

LLNL Scholar Engagement and Education Strategic Plan

This strategic plan defines a vision and mission for the Laboratory's scholar engagement and educational programs. It establishes three enduring goals with clear benefits to DOE/NNSA and LLNL. Appendices A through D describe four programs that support these goals and are consistent with Contract 44.

Vision Statement: LLNL is recognized as a world-class scientific collaborator, valued national asset, and employer of choice within the academic and local communities.

Mission Statement: LLNL will engage students and faculty in collaborative R&D, work study opportunities, and educational activities that support DOE programmatic objectives, address future national security workforce needs, and enhance community awareness and understanding of science, DOE, and the Laboratory.

Strategic Goals: The Laboratory will realize its vision by working toward three enduring and complementary strategic goals. Each of these goals seeks to engage students and faculty at all levels, but with different emphases. The Laboratory will focus on scholar employment opportunities for post-secondary students and faculty that will directly contribute to DOE/NNSA programmatic, scientific, and recruiting objectives. The Laboratory will conduct various educational programs for students, teachers, and the general public aimed at increasing interest in science and engineering and improving the quality of science, technology, engineering and mathematics (STEM) education in local communities.

Goal 1: Develop and sustain long-term academic partnerships focused on NNSA's programmatic and scientific mission objectives (Collaborative R&D).

Benefits:

- Focuses external academic researchers on NNSA and LLNL programmatic and scientific problems
- Exposes LLNL technical staff to new ideas
- Promulgates LLNL scientific advances to the outside world
- Enhances the scientific reputation of the Laboratory and NNSA
- Increases WFO and Science funding via joint proposals

Strategies:

- Special employment opportunities
- Contractual and consulting agreements

Goal 2: Encourage post-secondary students in relevant science and engineering fields to pursue LLNL employment (College Recruiting).

Benefits:

- Nurtures a diverse pipeline in key areas of science and engineering with an emphasis on DP critical skills
- Exposes students and faculty to NNSA programs
- Introduces students to LLNL work environment
- Builds long-term relationships with key faculty members
- Establishes LLNL as an "employer of choice"

Strategies:

- Special employment opportunities
- Contractual agreements
- Student support programs
- Campus recruiting

Goal 3: Increase student and teacher interest in science and engineering and awareness of DOE/NNSA and LLNL programs through STEM educational activities.

Benefits:

- Supports DOE's emphasis on STEM education
- Promotes student and teacher science literacy
- Increases community awareness and appreciation of DOE/NNSA and LLNL
- Enhances LLNL's ability to recruit top S&E staff by improving the quality of STEM education in local schools

Strategies:

- Educational activities
- Academic partnerships
- Teacher training

Implementation: The Laboratory will achieve the above goals through the implementation of various programs and management initiatives. Many of these activities are already under way in accordance with Contract 44 and/or explicit NNSA Contracting Officer approval (e.g., research subcontracts and campus recruiting). LLNS is supporting complementary activities through its NR budget (e.g., local scholarships). The purpose of this strategic plan is to provide a context for these activities and the four programs proposed in Appendices A through D. The proposed programs emphasize scholar employment and education mechanisms. They also support the goals described in the LLNS Diversity Plan (UCRL-AR-233255), especially with regard to improving workforce diversity (Section 1) and enhancing educational outreach (Section 2). They will be executed in accordance with Appendices A and B of Contract 44.

Costs: Allowable costs are limited to those that are (i) explicitly listed in the attached program descriptions; (ii) associated with other approved Contract 44 activities; or (iii) separately approved by the NNSA Contracting Officer. LLNL also may support its scholar engagement and education programs with funds from non-DOE sources, including LLNS and other companies, public and private institutions, and individuals—so long as these funds are managed outside Contract 44.

Any equipment loans will be made in accordance with LLNL policies and procedures and Contract 44.

