

V. Operations and Infrastructure

Strategic Plan

Our fourth strategic objective is stated in Chapter II: “The University of Chicago and Argonne will continuously improve the cost-effectiveness, management, and operations of the Laboratory.” This chapter presents strategic plans for the following areas of operations and infrastructure at Argonne: human capital; site and facilities; environment, safety, and health; integrated safeguards and security management; information management; communications, outreach, and community relations; performance management; and cost-effectiveness of support functions. The chapter begins with general statements of mission, situation, and goals and strategies for operations and infrastructure.

General Mission

Operations infrastructure and support activities are crucial to the effective and efficient achievement of our R&D mission. Operations organizations work as partners with Argonne’s R&D programs, providing cost-effective, customer-focused infrastructure and services that enable the creation of world-class science, technology, and service products.

General Situation Analysis

Because operations and infrastructure are funded as a charge to the total program funding we receive, there is always great incentive to reduce these overhead costs while still maintaining the effectiveness and quality of operations and services. Every overhead dollar saved is an additional dollar for direct funding of research programs.

General Goals and Strategies

Management of our operations infrastructure and support functions has seven broad goals, specified below along with strategies for their achievement:

- Enable and support Argonne’s R&D work. Provide efficient services, business processes, and information systems that are responsive to programmatic requirements and initiatives.
- Deliver distinctive customer service. Provide efficient customer-focused services that improve employee productivity, advance programmatic goals, and drive operational excellence.
- Provide exceptional infrastructure. Develop innovative strategies for building and maintaining highly reliable, cost-effective site utilities and facilities that support world-class science and technology.
- Enhance external and internal communication. Increase national recognition of our contributions to science and technology. Encourage sharing of information and ideas among all employees. Expand productive partnerships.
- Demonstrate success in safety and security. Effectively integrate safety and security into all operations, perform favorably compared to national standards and external peers, and continually improve performance. Provide appropriate access to Argonne and its user facilities through implementation of carefully considered policies and requirements for both safety and security.
- Promote Argonne as an employer of choice. Provide a high-quality work environment and competitive salary and benefits — all highly valued by employees.
- Deliver outstanding performance. Earn outstanding ratings from DOE in all contractual performance areas for Laboratory operations.

The cornerstone of our approach to efficient operations and successful research is integration of safety, security, environmental, and other operational responsibilities and activities into line

management and work practices throughout the Laboratory, at all levels. Our Integrated Management program addresses the full range of relevant risks we face in our work. It encompasses our Integrated Safety Management program, our Integrated Safeguards and Security Management program, and our Environmental Management System. In all areas, Integrated Management involves careful attention to the following five steps: (1) define the scope of work, (2) analyze the risks, (3) develop and implement controls, (4) work within the controls, and (5) use feedback and make improvements. Policy formulation, leadership, and coordination are provided by the Environment, Safety, Security, and Health Committee. In addition, security considerations are included in assessments of performance of line management and in oversight conducted by the office for Environment, Safety, and Health/Quality Assurance Oversight.

We continually strive to increase the efficiency of our operations and support units while maintaining their effectiveness and quality. The performance-based contract between the University of Chicago and DOE, hereafter referred to as the *Prime Contract*, provides a system for encouraging continuous improvement in our operational functions (as discussed further in Section V.G). With collaboration and support from DOE's Chicago Operations and Argonne Area Offices, we continually strive to refine a full range of best business practices.

A. Human Capital

Situation

The quality of technical staff is a primary determinant of the performance of an R&D laboratory. Our human resources strategy is designed to develop strong leadership, to support a creative and diverse workforce, and to recruit and develop the talent needed to implement our programmatic activities and initiatives.

Human resources management at Argonne is conducted as a partnership between our programmatic and operations organizations and the central Human Resources Division. Critical to the success of this effort is a focus on Laboratory

policies, programs, and initiatives that influence an individual's decision to join the Laboratory, that help shape the working environment for those making a career at Argonne, that contribute to the well-being of employees (even after they retire) through important benefits such as health insurance and retirement income, and that comply with federal and state regulations.

Total commitment to equal opportunity for all people is a fundamental Laboratory policy. We value the diverse cultural and ethnic backgrounds of our employees and strive to create an environment that capitalizes on these differences as one means of maintaining a high-performance workforce.

Goals

The goal of our human capital management is to support the strategic objectives of our programmatic and operations organizations by developing and implementing programs that attract, develop, compensate, and help to retain a qualified and diverse staff. Specific objectives include the following:

- Directly link and integrate centralized human resources strategies with the strategic needs of division managers.
- Improve the quality of employees' work life in order to foster staff satisfaction, individual contribution, and organizational effectiveness.
- Maintain a compensation policy that is competitive with policies at peer organizations and that rewards superior performance.
- Promote the commitment of managers at all levels to equal opportunity, affirmative action, and diversity.
- Develop Laboratory leadership and staff capabilities through targeted management training and skill development opportunities.
- Provide services that promote the well-being and productivity of Argonne employees.

Strategies

The key to effectively integrating centralized human resources strategies with the needs of

individual programmatic and operations divisions is frequent dialogue with division managers, particularly regarding opportunities for centralized services that go beyond purely administrative functions. To achieve this integration, we use formal management surveys, input from human resources liaisons within the divisions, and direct dialogue involving division managers. During regularly scheduled one-on-one meetings, division directors and human resources representatives discuss personnel and recruitment needs, training, diversity targets, and the division's general human capital needs.

Achievement of our goals requires top-quality staff who find personal and professional fulfillment in their work. (Table V.1 describes their extensive academic training.) Our success in employing high-caliber staff starts with recruiting the best and the brightest, including people from diverse backgrounds. In FY 2002 Argonne recruiters participated in eight job fairs, through which they made direct contact with more than 800 potential new hires.

Table V.1 Academic Degrees of Argonne Staff^a

Occupational Category	Total	PhD	MS/MA	BS/BA	Other ^b
Officials and Managers	553	265	141	102	45
Scientists	617	305	123	132	57
Engineers	570	209	143	145	73
Managers and Administrators	271	16	54	103	98
Technicians	527	1	6	70	450
All Others	976	0	3	59	914
Grand Total	3,514	796	470	611	1,637

^a Number of full- and part-time regular employees as of September 30, 2002.

^b Associate level degree or less.

We are committed to strengthening the vitality, quality, and diversity of our workforce. Maintenance of a competitive compensation structure is important in our competition for critical talent. We manage all components of compensation — base pay, merit increases, compensation supplements, and promotion-related increases — as a coordinated whole. Each employee's compensation (apart from fringe benefits) is linked to achieved performance, as evaluated under our appraisal process. That process focuses on sustained performance and

compensation relative to peers and the external market. In its recent certification of Argonne's compensation system, DOE characterized the system as one "... that demonstrates continuous improvement, creativity, and effectiveness."

Total commitment to equal opportunity for all people is a fundamental Argonne policy. Our annual *Affirmative Action Plan* gives managers a summary of previous accomplishments and a blueprint for the future. Supervisors are held accountable for progress in this area. In FY 2002, job postings and recruitment ads were placed in 19 magazines and web sites that target minority job candidates, an increase from 8 in FY 2001. Table V.2 describes the Laboratory's current employee populations.

