

## **8. Proposal Submission Process**

### **National Laser Users' Facility and Laboratory Basic Science**

Omega Facility users include all those who are conducting or plan to conduct experiments at the facility including scientists from Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL), the Laboratory for Laser Energetics (LLE), Naval Research Laboratory (NRL), Sandia National Laboratories (SNL), Commissariat à l'Énergie atomique et aux énergies (CEA), the Atomic Weapons Establishment (AWE), and National Laser Users' Facility (NLUF) program Principal Investigators (PI's) and collaborators. The Inertial Confinement Fusion (ICF) and High-Energy-Density (HED) Program efforts are coordinated through respective committees that include representatives from the three national weapons laboratories (LLNL, LANL, and SNL) as well as LLE. The U.S. Department of Energy/National Nuclear Security Administration (DOE/NNSA) provides annual guidance that determines the fractional allocation of the Omega Laser Facility shot time to the ICF and HED Programs and to Fundamental Science experiments [Laboratory Basic Science (LBS) and NLUF].

The submission and approval of proposals for the NLUF and LBS programs involve biennial (in the case of NLUF) and annual (in the case of LBS) calls for proposals and are the subject of this chapter.

#### **8.1 NLUF PROGRAM**

The University of Rochester operates the NLUF under an agreement with DOE. DOE funds the operation of the Omega Laser Facility, thereby making it possible for researchers to conduct approved/allocated experiments at the University of Rochester without direct charge. DOE provides grants directly to NLUF participants. The projects funded under this program are for conducting fundamental experimental research in HED science using the research tools and resources of the NLUF. This includes, but is not limited to, inertial fusion, plasma physics, spectroscopy of highly ionized atoms, laboratory astrophysics, fundamental physics, materials science, biology, and chemistry.

A review committee (NLUF Steering Committee) is appointed by the President of the University of Rochester with DOE's approval. The review committee recommends applications deemed worthy of laser time on the NLUF in a ranked order. Final selections are made by a designated DOE/NNSA official based on technical-merit review, cost, and funding availability. Proposal submissions and reviews are currently made biennially.

Since its inception in 1979, NLUF has received 329 proposals from prospective users of which 176 have been accepted. The DOE/NNSA has recently made available \$1.6 million per year to NLUF users to support their experiments at the Omega Laser Facility. These funds provide graduate student support, some limited senior investigator support, supplies, travel, and some equipment support for the NLUF users. In addition, DOE/NNSA also has made available up to \$0.9 million of support for target fabrication for NLUF users through the DOE/NNSA target-support contractor.

This guide provides the appropriate technical references for researchers to prepare NLUF proposals for the use of the OMEGA and OMEGA EP Laser Systems at LLE. Calls for proposals to use these two laser systems as part of the NLUF program are issued by DOE/NNSA through the Albuquerque Operations Office. LLE serves as the technical liaison for NLUF and, as such, is the primary interface for technical discussions prior to preparing proposals. Although some detailed information is provided in this guide to assist the potential users to formulate and field proposals at the LLE facility, *the official DOE/NNSA solicitation contains the only formal proposal-submission regulations that govern the DOE/NNSA proposal-selection process. Prospective NLUF users must follow all the instructions on the official DOE/NNSA solicitations.*

The research facilities available to NLUF participants include the OMEGA and OMEGA EP Laser Systems (operating in routine configuration), and standard laser and plasma diagnostics. DOE/NNSA also funds General Atomics (GA) to provide limited target-fabrication support to NLUF users. Detailed target-fabrication requirements must be provided in the users' proposals to ensure this support.

In addition to the OMEGA and OMEGA EP lasers and associated equipment, LLE has supporting laboratories, computing resources, shop facilities, and engineering resources. These auxiliary facilities are also made available to NLUF participants if required, but fees may be charged for their use.

All potential and approved NLUF users of the facility are expected to be familiar with the contents of this handbook and the relevant references to which it points. An understanding of the general information, policies, and procedures contained herein is necessary to formulate, submit, and carry out a user proposal. Additional information is provided on the procedures to follow once a proposal is conditionally approved but before system shots are carried out. Finally, introductory and orientation information is provided to assist a user during visits to LLE.

