

**NOAA Research & Development (R&D)
High Performance Computing System (HPCS)
Request for Information (RFI)**

The National Oceanic and Atmospheric Administration (NOAA) anticipates acquiring an advanced high performance computing system (HPCS) to meet its research and development (R&D) computing requirements with possible options to accommodate unanticipated additional NOAA HPC requirements as well as the HPCS needs of other partner agencies. The new HPCS will replace or augment the current R&D HPCS platforms of NOAA's Forecast Systems Laboratory (FSL) in Boulder, Colorado; the Geophysical Fluid Dynamics Laboratory (GFDL) in Princeton, New Jersey; and the National Centers for Environmental Predictions (NCEP) located in Camp Springs, Maryland. The replacement system will be known as the NOAA R&D HPCS and will provide a primary resource needed to carry out NOAA's research mission.

Increased computational power is essential for NOAA to meet its strategic goals related to weather, climate, air quality, coastal and ocean resource management, and national commerce support, thereby providing improved service to the public. In order to fulfill the objectives of contract award late in FY2005 and initial system delivery early in FY2006, NOAA will use the Department of Commerce's re-engineered acquisition process referred to as "Concept of Operations" or CONOPS, described in "Department of Commerce Acquisition Process Case for Change" (available from the CONOPS home page located at <http://oamweb.ossec.doc.gov/conops>). An R&D HPCS acquisition Team ("the Team") has been formed within the Department of Commerce, and a Project Agreement has been drafted between the Team and management to spell out the objectives, milestones, approach, budget and resources available for the project. The Project Agreement and associated documents describing this project are being made available on the Internet at the Project Web Site, <http://rdhpcs.noaa.gov/> as they are completed. Interested parties should continue to monitor this web site for additional information concerning this project.

NOAA is seeking varied concepts and innovative approaches to obtain the needed computing system within the time frame and budget allocated. Publishing of the Project Agreement is intended to provide the high-performance computer industry with a general overview of the requirements, time frames and budget, as well as to open a formal communication channel between industry and the Team. The Team also is providing a draft Statement of Need (SON) on the Project Web Site, including information on how to obtain initial benchmark codes. The Team welcomes industry comments, questions and suggestions that will aid it in developing its acquisition strategy and finalizing the SON.

The probable budget for this acquisition is shown in the table below.

Probable Budget By Fiscal Year (subject to availability of funds)									
	2006	2007	2008	2009	2010	2011	2012	2013	2014
Equipment and Maintenance (Base)	\$3M	\$22M							
Equipment and Maintenance (Options)	\$0-5M	\$0-23M							

The Team will consider input received in response to this RFI as it continues to develop the SON and the Request for Proposals (RFP). The Team does not anticipate the need for a pre-proposal conference, but if one is deemed necessary, information will be posted on the Project Web Site.

The Team may conduct one-on-one communications with interested vendors in an effort to benefit fully from industry responses to this RFI.

Parties interested in providing information that the Team may use in developing the Government's technical or acquisition approach should review carefully the Project Agreement and supporting documents referenced in the draft Statement of Need, all of which are available at the Project Web Site.

One of the purposes of this RFI is to provide vendors with initial benchmark codes that will give an indication of the type of model programs that may be expected to run on NOAA's new R&D HPCS. A complete list of the major model programs and the proposed schedule is available at the Project Web Site. Instructions for obtaining the benchmark codes are available at the Project Web Site. The Team requests that vendors submit their benchmark test results with their RFI response. This will give NOAA an indication of the performance capabilities of each vendor's recommended computing resources. One of the principal outcomes of vendor/government dialog will be to ensure that viable approaches are considered during the competition. The Government may therefore utilize the information provided to refine its acquisition strategy to maximize competition among viable acquisition alternatives.

It is not the Government's intent to disclose vendor proprietary information and trade secrets to the public. The information submitted by vendors during the pre-solicitation period may be used by the Government in preparing its RFP and finalizing the SON, provided this can be done without disclosing proprietary vendor information that is protected from disclosure pursuant to the Freedom of Information Act and other laws and regulations.

Interested vendors should respond in writing to the following topics. Recommended page lengths

are identified in parentheses at the end of each question. Total response to this RFI should be limited to 14 pages, which provides flexibility to extend some answers beyond the recommended length, if needed. Vendors who submit written responses may be invited to augment their written responses with a 2- 3 hour oral presentation in late October or early November 2004. Vendors responding to this RFI and who are interested in making a presentation to the Team, please notify the Contracting Officer, William Voitk via E-mail (William.Voitk@noaa.gov) by September 15, 2004. The Team will make a decision on which vendors to invite to make presentations.