Our Performance Evaluation Process committee in FY 2002 developed and deployed a new process for evaluating the performance of employees. The committee solicited comments from employees and examined other laboratories and private industry as benchmarks. Employees were informed about the new process through a web site, news articles, and an all-employee meeting. The new process focuses on establishing a clear connection between the goals of each employee, the goals of the Laboratory, and the goals of the major intermediate levels of management.

We supplement the formal education of our employees with performance-enhancing training. Course offerings are based both on assessment of professional development needs and on compliance with DOE directives. The wide range of subjects offered includes supervisory skills, team building, project management, presentation skills, and R&D proposal development. We recently introduced a half-day workshop to orient new supervisors to their roles and responsibilities at the Laboratory. In FY 2002, 622 supervisors, old and new, received training to help them address discrimination, harassment, and similar challenges in the workplace.

Additional Argonne programs that promote the well-being and productivity of employees include health screening and wellness programs, financial education programs, and programs for dealing with life and family issues. Examples include programs on estate planning and

Table V.2 Equal Employment Opportunity at Argonne^a

Occupational Category	Total		Minority Total		White			
	Male	Female	Male	Female	Male	Female		
Officials and Managers	465	88	39	8	426	80		
Scientists and Engineers	1,010	177	159	35	851	142		
Managers and Administrators	108	163	5	27	103	136		
Technicians	465	62	46	9	419	53		
Clerical Workers	18	410	4	66	14	344		
Craftsmen and Laborers	336	37	63	15	273	22		
Service Workers	132	43	29	13	103	30		
Totals	2,534	980	345	173	2,189	807		

Occupational Category	African-American		Hispanic		Native American		Asian	
	Male	Female	Male	Female	Male	Female	Male	Female
Officials and Managers	4	3	6	2	0	0	29	3
Scientists and Engineers	16	2	14	4	3	0	126	29
Managers and Administrators	1	11	2	6	0	1	2	9
Technicians	17	2	19	1	1	1	9	5
Clerical Workers	2	29	2	26	0	1	0	10
Craftsmen and Laborers	45	11	14	3	1	1	3	0
Service Workers	19	7	4	5	2	1	4	0
Totals	104	65	61	47	7	5	173	56

^a Includes both full-time and part-time regular employees as of September 30, 2002.

preretirement planning, a women's wellness series featuring seminars and health screenings, an interactive roundtable on elder care, and a health fair.

To increase the effectiveness and quality of human resources information and to reduce costs, we take advantage of new electronic approaches to information management and reduce our dependence on traditional paper documents. For example, we (1) created an electronic database of 37,000 past Argonne employees to ensure prompt compliance with requests from federal agencies for claims information, (2) implemented a process for scanning retiree files into an electronically accessible format, and (3) designed an automatic process to submit Laboratory job openings to the America Job Bank. Our intranet provides electronic versions of the employee handbook, policy and procedures manuals, benefit plan descriptions, and information on the historical performance of retirement funds.

B. Site and Facilities

Situation

Argonne conducts basic and technology-directed research at two sites owned by DOE. Argonne-East is located on a 1,500-acre site in DuPage County, Illinois, about 25 miles southwest of Chicago. Argonne-West is located on an 800-acre tract within the Idaho National Engineering and Environmental Laboratory (INEEL), about 35 miles west of Idaho Falls, Idaho. Argonne-West is devoted mainly to R&D on nuclear technologies and nuclear environmental management.

The physical infrastructure at Argonne-East contains 4.8 million square feet of floor space, including 77 thousand square feet of nearby leased space. The facilities, valued at approximately \$1.9 billion, currently accommodate about 4,800 persons (including DOE employees, contractors, and guests). Throughout the year, over 2,000 additional researchers use the Laboratory's scientific facilities as visitors or

collaborators. Argonne-East facilities are nearly 99% occupied.

Argonne-West contains 581,000 square feet of floor space, with an estimated replacement value of \$438 million. The site currently accommodates about 690 persons. Recent renovations and continuing maintenance of major facilities are enabling Argonne-West to pursue important research on nuclear technology for DOE. Program sponsors other than DOE-Nuclear Energy are charged for facility utilization in a manner similar to the space use charge-back system at Argonne-East. Site services such as fire protection and dosimetry are purchased from the site contractor for INEEL.

Supplement 3 (located near the end of this document) provides additional information on Argonne’s sites and facilities, including plans for infrastructure and for the rehabilitation and modernization of facilities.

Vision

Argonne will retool its physical setting to achieve a 21st century infrastructure having appropriately configured research facilities that provide reliable, safe, secure, efficient, attractive working environments suitable for world-class science, engineering, and technical services.

Issues and Strategies

In the area of site and facilities, the principal challenges Argonne is addressing are the normal

aging of buildings and infrastructure and a substantial need for upgraded laboratory facilities to meet the challenges of the 21st century. As Figure V.1 shows, 54% of Argonne-East facilities are over 40 years old, while at Argonne-West 65% of space is over 30 years old.

Argonne-East

In recent years Argonne-East has made substantial progress toward the rehabilitation and replacement of its facilities. However, the Laboratory’s backlog of infrastructure and modernization needs is increasing, predominantly due to aging. Figure V.2 shows the condition of buildings at Argonne-East.

Over the infrastructure planning horizon, new programmatic facilities are expected to expand the base of modern, efficient space at Argonne-East. Nevertheless, substantial need for rehabilitation of older facilities remains.

Strategic modernization of Argonne-East facilities centers on three coordinated, phased upgrade projects addressing (1) building electrical systems, (2) building mechanical and control systems, and (3) laboratory space upgrades. The work scope of each project phase is based on priorities established through the Laboratory’s Condition Assessment Survey process.

In general, Argonne-East upgrades a building’s electrical system to support greater mechanical and functional power and lighting loads and to allow more extensive use of

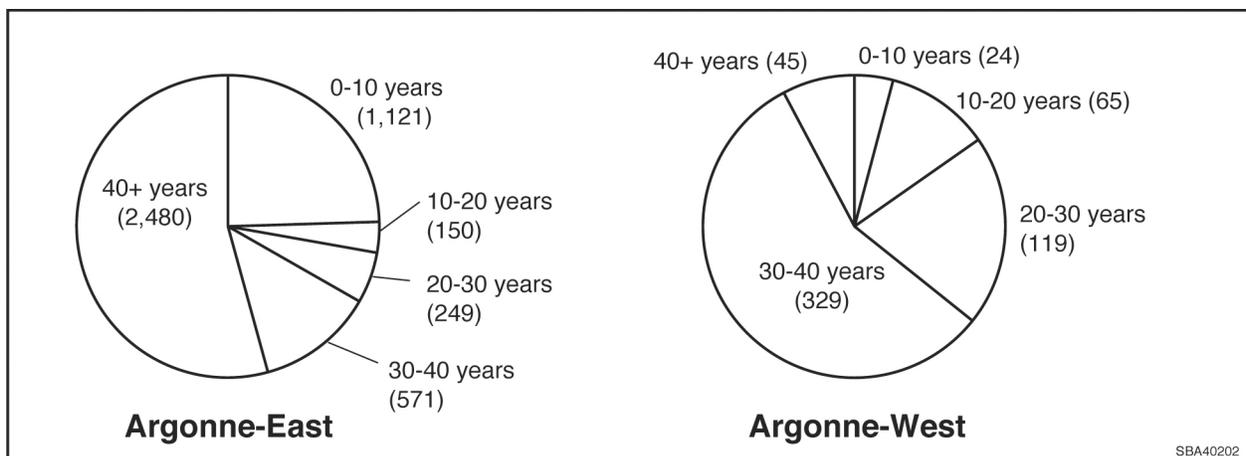


Figure V.1 Age of Argonne Facilities (values in thousands of gross square feet)

