

Computing Sciences Integrated Safety Management Plan

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REVISION LOG

Date	Major/Minor	Brief Description of Revision
January 2007	Minor	<ul style="list-style-type: none"> • Organizational Chart updated. • Charts, graphs and supporting documentation updated to reflect RY/FY07. • Added URLs. • Added core function descriptions.
October 2008	Major	<ul style="list-style-type: none"> • Added ISM core functions and guiding principles. • Added links to additional Policy and Procedure documents. • Added stop work policy. • Updated Scope of Work Authorized, adding Job Hazards Analysis (JHA) and Activity Hazard Document (AHD). • Deleted specific training course requirements. • Added signature page.
March 2009	Major	<ul style="list-style-type: none"> • Added Revision Log. • Updated Accountability and Responsibility section to incorporate most recent PUB-3000 requirements. • Updated work authorization information. • Added Employee Rights section.
March 2010	Minor	<ul style="list-style-type: none"> • Sec. 1: Added work locations. • Sec. 3: Modified details on walkarounds, construction contractor safety, and staff work expectations. • Sec. 5: Removed mention of Human Subjects research, updated AHD description. • Sec. 8: Updated Resource Allocation section. • Made minor housekeeping revisions throughout.
March 2012	Major	<ul style="list-style-type: none"> • Sec. 2: Added third Division. • Sec. 3: Updated Accountability and Responsibility wording. • Sec. 5: Added Working Alone policy, updated AHD descriptions. • Sec. 8: Updated Directorate resources.
March 2013	Minor	<ul style="list-style-type: none"> • Sec. 2: Updated Directorate Organization Chart. • Made minor housekeeping revisions throughout.

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1.0 Purpose

This Computing Sciences (CS) Integrated Safety Management (ISM) Plan provides guidance to implementation of the integrated environment, safety and health (ES&H) policies within the [Computing Sciences Directorate](#). CS has integrated each of the five functions and seven guiding principles of Integrated Safety Management (ISM)ⁱ from the [Lawrence Berkeley National Laboratory \(LBNL\) ISM Plan](#) into its ongoing research and operations. Furthermore, CS conducts all of its operations in a manner that protects the health and safety of employees and the general public, safeguards the environment, and is consistent with applicable LBNL, university, and government agency policies and regulations. The Laboratory's ES&H policies and requirements are contained in:

[PUB-201, Requirements and Procedures Manual \(RPM\)](#);
[PUB-3000, ES&H Manual](#), and
[PUB-3140, Integrated Environment, Safety, & Health Management Plan](#).

This ISM Plan describes the mechanisms that are applied in Computing Sciences to ensure proper implementation of these safety policies.

2.0 Description of Computing Sciences

The Computing Sciences mission includes computational research and operation of two national user facilities, the National Energy Research Scientific Computing (NERSC) Center and the Energy Sciences Network (ESnet). Berkeley Lab's Computing Sciences organization was created to advance computational science throughout the Department of Energy's Office of Science research programs. Computing Sciences combines computing and network operations with research and development in computer science, computational science, and applied mathematics.

The Computing Sciences Directorate, led by Associate Laboratory Director Katherine Yelick, was created in 1996 and currently has approximately 400 employees and guests. Computing Sciences includes three divisions: the Computational Research Division (CRD), the National Energy Research Scientific Computing (NERSC) Center Division, and the Scientific Networking Division (SND). The SND was formed in 2011, when the Energy Sciences Network was separated from CRD as a stand-alone Division. The CS organizational structure is shown in Figure 1.

The Computational Research Division conducts research and development in mathematical modeling and simulation, algorithm design, data storage, management and analysis, computer system architecture and high-performance software implementation.

The NERSC Division mission is to accelerate the pace of scientific discovery in the Department of Energy (DOE) Office of Science community by providing high-performance computing, information, and communications services. NERSC is the principal provider of high performance computing services to DOE Office of Science programs.

The Scientific Networking Division manages and operates the Energy Sciences Network (ESnet), a high-speed network serving thousands of Department of Energy scientists and collaborators worldwide.