Evaluation of NLUF applications is conducted using a merit-review process in accordance with the criteria set forth in the DOE solicitation for proposals. Utilizing merit review, applications undergo a preliminary screening to determine whether the requirements of the solicitation have been met before they are subjected to a detailed evaluation. Applications that do not include all requested information (as specified in the DOE/NNSA solicitation) may be considered nonresponsive and may not receive further consideration.

After the preliminary review, qualifying applications are subjected to a technical peer merit review. A scientific peer committee of highly qualified individuals will evaluate the applications using the following criteria:

- (a) Scientific/technical soundness and quality of the proposed method/approach.
- (b) Overall scientific/technical merit of the experiment and its relevance to its field of research.

- (c) The competence, experience, and past performance of the principal investigator and key project personnel.
- (d) The demands of the proposal in terms of resource requirements of the LLE facilities and personnel.

Over 80% of the accepted proposals have come from university laboratories, including Auburn University, Brigham Young University, Harvard University, Illinois State University, Massachusetts Institute of Technology, Polytechnic Institute of New York, State University of New York at Buffalo, State University of New York at Geneseo, Syracuse University, University of California at Berkeley, University of California at Davis, University of California at Los Angeles, University of Connecticut, University of Florida, University of Illinois, University of Maryland, University of Michigan, University of Nevada at Reno, University of Pennsylvania, University of Rochester, University of Texas, University of Wisconsin, and Yale University.

## 8.2 LBS PROGRAM

During FY08 a governance plan was implemented to formalize scheduling the Omega Laser Facility as an NNSA User Facility. Under this governance plan, Omega Facility shot days are allocated by campaign including the ICF and HED campaigns and Fundamental Science experiments. A portion of the Fundamental (Basic) Science experiments are allocated to the NLUF program and the remainder are allocated to the Laboratory Basic Science (LBS) program, comprising peer-reviewed fundamental science experiments to be conducted by the ICF laboratories including LANL, LLNL, LLE, NRL, and SNL.

Soliciting and scheduling LBS experiments parallels that of the NLUF program with two exceptions: (a) LBS involves an annual call for proposals that run for a maximum of one year and (b) the solicitation is handled completely at LLE and involves only the allocation of shot time at the Omega Facility. The LBS users are expected to provide their own support (from their own institution) to support their experiments (travel, supplies, equipment, and labor).

An independent review committee of scientists with expertise in HED physics is appointed by the Laboratory Director. The review committee recommends applications deemed worthy of laser time at the Omega Laser Facility in a ranked order. Final selections are made by the Laboratory Director. Since its inception in 2008–2009, the LBS program has received 196 proposals from prospective users of which 89 have been accepted.

All potential and approved LBS users of the facility are expected to be familiar with the contents of this handbook and the relevant references to which it points. An understanding of the general information, policies, and procedures contained herein is necessary to formulate, submit, and carry out a user proposal. Additional information is provided on the procedures to follow once a proposal is conditionally approved but before system shots are carried out. Finally, introductory and orientation information is provided to assist a user during visits to LLE.

Evaluation of LBS applications is conducted using a merit-review process in accordance with the criteria set forth in the annual solicitation for proposals. Utilizing merit review, applications undergo a preliminary screening to determine whether the requirements of the solicitation have been met before they are subjected to a detailed evaluation. Applications that do not include all requested information may be considered nonresponsive and may not receive further consideration.

After the preliminary review, qualifying applications are subjected to a technical peer merit review. A scientific peer committee of highly qualified individuals will evaluate the applications using the following criteria:

- (a) Scientific/technical soundness and quality of the proposed method/approach.
- (b) Overall scientific/technical merit of the experiment and its relevance to its field of research.
- (c) The competence, experience, and past performance of the principal investigator and key project personnel.
- (d) The demands of the proposal in terms of resource requirements of LLE facilities and personnel.

Summaries of the LBS experiments carried out in FY13 are included in Appendix D.