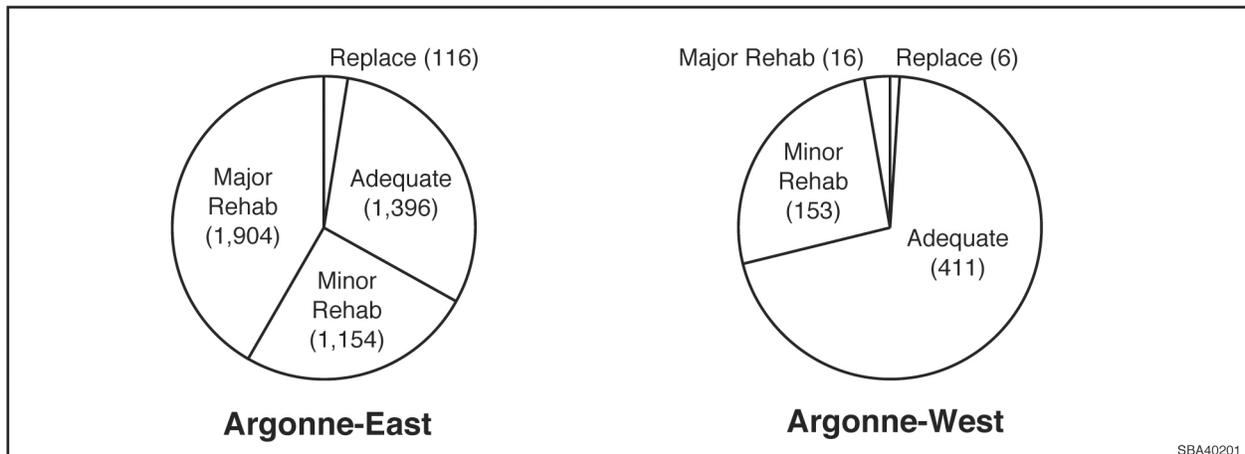


Figure V.2 Condition of Argonne Facilities (values in thousands of gross square feet)

equipment. Improved mechanical and control equipment and upgraded mechanical, distribution, and collection systems are installed as the basis for a building utility support network that is more flexible and adaptable.

In coordination with these efforts, Argonne-East plans significant upgrades to laboratory and office spaces to bring them to today's standards. Modernization is planned for 12 buildings providing 2 million gross square feet of space. The site's new central supply facility exemplifies application of the principles of sustainable design and facilities integration, which will be a hallmark of planned infrastructure upgrades.

To facilitate modernization of laboratory and office space, a general purpose laboratory-office building is needed for use during the accompanying relocation of research groups. In addition, a new high bay facility is needed for general program work.

Roof replacement is a major Argonne-East initiative as the roofs of major buildings near the end of their 20-year design life and the frequency and extent of repairs are increasing. Similarly, deteriorating roads and parking lots will require substantial investment over the next 5 years.

Other site improvements also have high priority. The proposed Phase V Fire Safety Improvements project will reduce the potential for property loss. In addition, the site's central heating plant will require a major upgrade of its auxiliary systems and equipment.

To achieve a 21st century infrastructure, Argonne-East requires total capital funds of approximately \$279 million in FY 2004 through FY 2009. (See Supplement 3 for details.) Figure V.3 shows the distribution of the total between General Purpose Equipment (GPE), General Plant Projects (GPP), and line-item funding. In addition, the site requires a total of \$63 million in direct operational funding from the DOE Office of Science to undertake needed environmental and demolition work not currently supported by funding from the DOE-Environmental Management program.

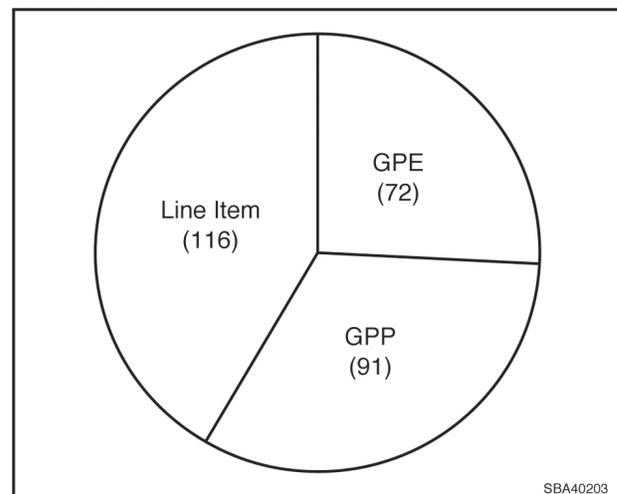


Figure V.3 Six-Year Capital Funding Requirement for Argonne-East (\$ million)

Argonne-West

In recent years Argonne-West has endeavored to maintain the condition of its facilities in mission-ready status. However, as Figure V.2 shows, an estimated 4% of the site's occupied space still needs replacement, major rehabilitation, or upgrades, while 26% needs minor rehabilitation. Seventy percent of occupied space is considered to be in adequate condition.

Strategic modernization of Argonne-West facilities focuses on upgrading sitewide utilities and support equipment and on maintaining major nuclear and radiological facilities in a mission-ready state. Priorities are established through the Asset Management and Infrastructure Prioritization process. In general, Argonne-West upgrades and refurbishes existing facilities as new programs (such as the Radioisotope Power System/Heat Source Project) are secured.

Argonne-West also needs new facilities. A general purpose office building is needed to replace eight "temporary" office buildings presently housing administrative, engineering, and DOE personnel.

Roof replacement is a major Argonne-West initiative as the roofs of major buildings approach the end of their design life and the frequency of repairs increases. Similarly, deteriorating sidewalks will require substantial investment over the next five years.

To achieve a 21st century infrastructure, Argonne-West requires total capital funds (GPP and GPE) of \$11.2 million in FY 2003 through FY 2009. In addition, Argonne-West requires annual operational funding of \$13.4 million for essential maintenance of real property, plus \$5.3 million annually to maintain its facilities in mission-ready status.

The Experimental Breeder Reactor-II (EBR-II) Plant Closure Project, successfully completed in FY 2002, placed the facility in a safe, stable condition requiring minimal surveillance and maintenance. Under the RCRA (Resource Conservation and Recovery Act) Part B Permit for EBR-II issued by the state of Idaho in December 2002, DOE-Nuclear Energy must complete "RCRA clean closure."

The demand for hot cell and laboratory space at Argonne-West is particularly high. A major focus is providing the facilities and infrastructure needed to deal with spent fuel and nuclear waste (for the electrometallurgical fuel treatment program, for example).