Roles and Responsibilities: The proposed programs fall into two main areas: (1) scholar employment and (2) STEM education. The Principal Associate Director for Science and Technology (PAD-ST) will oversee these programs and serve as the Laboratory's single point-of-contact. Program execution will be managed by the Associate Director for Strategic Human Capital Management (AD-SHCM) and Director of Public Affairs Office (D-PAO), respectively. The PAD-ST will review and assess the programs annually and provide overall guidance with

respect to the Laboratory's strategic goals in this area. The AD-SHCM and D-PAO are responsible for ensuring that the programs are properly and consistently implemented within the Laboratory.

Assessment: The PAD-ST will review the programs annually. This review will be based on an evaluation of program-specific metrics, quarterly progress reports, feedback from the participants, written assessments of student and mentor performance, and additional information as be may appropriate. The PAD-ST will practice continuous process improvement via lessons learned exercises and functional management assessments in cooperation with the PAD for Operations and Business.

The PAD-ST will review this strategic plan annually with LLNS senior management and revise as necessary to ensure continued alignment with LLNL, NNSA, and DOE mission needs. The PAD-ST will summarize the results of these reviews in an annual report to the LLNL Director, LLNS President, and NNSA Contracting Officer.

Revisions: Any new program elements or significant changes to existing activities require approval by the PAD-ST. Any new programs outside the scope of this strategic plan require a modification of the plan and approval by the NNSA Contracting Officer.

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Appendix A: Student Internship Program

Purpose: The Student Internship Program (SIP) allows students to engage in work-study employment opportunities in relevant science, engineering, and administrative fields. It provides a diverse, qualified pipeline of potential employees with key skills, knowledge, and abilities, including DP critical skills. It exposes students to NNSA programs, introduces students to the LLNL work environment, and helps to establish LLNL as an employer of choice.

Description: LLNL recruits at targeted universities nationwide to develop a pool of diverse, qualified applicants to participate in the Student Internship Program. Interested students from these and other universities apply to a broad set of posted assignments, and are selected by the hiring organization based on meeting specified skill, experience and academic achievement requirements. Assignments may be full time or part time throughout the year.

Students must be enrolled and in good academic standing at an accredited institution, or have been accepted to begin an undergraduate or graduate program, prior to commencing employment. Students must meet the minimum requirements of the assignment and be able to obtain a P clearance. Students are subject to applicable LLNL administrative, personnel, security, and ES&H policies and procedures.

The hiring organization will define an assignment that is relevant to its needs and the student's interests, as well as appropriate to the student's abilities and the expected term of the appointment. The hiring organization also will assign a mentor to oversee the student's work (see next paragraph). Salaries will be determined by the student's education level and discipline per a salary schedule prepared by the Strategic Human Capital Management Directorate.

The mentor will ensure that the student understands his or her assignment and will meet regularly with the student to monitor progress. The mentor will ensure that the student completes all required training and adheres to applicable Laboratory policies and procedures. The mentor will prepare a summary evaluation of the student's performance upon completion of the internship and will assess the student's suitability for future employment.

The student will complete all required training and will work on the defined assignment under the supervision of his or her mentor. The student also will participate as appropriate in activities that provide exposure to the Laboratory, including lectures, tours, and networking functions. The student will document his or her accomplishments in the form of a poster, oral presentation, and/or written report as determined by the student's mentor.

The Associate Director for SHCM will manage this program and document its activities annually. Individual program elements will be subject to annual review by the PAD for S&T.

Allowable Costs:

- Student intern salaries per a published salary schedule
- Transportation (including limited personal effects) between the student's home and Livermore for business purposes (but no more than three round trips per fiscal year)
- Per diem (lodging and M&IE) while on assignment at the Laboratory

Metrics:

- Number of program participants, including demographic analysis
- Number of program participants hired into other appointments
- Number of publications and conference presentations
- Survey of participants' satisfaction and suggestions for improvements
- Mentor's evaluation of the student's performance and suitability for future employment

Justification: This program supports Goals 1 and 2 of the LLNL Scholar Engagement and Education Strategic Plan. The enumerated costs are allowable under Contract 44, Appendix A, Section XIV, Special Programs.

