CHAPTER 3

The Idaho National Laboratory (INL) and Idaho Cleanup Project (ICP) Environmental Management Systems implement the U.S. Department of Energy (DOE) commitments for the protection of the environment and human health. DOE strives to be in full compliance with environmental laws, regulations, and other requirements that protect the air, water, land, natural, archeological, and cultural resources potentially affected by operations and activities conducted at the INL Site. This policy is implemented by integrating environmental requirements, pollution prevention, and sustainable practices into work planning and execution and by taking actions to minimize the impact of INL Site operations and activities.

3. ENVIRONMENTAL MANAGEMENT SYSTEMS

The framework that DOE has chosen to use for Environmental Management Systems (EMSs) and sustainable practices is the International Organization for Standardization (ISO) Standard 14001:2015, "Environmental Management Systems – Requirements with Guidance for Use." The ISO 14001:2015 model uses a system of policy development, planning, implementation, operation, checking, corrective action, and management review. Ultimately, ISO 14001:2015 aims to improve performance as the management cycle repeats. The EMS must also meet the criteria of Executive Order 14057, "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability," and DOE O 436.1A, "Departmental Sustainability," which require federal facilities to put EMSs into practice. Sites must maintain their EMS either by being certified for use or in conformance with the ISO 14001:2015 standard following the accredited registrar provisions or self-declaration instructions.

INL balances research, development, and demonstration; waste management; decontamination and decommissioning activities; environmental cleanup; and long-term stewardship in support of the INL mission with the protection and preservation of human health and the environment. INL complies with applicable laws, regulations, and other requirements. INL's EMS integrates environmental protection, environmental compliance, pollution prevention, and continual improvement into work planning and execution throughout work areas as a part of the Integrated Safety Management System.

INL is a combination of all operating contractors and the U.S. Department of Energy, Idaho Operations Office (DOE-ID), and includes the Idaho Falls campus and the research and industrial complexes termed the "INL Site" located 50 miles west of Idaho Falls, Idaho. For this report, INL consists of those facilities operated by Battelle Energy Alliance, LLC the INL contractor, or by the Idaho Environmental Coalition, LLC, the ICP contractor. INL Site contractors are referred to by their noted acronyms and include all facilities under their individual responsibilities.

The two main contractors have established EMSs for their respective operations. The INL Site contractors have been certified to meet the requirements of ISO 14001 since 2005. In 2019, the INL contractor became the first DOE national laboratory to be certified by the Nuclear Quality Assurance (NQA) Certification Program. Many elements of NQA-1 align with and complement the ISO 14001:2015 standard.

INL Site contractors have established EMSs for their respective operations. Accredited auditors are used to obtain ISO 14001:2015 Certification, which is required every three years. Evaluation audits are conducted annually to evaluate the contractor's conformance with the standards called out in ISO 14001:2015 and to confirm all applicable requirements of the standard have been met and effectively implement. During 2023, both INL Site contractors were audited and ISO 14001:2015 Certification of each EMSs continued. Results from the INL contractor audit showed no nonconformities, six management system strengths, and two opportunities for improvement. Results from the ICP audit showed no nonconformities and five management system strengths.

3.1 Environmental Policy

INL Site contractors state their commitments to the environment through an overarching policy that is displayed to employees. The policies commit to incorporate sound environmental management policies and practices into all work planning and execution in a safe, compliant, and cost-effective manner that protects human health and the environment. Environmental policies apply to all persons and encourages all personnel to report environmental concerns to management. The INL contractor policy commits specifically to do the following:

- *Environmental Protection:*
  - The practice of conserving and preserving the natural environment and its resources for the benefit of present and future generations.
- *Environmental Compliance:*
  - The adherence and conformity to laws, regulations, standards, and other requirements set by governmental bodies and delegated authorities in order to promote and ensure environmentally responsible behavior and practices by businesses and organizations.
- *Pollution Prevention:*
  - The practice of reducing or eliminating pollution at its source, rather than treating it after it has been created. This approach aims to minimize the release of harmful substances into the environment, thereby protecting human health and ecosystems.
- *Continual Improvement:*
  - The ongoing process of making incremental advancements and enhancements in various aspects of environmental protection. It involves continuously identifying areas for growth and implementing changes to achieve better results over time.

INL contractor employees integrate environmental requirements and pollution prevention techniques into work planning and execution to minimize the environmental impacts of their activities.

The ICP contractor policy commits to do the following:

- *Leadership Commitment:*
  - Integrate appropriate environmental practices into all project operations; document environmental objectives and targets; measure progress; and report performance through the EMS.
  - Educate employees on their environmental responsibilities and train them to ensure they comply with requirements.
  - Continuously improve their EMS through self-assessments and corrective actions.
  - Promote environmental stewardship, take prompt action to address concerns and issues, and have zero tolerance for noncompliance.
- *Environmental Compliance and Protection:*
  - Identify and comply with all applicable, relevant, and appropriate environmental laws, regulations, and permits.

  - Assess the effects of operations on the environment through a comprehensive environmental monitoring program.
  - Provide full disclosure and openness with DOE and regulatory agencies regarding any noncompliance with regulatory requirements.
- *Environmental Stewardship:*
  - Protect the unique natural, biological, and cultural resources associated with the INL Site contractors.
  - Minimize the effects of our operations on the environment and conserve natural resources by reusing and recycling materials, purchasing recycled materials, and performing other pollution prevention practices.
  - Use all means practicable to minimize or eliminate any newly generated wastes—whenever possible, newly generated wastes shall have a clear disposition path before they are generated.
- *Client, Employee, and Stakeholder Engagement:*
  - Communicate openly and honestly with all parties and stakeholders.
  - Share their respective Environmental Policy with all employees and subcontractors and make it available to the public.
  - Consider the input of all stakeholders when weighing alternative courses of action.
  - Measure their environmental performance, monitor their impact on the environment, and communicate the results to all parties.