Argonne-West is planning construction of the Remote Treatment Facility, an \$80 million major hot cell facility needed to handle and process for disposal remotely handled mixed transuranic waste from both Argonne-West and INEEL. Disposal of this waste outside Idaho by the year 2018 is required by the court-ordered settlement agreement between DOE and the state of Idaho. Moreover, after 2018 this facility will be a cornerstone — along with the Hot Fuel Examination Facility and the Fuel Conditioning Facility — for a much needed DOE hot cell center that will (1) develop base technologies to address problems associated with disposal of remotely handled waste and (2) support research to improve nuclear fuels and materials.

C. Environment, Safety, and Health

Situation

Protection of the environment, safety, and health (ES&H) is a fundamental value for Argonne. Safety statistics confirm that the Laboratory is a safe place to work, and both analysis and experience indicate that our operations have minimal environmental impact. For example, as Figure V.4 shows, for the past several years we have maintained case rates for recordable and lost/restricted workdays — as defined by the Occupational Safety and Health Administration — that are low relative to comparable industry rates. Our FY 2002 *Self Assessment* explains our progress in ES&H in detail (URL: www.ipd.anl.gov/cpmr/text.html).

We recognize the need for continuous evaluation and improvement in our ES&H programs, and we have firmly embraced Integrated Safety Management (ISM) policy as an operating philosophy. ISM maintains employee attention to essential ES&H issues, goals, and ideas. The structure of our ES&H program is described in depth in the *Integrated Safety Management (ISM) Program Description*,

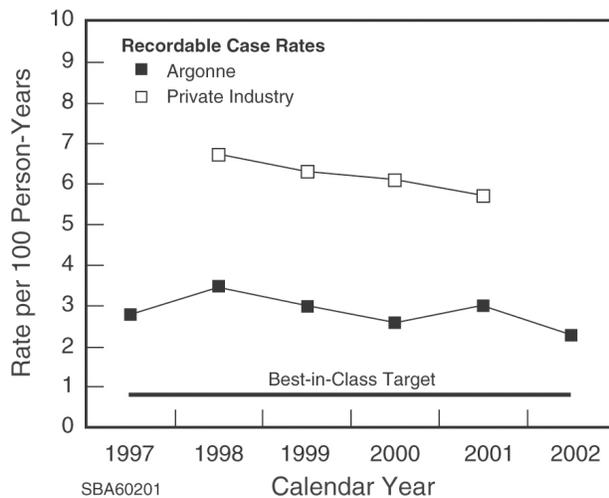


Figure V.4 Case Rates for Recordable Workdays

Revision 7, dated March 19, 2003 (URL: http://www.anl.gov/ESH/main/ism/pdf/ISM_rev7.pdf).

Our ISM program includes investigation of incidents and proactive management of Worker's Compensation claims through coordination of (1) medical department interventions and ES&H analyses with (2) investigations of causes by line managers. The central goal is to protect employees from occupationally related injury or illness.

Our medical department supports DOE's Beryllium Worker Protection Program and offers beryllium blood lymphocyte testing to voluntarily participating employees. In cooperation with DOE, we assist the Oak Ridge Institute for Science and Education (ORISE) in offering former employees an opportunity to participate in ORISE's Beryllium Medical Surveillance Program. Argonne strongly supports both of these beryllium-related programs.

Goals and Objectives

The overall goal of our ES&H program is to ensure that all activities are conducted (1) with minimal and measured adverse impacts to personnel and the environment and (2) within regulatory constraints. The central tenet of ISM throughout Argonne is line management responsibility and accountability, in conjunction with the expectation that each worker is involved

in ISM and accepts responsibility for implementing and promoting it.

To strive for continuous improvement in achieving this overall goal, we have established five specific strategic objectives:

- Conduct an ES&H program that effectively supports R&D activities and is judged to be "outstanding" by both DOE and peer laboratories.
- Promote assessment planning by each major research and support organization, and ensure that their assessment plans include the proper mix of self-assessment and independent assessment to appropriately address the broad range of relevant ES&H issues.
- Establish and track appropriate indicators of ES&H performance that help promote improvements to the Laboratory's safety culture and research performance.
- Enhance the Laboratory's current environmental management system to support the goals of the *Greening of the Government through Leadership in Environmental Management* (Executive Order 13148) and DOE Order 450.1 by, in part, interpreting the environmental management system as part of the ISM program and continuing to work toward good relations with stakeholders and surrounding communities.
- Establish and maintain a long-term stewardship program for environmental monitoring of Laboratory remediation sites.

Strategies

We regularly (1) evaluate our ES&H requirement documents to ensure that they reflect changing regulations, (2) implement the documented requirements, and (3) assess various ES&H program elements to measure implementation of requirements and to promote continuous improvement.

We use limited available resources to address ES&H concerns that pose the greater risks. However, setting priorities often requires considerable judgment in such areas as promoting continuous improvement in the Laboratory's safety culture, in the performance metrics system,

and in other ES&H systems. We rely on the creativity of our personnel to establish ES&H requirements and implementation strategies that are consistent with the risks presented by the work being done. Specific needs are documented as part of our *ES&H and Infrastructure (ESH&I) Management Plan* process.

We will continue to pursue our ES&H goals through our strategic objectives by using established systems operating pervasively under the ISM philosophy. We will continue to monitor our ES&H performance by using *Prime Contract* performance measures, other germane indicators, and our formal assessment program. We will continue to conduct frequent monitoring, surveillance, and evaluation in the workplace in order to implement specific ES&H performance measures and to address ES&H issues generally. We will continue to benchmark our processes and performance against those of other organizations. For example, we are contracting with safety services at DuPont for evaluation of our current programs and for training programs.

We use a structured approach to ensure that facility conditions affecting ES&H are appropriately identified and prioritized among all our infrastructure needs. Our *ESH&I Management Plan* addresses required reporting to DOE by means of a detailed prioritization of all ESH&I projects. Projects related to ES&H include life safety and fire protection upgrades, environmental restoration, wetlands management, mechanical and control systems, an electrical service upgrade line item, decontamination and decommissioning activities, and a facility to store remotely handled transuranic waste for final disposal.

Our assessment program includes (1) assessments conducted by line organization managers to evaluate their own processes; (2) other self-assessments conducted by line organizations to evaluate specific topics; and (3) independent assessments conducted by Laboratory organizations or committees, by committees of the University of Chicago, by DOE, or by other regulatory agencies or stakeholders. On the basis of the results of these assessments and other evaluations, we establish appropriate corrective action plans. Where corrective actions require significant resources and changes to the Laboratory infrastructure, we use the formal

ESH&I Management Plan process to identify and prioritize resource allocation.

To address the requirements in DOE Order 450.1, we plan to include existing program elements in an environmental program description that is integrated with the current ISM program description. The environmental program description will explain (1) how our work meets DOE regulatory requirements and environmental regulations such as RCRA and the Comprehensive Environmental Response, Compensation, and Recovery Act and (2) ongoing Laboratory programs that promote pollution prevention, waste minimization, long-term stewardship, community relations, and continuous improvement.

D. Integrated Safeguards and Security Management

Situation

We have a responsibility to provide a safe and secure environment for all our employees and visitors. Facilities, equipment, and information must be protected from theft, disruption, or misuse. Argonne-West protects significant quantities of special nuclear material. (Argonne-East possesses only small quantities of nuclear materials for limited research use.) Detection and prevention of electronic intrusion are among the more challenging aspects of security that we face.