Appendix B: Lawrence Scholar Program

Purpose: The Lawrence Scholar Program (LSP) supports graduate students engaged in LLNL-relevant research activities through employment opportunities and collaborative research with the student and his or her faculty advisor. In so doing, the LSP develops strategic university partnerships focused on long-term DOE/NNSA needs. It provides a diverse, qualified pipeline of potential employees with key skills, knowledge, and abilities, including DP critical skills. Moreover, by virtue of its residential requirements and collaborative nature, this program ensures that the graduating PhD student is more likely than other applicants to be hired at LLNL.

Description: LLNL recruits at targeted universities nationwide to develop a pool of diverse, qualified applicants to compete for participation in the Lawrence Scholar Program. A Steering Committee will establish (and periodically update) a list of essential skills and relevant research topics for use in recruitment, candidate evaluation, and hiring.

Interested graduate students apply to the LSP and are selected competitively based on the quality and relevance of the proposed research topic, the student's academic achievements, the ability to establish collaborations between the student's faculty advisor and an LLNL mentor, and the potential for future employment. Students are usually 50% time during the academic year and 100% during the summer for up to four years total, assuming satisfactory progress toward a PhD. The student will spend at least six months on-site at LLNL in any calendar year. (Exceptions to any of these requirements may be granted by the Steering Committee with the concurrence of the PAD-ST.)

Students must be enrolled and in good academic standing at an accredited institution, and must have completed the majority of their coursework (e.g., advanced to graduate candidacy). Students must focus their PhD thesis research on the LLNL-relevant topic proposed in their application. Students must meet the minimum requirements of the program and be able to obtain a P clearance. Students are subject to applicable LLNL administrative, personnel, security, and ES&H policies and procedures.

The hiring organization will define an assignment that is relevant to its needs and the student's interests, as well as complementary to and supportive of the student's proposed research. The hiring organization also will assign a mentor to oversee the student's work and collaborate with the student's academic advisor (see next paragraph). Salaries will be determined by the student's education level and discipline per a salary schedule prepared by the Strategic Human Capital Management Directorate.

The mentor will ensure that the student understands his or her assignment and will meet regularly with the student to monitor progress. The mentor will ensure that the student completes all required training and adheres to applicable Laboratory policies and procedures. The mentor will collaborate with the student and his or her faculty advisor on the proposed research topic. The mentor will prepare an annual summary evaluation of the student's performance and suitability for future Laboratory employment. The mentor will assist the student in identifying employment opportunities and will facilitate interviews for appropriate LLNL positions as the student nears completion of his or her PhD.

The student will complete all required training and will work on the defined assignment and relevant research under the supervision of his or her mentor. The student also will participate as appropriate in activities that provide exposure to the Laboratory, including lectures, tours, and networking functions. The student will document his or her annual progress in the form of a poster, oral presentation, and/or written report as determined by the student's mentor.

The Associate Director for SHCM will manage this program and document its activities annually. Individual program elements will be subject to annual review by the PAD for S&T.

Allowable Costs:

- Lawrence Scholar salaries per a published salary schedule
- Transportation (including limited personal effects) between the student's home and Livermore for business purposes (but no more than six round trips per fiscal year)
- Per diem (lodging and M&IE) while on assignment at the Laboratory
- Relocation expenses (per policy) if the student relocates to the Bay Area to work in residence at the Laboratory. In this case, employment must exceed twelve continuous months (but be less than forty-eight months). If the participant chooses this option, he or she may not receive transportation and/or per diem expenses.

Metrics:

- Number of program participants, including demographic analysis
- Number of program participants hired into other appointments
- Number of publications and conference presentations
- Number of program participants who become collaborating faculty
- Survey of participants' satisfaction and suggestions for improvements
- Mentor's evaluation of the student's performance and suitability for future employment

Justification: This program supports Goals 1 and 2 of the LLNL Scholar Engagement and Education Strategic plan. The enumerated costs are allowable under Contract 44, Appendix A, Section XIV, Special Programs.