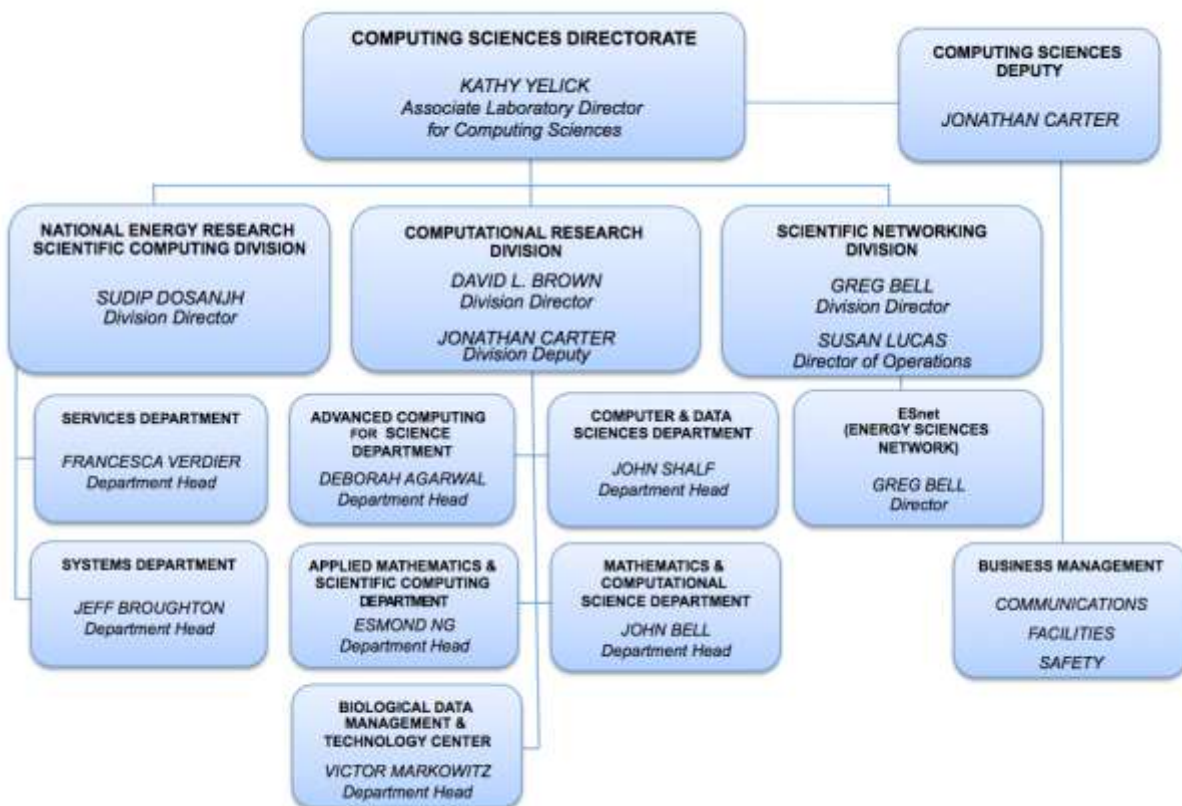


Figure 1 Computing Sciences Organization Chart

Computing Sciences offices and computer rooms are located in the Building 50-complex on the main Lab site, at the Joint Genome Institute in Walnut Creek, and at the Oakland Scientific Facility (OSF), in Oakland. A majority of CRD and SND staff are located in the B50-complex, and NERSC staff are located primarily at the OSF. Small numbers of CRD and NERSC staff work at the JGI, though it is not their primary location. All of the Divisions have some staff that work remotely, both in offices and in technical areas. Drop-in offices have been established in the 50-complex and at OSF, facilitating flexible work arrangements and matrixing of employees. In addition, CS Area researchers collaborate with faculty and scientists located at other institutions. These collaborators may have LBNL employee or Guest status.

3.0 Accountability and Responsibility

Division Management is responsible for ensuring implementation of ES&H policy. Safety in Computing Sciences flows from the Directors of the three Divisions to their direct reports, and from them down to first line supervisors. Division Management ensures that roles and responsibilities for ensuring compliance with ES&H requirements within CS are clearly defined in staff position descriptions and performance review documents.

Line Management includes Department Heads, Group Leads, and other supervisors. Line Management is responsible for protection of the public, employees, and the environment. More specifically, Computing Science line managers are responsible for integrating ES&H into work practices and for ensuring active communication up and down the management line and within the workforce. Line management is responsible for reviewing the ES&H hazards

and controls for their employees, guests, contractors, visitors, students, and matrixed employees, ensuring that the hazard analysis is completed within 30 days of their start date, and that required training is completed and controls are implemented. Sections 5 and 6 of this ISM Plan provide additional detail on work authorization.