Our mission predominantly involves fundamental research or technology development, with results disseminated openly and shared with the scientific community or made available to private industry. The quality of such work depends intrinsically on open dialogue and exchange of information. To serve our mission, each year we host thousands of foreign visitors and assignees, with whom we encourage active information exchange. We also participate in several officially sanctioned training programs with Russia, other countries of the former Soviet Union, and the International Atomic Energy Agency. As a key player in leading-edge cooperative R&D with U.S. industry, we often conduct research involving vital commercial interests.

Most of our work is exempt from export regulation and is constrained only by prudent management to assure accuracy and proper disclosure. Nevertheless, certain Laboratory undertakings are subject to some combination of export control, classification, proprietary interest, and other restrictions on dissemination of results.

Objectives

The Argonne-West Nuclear Program Services Division, the Argonne-East Office of Safeguards and Security, the chief information officer, and the Office of Counterintelligence mutually integrate their efforts to ensure the following results:

- Appropriate controls, systems, and security personnel protect special nuclear materials, classified matter, and high-value property against theft, diversion, or destruction.
- Site access controls provide a safe, secure working environment for employees; for guests; and for the large, diverse community of visiting researchers using Laboratory facilities.
- An active cyber security program makes electronic information freely and readily accessible to authorized users while protecting the information against disruption, compromise, destruction, or misuse.
- Appropriate processes and procedures are in place to assure controlled access to classified and proprietary information.
- Active awareness training and information programs educate all employees in how to maintain and enhance Laboratory security.

Our security organizations work closely with each other and with senior management to ensure that policies and systems are optimized to protect Laboratory assets while enabling scientific progress.

Strategies

Protection of our physical assets requires a combination of access controls and other security measures. Protecting equipment, hardware, and materials at Argonne-East generally involves practices characteristic of industrial security. The

protective forces at the Argonne-East site are trained security professionals who operate under contract to the Laboratory. Argonne manages and administers these forces, which include unarmed, trained security officers. The Laboratory is responsible for providing security for the entire Argonne-East site, including DOE offices and the New Brunswick Laboratory.

The larger quantities of special nuclear material at Argonne-West necessitate more extensive access controls and security force capabilities. The site's security force is armed and certified by DOE to the SPO-II level. Some officers are certified to the SPO-III level and are assigned to special response teams. All members of the Argonne-West security force are regular Laboratory employees. The site also employs physical protection systems such as sensors, alarms, physical barriers, entry control devices, and surveillance systems. An extensive, documented vulnerability analysis has been completed, utilizing DOE's *Design Basis Threat*.

Protection of intellectual property involves implementing an integrated network of policies, procedures, and practices. We meet all federal regulations relating to national security and export control, including all applicable DOE regulations. Key to our program are access control and awareness training, supplemented by an extensive cyber security program for both classified and unclassified computing and by counterintelligence activities. A graded approach is used to determine the type and intensity of protective measures implemented.

Our cyber security program is designed to provide sophisticated, multitiered protection of both Laboratory sites from unauthorized access to information and disruption of information systems, with minimal disturbance of open scientific discourse. The program identifies information having national security interest; information whose distribution should be limited, from the perspective of Laboratory management, operations, and business activities; commercial or proprietary information; and research information that has not yet been approved for release. Access to all information other than general public use information is protected by graded or tiered access control mechanisms and is systematically monitored. Encryption is used where appropriate.

Reporting and tracking capabilities are employed locally to anticipate cyber security problems before they occur, and a full response capability is maintained. Cyber security systems are evaluated and tested regularly, and improvements are deployed continuously to counteract changing threats. We provide computer security training to all our computer users.

At both sites, we maintain an Operations Security (OPSEC) program designed to minimize the ability of foreign intelligence agencies or other adversaries to exploit sensitive DOE activities or information and to prevent the inadvertent disclosure of such information. The OPSEC program is supported and overseen by an OPSEC working group, which represents both programmatic and operations organizations. Support by the working group includes (1) development and review of the site's *OPSEC Program Plan*, *Critical Program Information*, and *Comprehensive Local Threat Statement*; (2) participation of group members in OPSEC assessments; and (3) review of assessment results and countermeasures. The OPSEC working group also provides oversight and advice to senior management on the Laboratory's broader safeguards and security program, as well as advice to program managers.

We have a robust classification program at each site to establish policies and procedures that ensure the proper identification and classification of information requiring protection in the interest of national security. The classification officer at each site develops and implements training programs for persons working with classified information. Trained, knowledgeable persons are certified as "authorized derivative classifiers" to support both individual projects and routine Laboratory work. These individuals and classification officers review potentially sensitive information to ensure that all classified information is identified and protected.

The DOE Office of Independent Oversight and Performance Assurance (DOE-OA) inspected the safeguards and security program and the cyber security program at Argonne-East in March and April 2003. The purpose was to evaluate the protection being provided for nuclear materials, classified matter, and sensitive unclassified information. DOE-OA reported that DOE and

Argonne-East management have demonstrated strong commitment to the site's security program. Improvements in cyber security were considered particularly noteworthy, demonstrating an effective balance between security concerns and scientific productivity. All areas reviewed were determined to have "effective performance."

In late October 2002 DOE-OA inspected safeguards and security programs at Argonne-West. Both limited-scope and major force-on-force performance tests were included. DOE-OA noted substantial improvements in the site's safeguards and security programs since the previous inspection in 2000, including a major upgrading of the physical security system and establishment of an in-house capability to assess vulnerabilities. Also acknowledged were strengths in management involvement and in security-related skills and knowledge among the site's population. DOE-OA indicated that improvements and additional funding were needed for the protective force and for management of the protection program at the site, in order to establish the resources needed for safeguards and security over the long term. To address these concerns, the Laboratory hired additional personnel by using FY 2003 funding.

The main objective of our counterintelligence (CI) program is to support DOE's CI program generally and the Laboratory specifically, by detecting, counteracting, and preventing political, economic, industrial, and military espionage and other clandestine intelligence-gathering activities directed at Argonne personnel, information, activities, facilities, and technologies. Our CI program is designed to deter and neutralize intelligence gathering on behalf of foreign governments or others. At both Argonne sites, this multifaceted program encompasses CI awareness, CI aspects of cyber security, CI-related investigations, and threat analysis, as well as liaison with federal, state, and local law enforcement and the U.S. intelligence community.

The CI program at each Argonne site supports and strengthens the Laboratory's overall safeguards and security program by working in concert with programs addressing security education and awareness, foreign visits and assignments, foreign travel, cyber security, operations security, information security,

personnel security, nuclear material control and accounting, and physical security.

E. Information Management

Information management at Argonne emphasizes the effective development, communication, and management of scientific, technical, operational, and administrative information. Because of the broad importance of information management and its associated infrastructure, we manage those two intimately related areas both as integral parts of research programs and as institutional functions.

Vision

We will maintain high-performance, cost-effective infrastructure and services in information management. These capabilities will support excellence and efficiency in our R&D programs by providing for optimal use of text, data, images, and sound in appropriate media. Employees will be proficient in the computer-related skills needed to realize fully the benefits from the Laboratory's information systems.