Appendix C: Faculty Employee Program

Purpose: The Faculty Employee Program (FEP) temporarily employs college professors and school teachers (hereafter called “faculty”) in collaborative research and work-study opportunities in relevant science, engineering, and administrative fields. Program participants contribute to Laboratory and NNSA scientific and programmatic objectives via mission-relevant research and development activities and/or the advancement of science curricula within schools and colleges. This Program builds long-term, mutually beneficial relationships with the participating professors and teachers. It exposes them and their students to NNSA programs, introduces them to the LLNL work environment, and helps to establish LLNL as an employer of choice. In the case of university faculty, this program also strengthens recruiting relationships by helping to identify students for the Student Internship Program and for the Lawrence Scholar Program.

Description: The Faculty Employee Program temporarily employs faculty to collaborate with LLNL staff on projects of mutual interest. These projects are usually collaborative research efforts, but may also include developmental and training assignments in support of approved Scholar Engagement and Education programs. Interested faculty apply to a broad set of advertised opportunities, and are selected by the hiring organization based on meeting specified requirements, including key skills and established interactions with LLNL staff. Assignments may be full time or part time throughout the year.

Faculty participants must be members of accredited institutions, or have been accepted to begin employment at such an institution, prior to commencing employment. Faculty must meet the minimum requirements of the assignment and be able to obtain a P clearance. Faculty employees are subject to applicable LLNL administrative, personnel, security, and ES&H policies and procedures.

The hiring organization and faculty participant will define an appropriate assignment and term of appointment. The hiring organization also will assign a Laboratory collaborator to work with the faculty participant (see next paragraph). The temporary salary will be based on the faculty participant’s current salary and will not exceed his or her prorated annualized academic salary.

The Laboratory collaborator will ensure that the faculty employee understands his or her assignment, completes all required training, and adheres to applicable Laboratory policies and procedures. The Laboratory collaborator will prepare a summary evaluation of the faculty employee’s performance upon completion of the assignment.

The faculty employee will complete all required training and will work on the defined assignment under the direction of his or her Laboratory collaborator. The faculty employee also will participate as appropriate in activities that provide exposure to the Laboratory, including lectures, tours, and networking functions. The faculty employee will document his or her accomplishments in the form of a poster, oral presentation, and/or written report.

The Associate Director for SHCM will manage this program and document its activities annually. Individual program elements will be subject to annual review by the PAD for S&T.

Allowable Costs:

- Faculty salary based on the participant's current salary and not to exceed his or her prorated annualized academic salary.
- Transportation (including limited personal effects) between the faculty's home and Livermore for business purposes (but no more than six round trips per fiscal year)
- Per diem (lodging and M&IE) while on assignment at the Laboratory
- Relocation expenses (per existing policy) if the faculty member relocates to the Bay Area to work in residence at the Laboratory. In this case, employment must exceed twelve continuous months (but be less than forty-eight months). If the participant chooses this option, he or she may not receive transportation and/or per diem expenses.

Metrics:

- Number of program participants, including demographic analysis
- Number of publications and conference presentations
- Number of proposals submitted to external funding agencies
- Number of program participants' students who work at LLNL
- Survey of participants' satisfaction and suggestions for improvements
- Lab collaborator's evaluation of the faculty member's performance

Justification: This program supports Goals 1, 2, and 3 of the LLNL Scholar Engagement and Education Strategic Plan. The enumerated costs are allowable under Contract 44, Appendix A, Section XIV, Special Programs; and Contract 44, Appendix B, Section 6.3, Science and Math Education.

Appendix D: STEM K-12 Education Program

Purpose: The Science, Technology, Engineering, and Mathematics (STEM) K-12 Education Program (SEP) seeks to enhance K-12 STEM education in order to advance STEM knowledge and appreciation, improve local schools, and support the Secretary of Energy's STEM education priority. Improved STEM education makes LLNL more attractive to prospective employees who value good schools with strong STEM curricula and teachers.