Supervisors conduct biannual safety walkarounds to review the safety of their employees and workspaces, documenting their observations and ensuring that unsafe conditions are corrected promptly. One of the walkarounds may be conducted in conjunction with an annual wall-to-wall review by Division management. Supervisors participate in accident investigations to identify accident causes and corrective actions. They ensure that corrective actions identified in walkarounds and accident investigations are entered into the [Corrective Action Tracking System](#) (CATS). Management proactively promotes and encourages safety awareness in the workplace.

Work Leads may be authorized by line management to direct, train, and/or oversee the work and activities of one or more workers. If the supervisor does not designate a Work Lead, the supervisor serves as the work lead.

Area Safety Leaders are responsible for overall safety within technical areas. The CS technical areas are computer rooms. Area safety leaders ensure that the appropriate personal protective equipment has been determined, and that this is posted with other required information at each entrance to their areas.

A Division Safety Coordinator (DSC) serves as a point of contact for all Division staff regarding the implementation and interpretation of the Lab's ES&H policies. The DSC coordinates and manages required safety programs and documentation. The DSC works with CRD, NERSC and SND safety representatives to promote ES&H awareness, communication, safe work practices, and compliance within the NERSC and SND Divisions.

All employees, participating guests, and contractors are responsible for knowing and following the ES&H requirements that apply to their work. They are expected to work safely, and to cooperate and contribute to Computing Sciences ES&H activities as appropriate. They must consult with qualified specialists to resolve any questions about ES&H activities.

All employees, participating guests, and contractors are responsible for bringing safety and health concerns promptly to the attention of the appropriate manager, supervisor, or work lead for resolution. Line management is then responsible for investigating the concern and implementing corrective action. If a satisfactory response is not received, the Division Director should be contacted, followed by the Director of the Environment, Health, and Safety Division.

All employees, participating guests, and contractors are responsible for stopping work activities considered to be an imminent danger. An "imminent danger" is defined as any condition or practice that could reasonably be expected to cause death or serious injury, or environmental harm. The Laboratory's [Stop Work Policy](#) can be found in the RPM.

Subcontractors are required to comply with ES&H requirements. CS managers are responsible for the safe performance of work conducted on-site by subcontractors. When non-construction subcontractor work is hands-on and is conducted on-site, the work hazards are documented in a [Subcontractor Job Hazards Analysis](#). Construction work hazards are

addressed through contractor [Safety Checklists and construction JHAs](#). Subcontractor employees issued an LBNL badge for more than 30 consecutive days are required to complete an individual Job Hazards Analysis and receive the necessary safety training before starting work.

Matrixed employees' supervisors from the home divisions or departments retain all ES&H responsibilities pertaining to the matrixed employees.

Students are afforded the same protections and assume the same obligations as any LBNL employee or guest for safe work practices. Before student work begins, supervisors are responsible for assuring that each student possesses a thorough understanding of safe work practices. Supervisors are responsible for assuring that each student completes a JHA, EHS0010 ([Overview of EH&S at LBNL](#)) training, and performs work safely.

Offsite work is subject to safety requirements and review as applicable, determined in each case by completion of the JHA and consideration of the type of work. CS has some employees who work in permanent offices at other locations or institutions; some employees or Affiliates may be present onsite only once a year for a week or month or other length of time. SND's ESnet employees routinely provide on-site support at computational facilities around the United States.

Telecommuting is addressed on a case-by-case basis, and may be permitted at the discretion of line management, when appropriate.

4.0 Safety Committee

CS maintains an ES&H (Safety) Committee, consisting of representatives from Directorate Management, the Safety Advisory Committee (SAC) representative, the Division Safety Coordinator, the EH&S Division Liaison, CRD Division Departments, the NERSC Safety Representative, and the SND Safety Representative. The Safety Committee is chaired by the Division Safety Coordinator.

The CS Safety Committee's responsibilities include these functions:

- review, maintain and implement the CS ISM Plan
- analyze accident and injury data
- promote ES&H awareness and training
- review the need for specialized training
- participate in planning for ES&H Peer Reviews
- develop metrics and analyze pertinent data
- advise the Associate Laboratory Director on ES&H issues.

Members of the Safety Committee participate in the preparation of Self-Assessment Reports for the Associate Laboratory Director. The Safety Committee also assures that Computing Sciences works to improve the effectiveness of the ES&H program through the dissemination of lessons learned and other appropriate mechanisms. Division Directors attend at least one regular Committee meeting each year.