1. Information Technology

Situation

We provide a wide range of central services to support the digital collection, creation, dissemination, and archiving of R&D and business information. Service organizations also operate a Laboratory-wide spectrum of systems and services for software development and application, telecommunications, and computing. Strategic planning, funding, and coordinated management for the Laboratory's information infrastructure and systems are addressed collaboratively by policy and planning groups supported by review and implementation teams.

To ensure that our information management infrastructure evolves as required to support programmatic needs, we lead or collaborate in various national initiatives in information access, networking, and telecommunications, particularly through pilot projects that test the applicability of

new information technologies to DOE-funded R&D. We maintain national network connections, such as ESnet (the DOE Energy Sciences Network), MREN (a high-speed test network in the Chicago metropolitan area, recently upgraded from 155 megabits per second to 622 megabits per second), and I-Wire (a statewide network test bed operating at 10 gigabits per second). Sophisticated network intrusion detection capabilities provide for identification and dynamic blocking of intruders and for detection of cyber security anomalies in network traffic. Each day, as many as 300,000 potential intruder alarms are scrutinized, and a terabyte of network traffic data is analyzed for cyber security anomalies.

Goals and Objectives

The primary goal of information technology at Argonne is to maximize the ease and effectiveness with which information is acquired, created, communicated, stored, retrieved, and applied, both within the Laboratory and with our partners in government, academia, and the private sector. Our operations organizations have the following supporting objectives:

- Develop a comprehensive architecture for all aspects of information technology at the Laboratory.
- Streamline administrative operations by using rapid prototyping methods of application development.
- Develop and maintain an efficient, standards-based infrastructure for communications, computer networking, and information systems.
- Make the support organization for information technology more focused on solutions and more nimble.
- Seed collaboration technology to facilitate internal and external exchange of information.
- Maintain strong cyber security via both infrastructure and operational programs.
- Maintain strong core competencies in state-of-the-art and emerging information technologies that enable timely deployment of systems and services tailored to mission needs.

- Extend the currently available high-performance network to all Laboratory desktops.
- Evaluate emerging information technologies through aggressive use of demonstrations and pilot projects.

Strategies

Our near-term strategies for information technology focus on the Laboratory's needs for (1) secure, high-performance telecommunications and networking infrastructure and (2) high-quality Laboratory-wide information systems and services.

Key strategies for achieving secure, high-performance, cost-effective network facilities include the following:

- Upgrade Laboratory network backbones and local connections to support seamless high-speed network access.
- Reengineer remote-access systems to allow secure use of Internet service providers.
- Ensure our interoperability with other DOE sites and commercial service providers through the continued use of test beds based on standards adopted at the Laboratory.
- Test and plan for an upgrade of the existing PBX (private branch exchange) system to an integrated voice-data-video network based on "Voice-over-IP" technology, which uses Internet protocol.

We operate a suite of central information systems in the areas of records, finance, personnel, procurement, facilities, scientific and technical information, environmental protection, and employee health and safety. Key strategies for achieving high-quality, cost-effective central information systems include the following:

- Pursue new initiatives that improve Laboratory-wide access to data supporting both R&D and operations.
- Simplify user access to operational and administrative information through expanded use of web interfaces.

- Build the information infrastructure needed to facilitate the migration of existing incompatible business applications to more open, integrated, web-based solutions.

2. Scientific and Technical Information

Situation

Scientific and technical information (STI) is both an essential driver and the main product of our R&D. We manage our STI via an integrated suite of programmatic and support activities. Infrastructure that supports effective stewardship of STI throughout its life cycle includes virtual and physical library systems, publishing and presentation services, and records management services.

Through digital, print, and staff resources, our research library provides efficient, structured access to the full range of global scientific and engineering information needed to undertake R&D. The Argonne Information Management (AIM) System is the key mechanism for delivering library resources to researchers. Serving as a web portal to multidisciplinary information resources and services at Argonne and around the world, the AIM System averages about 20,000 user sessions per month. Over the past five years, customer usage of this system has increased 86%, and the average cost per use has dropped 45%.

Dissemination of results from our R&D is made more effective by centralized publishing and presentation support services at both major Argonne sites. These services encompass communications planning, writing, editing, the visual arts, and document production, with award-winning products in all conventional and digital media. Final Laboratory publications are posted to a central Internet site to broaden their availability to the global scientific community.

Our central records management services support the preservation of scientific and business information in accord with federal requirements. Services provided include technical assistance to records originators, a records inventory system, storage and disposal of older records, and records searches.

Goals and Objectives

The goal of STI management at Argonne is to enhance the quality, productivity, and recognition of our R&D by enabling scientists and engineers to acquire and use relevant information rapidly and to communicate their findings effectively. Supporting objectives are (1) to provide high-performance digital systems and human services that give rapid, easy, continually improving access to STI and (2) to operate STI systems and services cost-effectively.

Strategies

Key strategies for providing high-performance STI systems and services include the following:

- Influence the direction of electronic publishing to the benefit of Argonne and other national laboratories through collaboration with private-sector publishers, other research institutions, and federal agencies, taking advantage of national and international forums such as the Library Advisory Council of the Institute of Electrical and Electronics Engineers, Inc.
- Integrate industry-leading, standards-based, commercial hardware and software systems, as well as forefront creative practices, into the Laboratory's communications, library, and records management functions.
- Apply insights from internal customer feedback and external peer reviews to enhance the quality of Argonne's STI infrastructure and services. One example of external review is entry of publication and presentation products into professional peer competitions, which annually bring substantial numbers of awards to the Laboratory.
- Enhance the STI resources available on the desktops of our researchers through the AIM System. The system's growing virtual library includes electronic journals, scientific databases, reports, standards, specialized search and retrieval tools, and inventories of Argonne-authored publications and Argonne records. In 2003, 77% of the 1,090 journal titles purchased by the research library are available to our staff electronically, compared to 61% in 2002.

- Increase the global public availability of Argonne-authored technical reports and conference papers via both a Laboratory Internet site and DOE-operated information dissemination systems.

Key strategies for achieving cost-effective systems and services include the following:

- Leverage capabilities developed to acquire, use, and communicate STI to improve management of text-based business information. Current examples are the management of office copier rental programs by central document production groups at both major Argonne sites; the integrated management of scientific and business records; and the inclusion of Laboratory manuals, business correspondence, and forms in the research library's AIM System.
- Operate support organizations at both major Argonne sites to provide the STI systems and services that are most efficient when their management is centralized.
- Match the scope and timeliness of institutional STI services to the needs of Argonne's R&D programs, through collaborative planning and budgeting by programmatic and operations staff and management.
- Purchase library collection materials through cost-saving consortial agreements, such as those negotiated by the DOE laboratories' library consortium; link Argonne staff to external library collections of special value, notably those of the University of Chicago and other major research libraries in Illinois.
- Apply the best practices of industry to achieve efficiency in all STI activities.

F. Communications, Outreach, and Community Relations

Situation

To conduct its R&D operations efficiently and effectively, Argonne must have the confidence and support of its stakeholders. Our major non-DOE stakeholders include Argonne employees, the research community, local and national news

media, the trade press, the broad national public, members of the public living near our two sites, the educational community, and potential licensees and research partners in industry. Accordingly, we take special care to maintain close, positive relationships with all of these groups and to foster a climate of mutual trust. This effort involves constant attention to two-way communications that are accurate, clear, timely, and credible. An active and growing outreach program seeks to inform our constituents about our work and to involve them constructively in our activities.