Program Description: The STEM K-12 Education Program supports a variety of teacher professional development and student enrichment activities. Individual program elements must possess several of the following characteristics:

- substantive academic content
- relevance to LLNL science and technology
- emphasis on K-12 teachers and/or middle and high school students
- utilization in local school districts and/or state colleges
- continuing education or college credit for teacher programs
- encourage pursuit of STEM career opportunities

SEP does **not** include general educational activities conducted for community outreach purposes under Contract 44, Appendix B, 6.4 Communications and Public Affairs (e.g., LLNL tours, public events, presentations and speaking engagements, etc).

Teacher development: SEP teacher development activities connect educators (herein called Participants) to real-world, cutting-edge research conducted at LLNL. This exposure to LLNL science and technology enhances their STEM literacy and provides them with information resources that they can incorporate into their classrooms to stimulate student interest in science and technology. Participants may earn undergraduate or graduate credit from a California State University (CSU) campus.

Teacher development activities include science education instruction for credentialed teachers (professional development), pre-credentialed students preparing to enter the classroom (training), and pre-baccalaureate science students considering a teaching profession (recruitment). Program elements are developed and executed by LLNL in collaboration with education partners to support DOE educational objectives and improve the quality of education in local school districts. Educational partnerships include the University of California (UC), California State University, community colleges, and local school districts.

Student enrichment: SEP student enrichment activities enhance the quality of STEM education in local schools, increase student interest in STEM careers, and increase awareness and understanding of DOE, NNSA, and LLNL programs. Most of these activities are conducted in partnership with others, including Sandia National Laboratories/California, local colleges, and local businesses—all of which contribute funds and/or in-kind contributions. The activities target students, their teachers, and their parents and are conducted in the local communities in which Laboratory employees live.

A team approach is used for the development and execution of teacher and some student program activities. For example, science teachers and/or college staff employed by the

Laboratory work in collaboration with LLNL scientists to ensure quality science content, model best practices, and align programs with California Science Content Standards. Such personnel are hired as faculty employees (via FEP) or procured via a subcontract. LLNL employee participation is in accordance with LLNL Personnel Policies and Procedures.

SEP activities are typically offered in partnership with other organizations and are therefore often funded by a variety of sources, including DOE, UC, CSU, and non-DOE grants, as well as participating organization cost sharing. For example, participants may be paid via the DOE ACTS Program (funded by the DOE Office of Science), or they may receive stipends from third-party sources, including CSU and private industry.

Current program elements include but are not necessarily limited to:

- Teacher Research Academies (professional development with UCD cost-sharing)
- DOE Academies Creating Teacher Scientists (develop outstanding STEM teachers)
- Edward Teller Science & Technology Symposia (one day workshops)
- Emerging Teachers (research internships and training with CSU cost-sharing)
- Science on Saturdays (lecture series introduces students and teachers to LLNL S&T)
- Tri-Valley Science & Engineering Fair (encourages students to pursue STEM careers; affiliated with Intel; significant cost sharing)

The Director of PAO will manage this program and document its activities annually. Individual program elements will be subject to annual review by the PAD for S&T.

Allowable Costs:

- Teachers salaries (via the Faculty Employee Program) for STEM K-12 Education Program development and execution to ensure relevance to LLNL and NNSA needs
- Off-site facility rental for event execution via approved procurement mechanisms
- Necessary supplies and materials

Metrics:

- Number of program participants, including demographic analysis
- Amount of non-DOE cost-sharing
- Survey of Participants' satisfaction and suggestions for improvements

Justification: This program supports Goal 3 of the LLNL Scholar Engagement and Education Strategic plan. The enumerated costs are allowable under Contract 44, Appendix A, Section XIV, Special Programs (b) and (d) and Appendix B, Section 6.3, Science and Math Education.