5.0 Scope of Work Authorized

The majority of Computing Sciences employees work in an office environment with intensive computer use. Staff also perform work in computer rooms or other technical areas and require training appropriate to their activities in these areas. No personal protective equipment (PPE) is required for entry into computer rooms. Computing Sciences Divisions utilize the Laboratory JHA process to apply appropriate controls to the hazards of staff member tasks. CS may implement task-based JHAs when necessary for limited-term work.

Formal authorizations requiring ES&H review are implemented as required by Laboratory policy. Permits, including lockout/tagout and live electrical work permits, are used as necessary to control work hazards of employees and contractors.

[Activity Hazard Documents](#) (AHDs). Computing Sciences has established two AHDs authorizing electrical work: AHD #3527 covers ESnet work to repair and install electrical equipment, maintain servers, and build, test, and move feeder cables, primarily in the ESnet computer room in 50B. AHD #3517 covers OSF operation of electrical breakers, 480V and below, in the OSF computer room. This may be necessary following a power loss, during normal work on clusters and drives, in the event of a tripped breaker, or after installation of new circuits.

[Working Alone Policy](#). Working alone is performing work when no one is within sight or earshot who could help in the event of an emergency. Activities where a plausible injury or exposure could render an individual unable to self-rescue are considered too hazardous to permit working alone. Work leads determine whether any work under their control requires a work alone prohibition and, if required, include controls in the work authorization (JHA, AHD) to implement this prohibition.

Supervisors will review their employees' activities annually or when work changes, and will obtain required approvals for potentially hazardous or regulated work as specified in [PUB-3000, Chapter 6](#).

6.0 Qualification and Training

The LBNL [JHA and training database](#) are mechanisms used to document hazard analysis and record performance and training requirements and their completion. CS staff and long-term guests must complete the JHA process within 30 days of their start date, and possess the requisite qualifications to function safely. Until such qualifications have been met, individuals will perform work only under the supervision of a qualified employee.

CS may develop additional training mechanisms including on-the-job training (OJT) and facility-specific training for work in CS computer rooms. Qualifications include skills, work experience, knowledge, training, and certifications required by regulations, by Laboratory policy, or Division management. Contract labor employees, guests, and students who will be at LBNL for more than 30 days are subject to the same ES&H requirements for qualification and training as career employees performing similar tasks.

CS staff qualifications and training are reviewed as part of the self-assessment program to ensure that skills are commensurate with technical needs and workplace hazards.

7.0 Employee Rights

CS staff may [file an ES&H concern](#) with their immediate supervisor, higher level managers, Director of the EH&S Division, or the local DOE office. Concerns may be submitted by calling the Berkeley Lab Employee Hotline (800) 403-4744. This toll free number is available 24 hours every day and is operated by a third-party vendor for confidentiality and anonymity if so desired by the caller. Persons reporting improper activities are fully protected by the law and Lab policy against retaliation. The LBNL HR Web site also has information regarding whistleblower policy, and provides a number of 24-hour hotlines of potential use to Lab employees.

8.0 Resource Allocation

Supervisors will incorporate appropriate resource allocation to address ES&H concerns in all research and operations proposals. The allocation of funds is particularly important in addressing ergonomic issues but may also be required to cover the cost of safety equipment, permits, and training.

To facilitate implementation and execution of this ES&H Plan, the following Computing Sciences resources are made available:

Directorate ES&H Coordinator
Administrative Support
Directorate ES&H Committee Member
LBNL Safety Advisory Committee Representative

The following resources are made available by the EH&S Division. They are available to assist supervisors, the ES&H committee, and staff in general with any aspects of the implementation of this program.

EH&S Division Liaison
EH&S Subject Matter Experts: Electrical, Ergonomics, Fire Protection, Industrial Hygiene, Laser, Seismic

ⁱ The five functions of Integrated Safety Management (ISM) are:

- Define the scope of work;
- Identify the hazards of the work;
- Develop and implement controls for the hazards;
- Perform the work as authorized; and
- Maintain continuous improvement from regular feedback.

These five ISM core functions are sustained by applying the seven guiding principles of ISM:

- Line management responsibility and accountability for ES&H;
- Clear ES&H roles and responsibilities for managers and staff;
- Competency commensurate with responsibilities;
- An on-going balance between safety on one hand and research and operational priorities on the other;
- Working within standards and requirements;
- Hazard controls tailored to the work; and
- Authorization basis established for the work.