The major elements of our programs in communications, outreach, and community relations involve the following activities:

- *Employee Communications.* Argonne's weekly employee newsletter is read in its entirety or in part by more than 99% of employees. Employee communications are also well served by daily sitewide electronic mail broadcasts, a continually updated intranet, a telephone INFO-line, on-site technical and scientific seminars and conferences, colloquia featuring renowned speakers, and a variety of special employee events.
- *The Research Community.* Ongoing communications with peers in the research community are conducted by scientific staff who publish more than 2,000 research papers and reports annually and who participate in scientific and technical conferences — often presenting papers or sponsoring events.
- *Media Relations.* Our external communications efforts mainly target the news media, which constitute our major avenue for informing the national and local public about both the long-term value of scientific research in general and the benefits of Argonne and DOE-funded research in particular.
- *Trade Press.* The trade press is an important vehicle for informing industrial researchers and executives about our research and facilities, which can help industry solve its research problems and can lead to other productive relationships, such as R&D partnerships.

- *Community Relations.* Our wide-ranging community relations programs reach all of our major stakeholder groups. These programs include site tours, special events, speeches by staff to external audiences, and a vast array of Argonne-sponsored conferences and seminars.

Communications and outreach are also important aspects of other major Laboratory activities discussed elsewhere in this *Institutional Plan*, notably science education (see Section IV.A.1.j) and technology transfer (see Section IV.A.4 and Supplement 2).

Goals and Strategies

We continually seek opportunities to further strengthen our programs in communications, outreach, and community relations. Pursuit of the following important opportunities is under way or being planned:

- We are increasing our traditional outreach to the general science news media through efforts such as increased representation at press briefings and annual meetings of professional research societies.
- We are augmenting outreach to all key audiences with a new monthly electronic newsletter, *What's New at Argonne*, to which anyone may subscribe.
- We have supplemented our widely read weekly employee newsletter with a successful and popular daily electronic newsletter distributed to all Argonne-East employees.
- We have increased the science content of our quarterly magazine *logos* and repositioned it to target a primary audience of internal and external researchers and “the interested layperson.”
- We have strengthened and rejuvenated our Speakers Bureau through an aggressive outreach program, to make potential audiences more aware of our speakers and the relevance of their topics and expertise to the interests of stakeholder groups.
- We are planning a series of several community events to be held in lieu of a public open house, which is not possible in light of current national security concerns.

- We will continue to work closely with DOE-Chicago Operations and its Argonne Area Office to nurture a series of quarterly meetings with leaders from communities neighboring Argonne-East. This highly successful Community Leaders Round Table keeps our neighbors informed about our activities and expected impacts to the surrounding area, and it provides an informal forum for feedback.

For more than a half century, we have benefited from remarkably strong community support, positive news media relations, and strong management commitment to communications and outreach. The strategies outlined above are designed to build on those successes.

G. Performance Management

Situation

The performance-based *Prime Contract* under which the University of Chicago operates Argonne for DOE specifies objectives, performance measures, and incentives that foster outstanding performance by the Laboratory. Since FY 1996, our performance has been evaluated by DOE on the basis of previously negotiated measures and expectations, as specified in Appendix B of the *Prime Contract*. (The term of the current contract extends through September 2004.) Argonne’s performance ratings have consistently been in the range of excellent to outstanding. (See Figure V.5.)

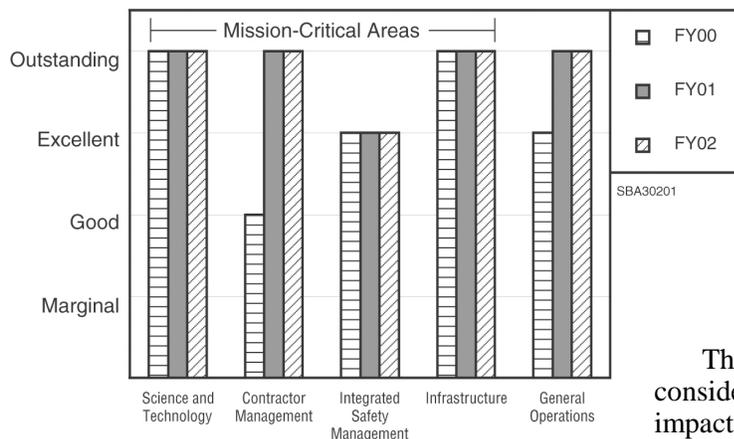


Figure V.5 Argonne Performance Ratings

Goals

Performance management begins with identification — by top Argonne management, the University of Chicago, and DOE — of high-level performance goals in three broad areas:

- *Science and Technology.* Argonne will deliver innovative, forefront science and technology aligned with DOE strategic goals and will conceive, design, construct, and operate world-class user facilities, all in a safe, environmentally sound, efficient manner.
- *Contractor Management.* The University of Chicago will provide leadership, guidance, and oversight that add value to the overall management of Argonne.
- *Operations.* Argonne will conduct all work and operate facilities cost-effectively and with distinction to achieve integration with and support of its mission in the areas of science, technology, energy, and environment, plus full protection of its workers, users of its facilities, the public, and the environment.

Strategies

Performance measures are developed for Argonne with the following criteria in mind:

- Contributes directly to or enhances the Laboratory’s ability to accomplish its R&D mission.
- Drives performance by concentrating on desired outcomes.
- Compels the Laboratory to focus on systems performance, cost-effectiveness, and continuous improvement of functions and services essential to its mission.
- Allows for meaningful analysis of trends and rates of change.
- Adds commensurate value in the context of the Laboratory’s mission and its entire performance plan.

The Mission-Critical performance category considers functions that have direct and significant impact on the Laboratory’s ability to carry out its

mission. Performance in these areas determines the annual fee received by the University of Chicago from DOE. In FY 2002 the Mission-Critical functions were science and technology, contractor management, ISM, project and infrastructure management, and cyber security. Table V.3 gives examples of performance measures in those five functional areas. Figure V.6 indicates the weightings given the five areas.

A number of operational activities not identified as critical are nevertheless included in Argonne’s performance management process. Performance in these general operations activities (see Table V.4) does not directly affect the

Table V.3 Mission-Critical Functions — Examples of Performance Measures

Functional Area	Measure
Science and Technology	Success in constructing and operating research facilities
Integrated Safety Management	Laboratory air and water effluents compared to U.S. Environmental Protection Agency compliance standards
Project and Infrastructure Management	Actual costs and milestones compared to predetermined schedules
Leadership	Effective succession planning demonstrated for key personnel
Cyber Security	Identified system vulnerabilities addressed on schedule

Table V.4 General Operations Functions

Communications and trust	Procurement
Counterintelligence	Property management
Finance	Publishing
Human resources and diversity	Safeguards and security
Information management	Technology transfer
Legal management	Work for others

University’s performance fee, but it does affect the size of the Laboratory’s annual employee bonus pool.

Working together, DOE, the University of Chicago, and Argonne have built strong momentum in continuously enhancing performance through ongoing feedback and improvement across the Laboratory. Ongoing improvement includes refinement of the measures used to drive performance, in order to better reflect desired outcomes and value added to the Laboratory’s research programs. As a general strategy, the university and the Laboratory are seeking to increase the use of peer review in the oversight and management of Laboratory operations.

