

High Performance Computing System Acquisition: Towards a Petascale Computing Environment for Science and Engineering



CONTACTS

Name	Dir/Div	Name	Dir/Div
Stephen Meacham	GEO/ATM	Jose Munoz	OD/OCI

PROGRAM GUIDELINES

[05-625](#) Solicitation

DUE DATES

Full Proposal Deadline Date: February 10, 2006
and the last business day in November 2006 and annually thereafter.

SYNOPSIS

NSF's five-year goal for high performance computing (HPC) is to enable petascale science and engineering through the deployment and support of a world-class HPC environment comprising the most capable combination of HPC assets available to the academic community. By the year 2010, the petascale HPC environment will enable investigations of computationally challenging problems that require computing systems capable of delivering sustained performance approaching 10^{15} floating point operations per second (petaflops) on real applications, that consume large amounts of memory, and/or that work with very large data sets. Among other things, researchers will be able to perform simulations that are intrinsically multi-scale or that involve the simultaneous interaction of multiple processes.

HPC Resource Providers - those organizations willing to acquire, deploy and operate HPC systems in service to the broad science and engineering research and education community - play a key role in the provision and support of a national HPC environment. With this solicitation, NSF requests proposals from organizations willing to serve as HPC Resource Providers, and who propose to acquire and deploy a new, and/or upgrade an existing, HPC system.

Competitive HPC systems will:

- Enable researchers to work on a range of computationally-challenging science and engineering applications;
- Incorporate reliable, robust system software essential to optimal sustained performance; and
- Provide a high degree of stability and usability.

A robust and effective HPC acquisition process, driven by the requirements of the science and engineering research and education community, is one of the key elements of NSF's HPC strategy. System performance on an appropriate set of benchmarks will thus be a key factor in system selection. These benchmarks will be designed to capture the salient attributes of those science and engineering applications placing the most stringent demands on the systems to be provisioned. The performance requirements and benchmarks for this competition will be posted on the NSF web-site at <http://www.nsf.gov/div/index.jsp?div=OCI> by November 10, 2005.

Up to two awards will be made as a result of this competition.

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Office of Cyberinfrastructure (OCI)
The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230,
USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749

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