research that requires access to high performance computing systems. Funding for such research should be sought via proposals submitted to NSF's research and education programs.

(7) What is involved in making HPC resources available via the TeraGrid?

TeraGrid is a collaborative infrastructure consisting of resource providers (RPs) and a Grid Infrastructure Group (GIG). The GIG is responsible for overall TeraGrid architecture, planning, and management, as well as for providing and/or coordinating common and central services. The TeraGrid system itself is an integrated and coordinated set of resources that provide advanced capabilities to users, science and engineering researchers and educators. The system design and implementation are driven by the requirements of scientists and engineers, and the

system's functionality is delivered through a variety of software, middleware, policy, and support functions.

Integrating and operating a computational resource as part of the TeraGrid involves a set of required and optional activities and services. Required components include:

- support for TeraGrid data movement services;
- participation in the coordinated implementation of security practices and policies;
- assistance in problem resolution for issues related to local resources;
- support for the Coordinated TeraGrid Software and Services specification;
- participation in verification and validation processes; and
- participation in the resource allocation and accounting processes.

The experience of current TeraGrid sites suggests that the initial task of integrating a fully operational computational resource into the TeraGrid system involves 6-10 weeks of work by 4-6 staff members with appropriate expertise. For resources that involve novel architectures or operating systems the initial integration and ongoing maintenance may be more involved. The GIG includes staff members who can assist in the integration effort, including on-site assistance if needed.

The nature of providing a computational resource for the national user community requires a significant effort in areas such as networking, security, software maintenance and system administration, and accounting and allocations. Ongoing participation in TeraGrid need not add substantially to the base level of staffing necessary to support a national user community. **It is estimated that participating in TeraGrid will require approximately 1 FTE in additional effort, primarily in supporting TeraGrid middleware functionality and in security, accounting, account management, and allocations coordination. In addition, participating sites will need to provide the GIG with responsive points of contact for system administration, networking, security, operations, and user support.** However, more active participation in TeraGrid is also welcome.

For coordination and planning purposes, TeraGrid uses working groups (ongoing) and requirements analysis teams (specific short term planning efforts), open to all TeraGrid partners who wish to participate. TeraGrid support, software planning, and security policy are examples of the activities covered by such groups. Additionally, TeraGrid partners hold a weekly Access Grid meeting (standard telephone call-in is also supported) to discuss upcoming plans and ongoing activities. **With the exception of the security coordination group, participation in these discussions is optional, however participation benefits both the individual staff members and the RP institution.** Staff members benefit through involvement with peers who have similar or complementary experience and skills. Institutions benefit because these activities provide an opportunity to help set policy and technical direction for TeraGrid. The TeraGrid activity itself benefits through the engagement of a broad range of perspectives and expertise.

The TeraGrid partnership has prepared a primer on the more general aspects of TeraGrid from the perspective of a Resource Provider. This may be found at <http://www.teragrid.org/basics>.

(8) How will maintenance, operations and user support be funded and what budgets should I include?

As described in detail in Section IV (Award Information) of the solicitation, the anticipated funding amount of up to \$30,000,000 is intended to cover the costs of acquiring, installing and bringing to an operational status an HPC system or systems. The primary budget entered on the normal FastLane budget pages should be for these costs.

A separate budget for user support and operating costs, as described in the section, "Effective User Support and Projected Operating Costs," in Part V.A of the solicitation, should be included in the Supplementary Documents section of the proposal.

Reviewers will be asked to consider the user support and operating costs in their analyses of the proposals and these costs will be a factor in funding decisions. At the time that the terms of an award are being negotiated with a prospective awardee, NSF will also negotiate a budget for user support and operating costs and ask the prospective awardee to submit a supplemental budget to cover these costs.

(9) What sort of information might help me to estimate the mix of jobs that is likely to represent the usage of the system?

In addition to a proposing organization's experience as a provider of HPC services, material on current usage of resources at NSF-funded systems is available at some of the web-addresses listed in FAQ 1. A number of research communities have articulated their future HPC science and engineering goals in workshop reports and similar documents. A number of these may be accessed from the OCI web page, <http://www.nsf.gov/div/index.jsp?div=OCI>.

(10) Will additional FAQs be added and how do I find out when this has happened?

If questions are received from prospective proposing organizations that seem likely to be of general interest, they and our answers will be added to this set of FAQs. We do not know if and when this will happen so please check this page frequently for updates.

(11) Is it permissible to include, in a single proposal, options for a particular architecture deployed at two or more different scales at correspondingly different costs? E.g. Option 1: system X for \$YM; Option 2: 2 times System X for \$ZM.

No. This will be interpreted as proposing a choice between multiple systems within a single proposal. The solicitation states that, "Each proposal should be for the acquisition and deployment of a single HPC system for which the project costs total between \$15,000,000 and \$30,000,000."