H. Cost-Effectiveness of Support Functions

As a broad goal, we seek to achieve productivity improvements sufficient to accommodate a moderate decline in the total constant-dollar resources we receive. More specifically, we seek increased efficiency and effectiveness in our overhead and technical support services sufficient to maintain a stable scientific workforce.

Situation

Our overhead management process has contributed significantly to reducing our overhead rate over the past several years, a time when DOE

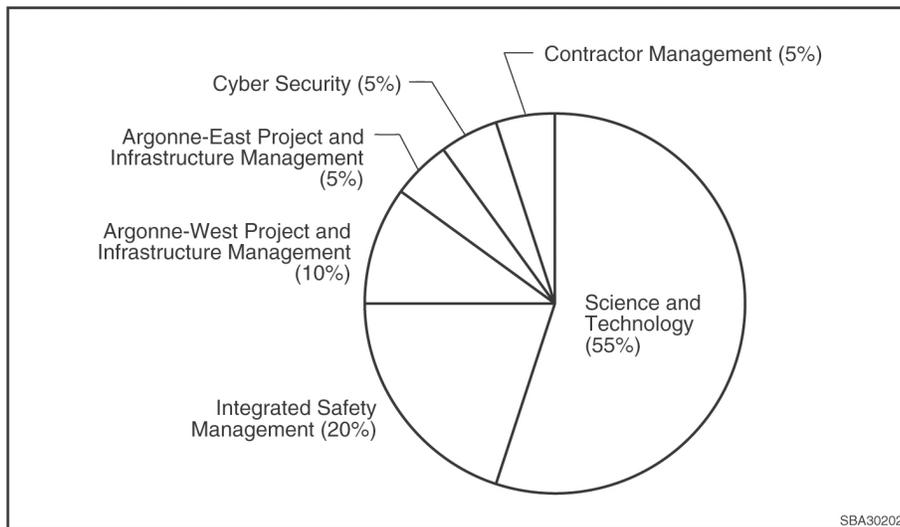


Figure V.6 Mission-Critical Functions by Contribution to Performance Fee (FY 2003)

initiatives exerted great cost pressure. As indicated in Figure V.7, we were able to reduce our overhead cost percentage performance metric from 22.4% in FY 1994 to 18.6% in FY 2002. We have maintained an efficient balance of researchers and support personnel, while we have improved the cost-effectiveness of our support functions. Figures V.8-V.10 show further performance metrics indicating our successful commitment to improving efficiency.

Challenges and Strategies

We must continuously improve the productivity of our scientific and support activities and keep our overall cost of operation among the lowest for a DOE multiprogram laboratory. To this end, we perform diligent, focused reviews of all our support costs, with particular attention to opportunities for additional process improvements. Reviews of support costs (1) use thorough, activity-based costing plans and tracking mechanisms to identify high-cost activities; (2) focus on documentation of baseline data and benchmarking of processes; and (3) generally create an atmosphere conducive to results-oriented management. Careful attention is given to identifying more effective cost distribution methodologies. We seek out and adopt best practices in other organizations, including private firms and other laboratories. At the same time, best practices within the Laboratory are identified for broader application.

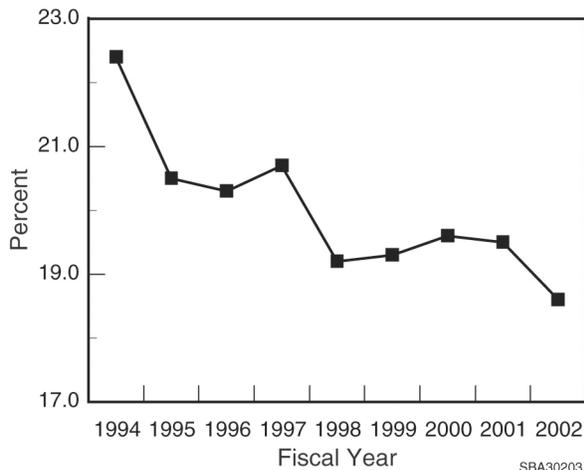


Figure V.7 Overhead Management Performance (overhead cost as a percent of total operating cost)

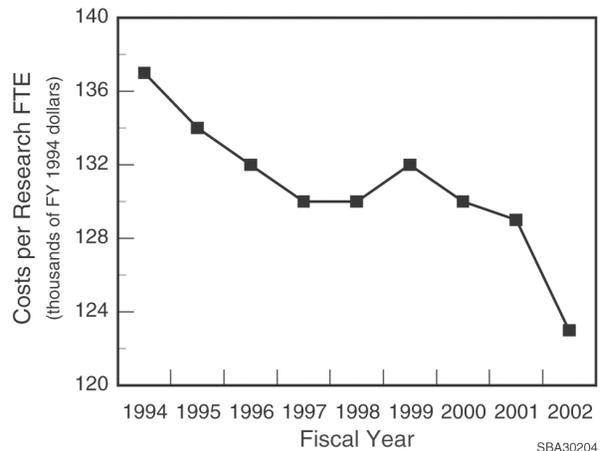


Figure V.8 Operating Costs per Research FTE

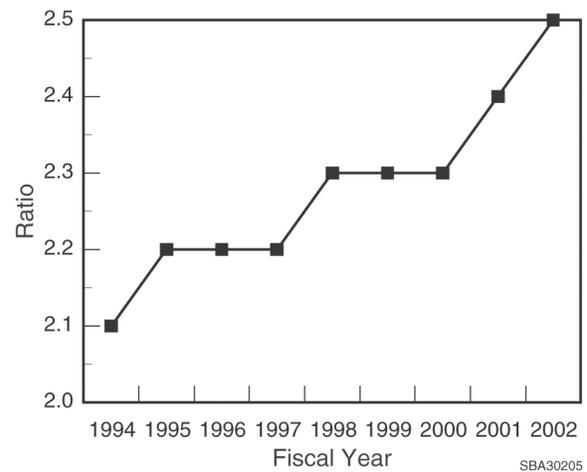


Figure V.9 Research to Support Ratio (research labor costs divided by support labor costs)

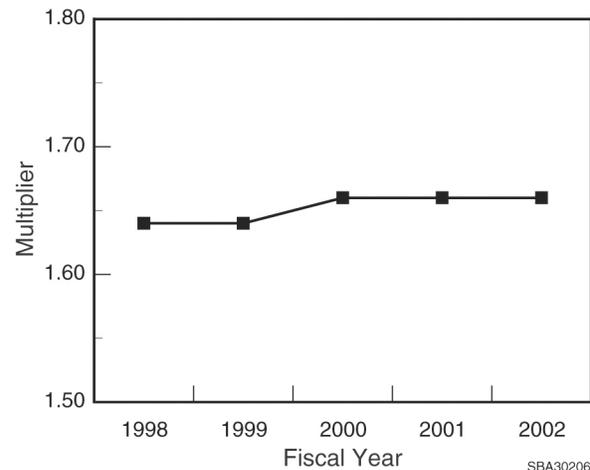


Figure V.10 Composite Support Cost Multiplier on a Direct Research Dollar