1. Briefly describe the involvement your organization has had in providing HPC systems to your customers. Has your HPC involvement included weather/climate applications? Describe relationships you have or have had with particular HPC, storage, communications, software, and facilities providers in support of your HPC involvement. Any references you can provide would be appreciated. (1 page)
2. Describe your organization's ability to provide engineering support to NOAA HPC users in the Washington, DC; Boulder, CO; and Princeton, NJ areas. (1/2 page)
3. Describe any anticipated HPC technology developments (i.e. compute, storage, network) that NOAA should be aware of to ensure that our SON elicits the best responses from the vendor community. Has your organization had a role in HPC Grid applications? (1 page)
4. Describe the largest file size your system can handle now, whether this is a hardware or software limitation and projections for the largest file size during the base and option periods of performance (See section C.4.3 in the SON document). Describe any alternatives solutions to maximize file size and trade-offs compared with other solutions. Describe the largest number of inodes your filesystem can handle now and projections for the base and option periods of performance. Describe any alternatives solutions to maximize inode number and trade-offs compared with other solutions. (1page)
5. The user profiles as identified in the SON show the majority of users located in 3 geographic areas with some additional remote users. What sort of bandwidth requirements would you expect the remote users to require? How would configurations comprising 1, 2, or 3 locations affect your system design and network bandwidth requirements? Identify the magnitude of any cost impact that could be expected in any given configuration. (1 page)
6. NOAA is planning to conduct two concurrent procurements: one for Operations¹ and this one, for R&D. Do you plan to submit proposals for both? If so, what challenges or opportunities does this present to your organization? If not, why not? Are there any changes to the proposed schedule or approach that you would suggest to help your organization be more responsive? Note: Vendors are not required to submit proposals for

¹ A separate acquisition is being conducted by NOAA's National Centers for Environmental Prediction (NCEP) to acquire two (primary and backup) high performance computer systems to be used by the National Weather Service in performing its operational weather and climate forecasting mission.

both the R&D and Operations. (1/2 page)

7. At this point in time, the Government has not identified sufficient government space to house the entire suite of equipment expected as a result of this procurement. What effect will the availability (or lack of availability) of government space have on your ability to respond to an RFP? (1 page)
8. The Government intends to offer vendors the flexibility to propose a consolidation of facilities or to provide a different geographical mix of functions than now exists. Are you able to evaluate such alternatives including the changes in required support and high bandwidth communications? (1 page)
9. As described in the SON, NOAA is transitioning from an organization-based approach to HPC to a new integrated approach along functional lines. Do you perceive any major problems with this approach or do you have any major concerns with the NOAA consolidated procurement for R&D? (1 page)
10. Based upon your knowledge of NOAA's current Research and Development (R&D) procedures and configurations, are there technologies, available now and over the course of the base period (thru 2010), that would enable NOAA to better integrate its R&D environment in such areas as: job scheduling, programming environment, data management, transitioning models from R&D to operations? (1 page)
11. NOAA plans on including options to augment the R&D HPCS with incremental computational increases based on future unknown requirements. What would be your organization's ability and approach to responding to unanticipated requirements throughout the course of the contract? What would be the best way to include these requirements in the RFP to enable your company to develop a response? (1/2 page)
12. If relevant, describe how possible outcomes of the SCO v. IBM lawsuit may affect the viability and cost of systems software that may be offered. (1/2 page)
13. What issues do you face with respect to the individual benchmark applications NOAA has chosen for this procurement? Do you have any concerns about the approach including the number, variety of benchmark applications or the scope of the workstreams? (1 page)
14. Do you understand the concept of "workstream" as described in the draft SON? Does the SON make it clear that one of the major goals of the acquisition is to optimize the throughput of each workstream? (1/2 page)
15. NOAA plans on issuing a performance-based contract for the R&D HPCS. Describe any performance measures/incentives that you would recommend that NOAA incorporate into the contract. (1/2 page)

16. What questions, recommendations or needs for additional information does your firm have in response to this RFI and draft SON that would help the Government prepare an RFP that your firm will be able to respond to effectively? (1 page)

The vendor's submission should reflect an understanding of NOAA's requirements for product delivery and an overall approach for providing the required capabilities. Multiple or alternative approaches are welcome. Although this RFI requests specific information, it is not intended to discourage innovative thinking on the part of industry to propose alternative solutions or approaches that the Team may not have considered.

Vendors responding should provide a point-of-contact, including: representative's name, email address, mailing address, and telephone number.

Benchmark results should be summarized according to the instructions included with the benchmark suite of applications.

Response Format

Please prepare two (2) paper copies (double-sided) and one (1) ISO 9660 CDROM in PDF, formatted for 8.5" by 11" sheets, single-spaced with margins of one (1) inch on all sides. The type for all documents submitted (including charts and graphs) should be limited to fourteen (14) pages, not exceed twelve (12) characters-per- linear-inch or be smaller than twelve (12) point, and should not exceed six (6) lines-per-vertical-inch.

Delivery Requirements

The Team requests that one (1) paper copy and all CD ROMs be received as a single package by the Government by 12:00 PM local time, on Tuesday, October 12, 2004 to the following location.

U.S. Department of Commerce / NOAA
NWS Acquisition Management Division
1305 East-West Highway, Room 7604
Silver Spring, MD 20910-3281
Attn: William Voitk
301-713-0828 x185

The Team requests that one (1) paper copy and all CD ROMs be received as a single package by the Government by 12:00 PM local time, on Tuesday, October 12, 2004 to the following location.

U.S. Department of Commerce / NOAA
Office of the CIO, HPCC
1315 East-West Highway, Room 9600
Silver Spring, MD 20910
Attn: William Turnbull
301-713-9600

Note that vendors need not respond to this RFI as a prerequisite for participating in the acquisition.

The Team will operate a "Questions and Answers" page on the Project Web Site for vendor questions related to this requirement. Questions should be submitted electronically to this web site. The Team will post the vendor questions and Government answers on the Project Web Site for public viewing, without revealing the source of the questions. If a vendor asks a question that involves proprietary information, the vendor should provide detailed information explaining why the question should be protected from disclosure. Vendor questions designated as proprietary or confidential will be protected from disclosure (except where otherwise required by law and judicial process). The Team will attempt to post answers to questions on the Project Web Site within a week of receipt.