

Mail Station L-559

Extension 2-1985

May 19, 2014

To: Distribution

From: Dona L. Crawford

Subject: 9th Institutional Unclassified Computing Grand Challenge Program RFP

This memo is a call for proposals requesting significant unclassified computing resource allocations (greater than 2,000,000 CPU-hours/year) on institutional capability systems for **up to one year** on Vulcan, Sierra, and/or Catalyst. This call for computing resources is open to all Laboratory scientists and engineers. Current Grand Challenge principal investigators (PIs) must reapply for continuation consideration.

Approximately 10 to 12 proposals will be selected to receive these significant allocations. To be considered, proposals must address a compelling, Grand-Challenge-scale, mission-related problem that pushes the envelope of capability computing while promising unprecedented discoveries in a particular scientific and/or engineering field of research. A successful project would be expected to receive high-level recognition from mission sponsors, the computing community, and the scientific community at large.

Proposals must be submitted via e-mail by **Friday, June 27, 2014**, to Krista Ladner (ladner1@llnl.gov) in PDF or MS Word format. (See the attached file for proposal content and length guidelines.) Acknowledgement of receipt of your proposal will be sent within two business days. (If you do not receive this acknowledgement, please send your proposal again.) Grand Challenge computing allocations awarded under this program will be announced on October 1, 2014 by the Director of the High Performance Innovation Center (HPCIC).

Review and Selection Process

Proposal review will be conducted by the Institutional Grand Challenge Awards Committee (IGCAC) chaired by the HPCIC Director. The IGCAC will arrange for both internal and external reviews, with input from the Multiprogrammatic and Institutional Computing (M&IC) program and the Laboratory Directed Research and Development (LDRD) office.

Six criteria will be used to evaluate proposals:

- **Quality and potential impact of proposed science and/or engineering**
- **Significance and potential impact of proposed computation**

Interdepartmental Letter

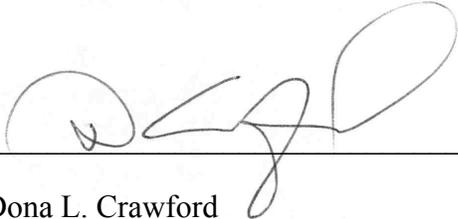
Computation Directorate

- Ability to effectively utilize a high-performance, institutional computing infrastructure
- Quality and extent of internal and external collaborations
- Alignment with the Laboratory science and technology strategic vision
- Performance on previous Computing Grand Challenge awards

The first two criteria are primary and are weighted heavily.

Utilization of the computational resources allocated through this program will be monitored, possibly resulting in mid-year adjustments to the allocations. Grand Challenge allocation award winners will be expected to present the results of their projects at an LLNL-hosted symposium after the end of this 9th campaign.

Institutional computing has been an essential component of our science and technology investment strategy and has helped us achieve recognition in many scientific and technical forums. We must continue to utilize these resources to enhance our presence and continue to generate headline scientific and technical accomplishments. I look forward to your compelling and exciting proposals.



Dona L. Crawford
Associate Director, Computation

9th Institutional Unclassified Computing Grand Challenge RFP

Proposal Content and Length Guidelines

This call is only for High Performance Computing (HPC) allocations. Proposals should be written at an appropriate level of detail for a technically diverse review team (e.g., as for *Scientific American*). Accessible references are encouraged, as are pointers to additional Web-accessible information. Publications or refereed articles mentioned in the proposal can be attached. The proposals are limited in length to a cover page and five pages of text (seven for continuing proposals) as follows:

General Information [1 page]. This section should include project title, and the names and contact information for the principal investigator and members of the research team (internal and external) who will require access to the computing resource. Proposers must describe, for each member of their team, the level of effort and the source of funds that will be devoted to this project. Please state whether LDRD support will be sought for the effort of some team members. Non-sensitive country foreign nationals requiring access to any LLNL computing resource must have an approved computer security plan in place prior to being granted access. Contact the LC Hotline (925-422-4531) for details on current policy regarding foreign national access.

Abstract [1 page]. This section should describe the project's scientific and/or engineering objectives and specific computational goals.

Summary of Results of Previous Computing Grand Challenge Work [2 pages maximum]. This section is only for previous Computing Grand Challenge awardees.

Significance of Proposed Work [1-2 pages]. This section, of utmost importance during the selection process, should include an assessment of the significance and singular impact of **both** the proposed science and/or engineering **and** the proposed Grand Challenge calculation. Examples include impact on the following: a scientific, computational, or engineering discipline or field of research; demonstration and acceptance of high-fidelity numerical simulations as a scientific or decision-making tool; missions of Laboratory, NNSA, or Department of Energy; and impact on the future development of HPC methods or technology.

HPC Requirements and Experience [1-2 pages]. The proposal must justify the average number of CPU hours per month requested between the start of awards, October 1, 2014, and projected end of awards, October 1, 2015. This section should include a research plan outlining how the researchers will approach their Grand Challenge calculation, including information on expected high or low-use periods during the year. Fair share allocations will vary between 2 million and 10 million CPU/hours for the year on Vulcan (BGQ), on Sierra (SU cluster), on Catalyst (SU cluster with NVRAM), or some combination of these systems. Fair share allocations cannot be "banked." To receive your full allocation, you must continually have jobs in the queue; if you do not run for some period of time, that opportunity is lost. You should also include any specific architecture, memory, disk, and archival storage (HPSS) requirements you have as well as the approximate job mix (number of jobs and number of nodes per job) for the duration of this campaign. In this section, you also need to provide evidence that you have experience running on large parallel computing resources and that the codes you plan to use are robust and can scale to the levels you propose to run. Show evidence of prior success and justify your plans for this allocation.