The ICP contractor's policies are available to the public through the ICP Internet address at https://idaho-environmental.com/Community/.

3.2 Environmental Management System Structure

The INL Site contractors' EMSs incorporate a Plan-Do-Check-Act approach to provide a framework under which the environmental, safety, and health programs are managed.

Plan – Defines work scope, identifies environmental aspects, analyzes hazards, and develops hold points and mitigations

Do – Implements defined controls and performs the work scope

Check – Evaluates performance, management reviews, and contractor's assurance practices

Act – Incorporates corrective actions, improvements, and lessons learned into practices.

This approach is interactive and iterative through the various work activities and functions, including policies, programs, and processes. The approach is also an integral part of the overall management of the Site's environmental compliance and performance. The main focuses of this cycle are (1) environmental policy, (2) planning, (3) implementation and operation, (4) checking and corrective action, and (5) management review.

3.3 Plan

3.3.1 Environmental Aspects

INL Site contractors have evaluated activities, products, and services to identify the environmental aspects of work activities that could affect the environment, the public, or result in noncompliance with regulatory requirements. INL Site contractors perform these evaluations against all applicable federal and state regulations, state permits, and local laws. These regulations and permits are the foundation for environmental standard operating procedures and implementing documents. INL Site contractors use the National Environmental Policy Act planning tool for all proposed actions that would take place onsite. INL uses the Environmental Compliance Permit Process, while ICP uses the Environmental

Checklist process to evaluate all activities and projects to ensure the proposed actions consider and mitigate environmental aspects as necessary. Environmental aspects are listed below:

Air Emissions. Air emissions applies to operations or activities that have the potential to generate air pollutants in the form of radionuclides, chemical and combustion emissions, fugitive dust, asbestos, and refrigerants. INL Site contractors have an Environmental As Low As Reasonably Achievable review process per DOE O 458.1, "Radiation Protection of the Public and the Environment," that protects the public and the environment against undue risk of radiation. The Environmental As Low As Reasonably Achievable Committee evaluates activities that have the potential for radiological impact on the environment and the public and determines the requirements for radiological emissions.

Chemical Use and Storage. Chemical use and storage apply to activities that purchase, store, or use laboratory or industrial chemicals, pesticides, or fertilizers. INL Site contractors have processes in place to maintain adequate inventory of appropriate emergency response equipment and to report inventories and releases.

Contaminated Sites Disturbance. Contaminated site disturbance applies to activities in Comprehensive Environmental Response, Compensation, and Liability Act areas of contamination or Resource Conservation and Recovery Act corrective action sites. INL Site contractors have processes to properly identify contaminated sites.

Discharging to Surface, Storm, or Groundwater. Discharging to surface water, storm water, or groundwater applies to activities that have the potential to contaminate groundwater or water. INL Site contractors have spill prevention and response plans in place for areas that have the potential to contaminate groundwater or water.

Drinking Water Contamination. Drinking water contamination activities are related to constructing, operating, and maintaining drinking water supply systems and equipment or activities with the potential to contaminate drinking water supplies. This includes bacteriological, radiological, or chemical contamination of drinking water.

Disturbing Cultural Resources. Cultural resource disturbance applies to activities that have the potential to adversely affect cultural resources, such as disturbing soils by grading, excavating, sampling, off-road vehicle use, or removing vegetation. It also applies to the protection of sensitive cultural or biological resources from disturbance. The potential for adverse effects also applies to modifying or demolishing historical buildings or structures that are 50 years old or older. INL has a cultural resources management team that evaluates work activities at INL to minimize the impact on historical buildings and cultural sites before an activity begins.

Environmental Justice. The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. It seeks to ensure that all individuals have equal access to a healthy environment and are not disproportionately burdened by environmental hazards.

Generating and Managing Waste. Regulated, hazardous, or radioactive material and waste packaging and transportation applies to activities that generate, store, treat, or dispose of hazardous, radioactive, or industrial waste. INL Site contractors have a waste management program that integrates and dispositions containerized hazardous, radioactive, or industrial waste and gives guidance on how to minimize the amount of regulated waste generated.

Releasing Contaminants. Releasing contaminants applies to activities that may release potentially hazardous contaminants into water, soil, or other noncontaminated or previously contaminated locations. All INL Site contractors' employees are trained to report any release to either their Program Environmental Lead or to the Spill Notification Team. Releases are tracked to verify proper cleanup is performed. Planned operations and research with the potential to release contaminants are evaluated to mitigate any significant environmental impacts.

Polychlorinated biphenyls (PCB) Contamination. PCB contamination applies to activities that use PCB-contaminated equipment or store and dispose of PCB-contaminated waste. INL Site contractors have processes in place to identify PCBs in excess equipment and to comply with regulatory requirements related to the use, marking, storage, and disposal of PCB equipment or waste.

Interaction with Wildlife/Habitat. Interaction with wildlife/habitat activities includes the potential to disturb or affect wildlife or their habitat or activities involving revegetation and weed control. INL Site contractors have processes in place

to ensure that identification and consideration is given to the cumulative impacts required by the National Environmental Policy Act, the Endangered Species Act, or the Migratory Bird Treaty Act. Procedures and processes are also implemented to control noxious weeds and revegetation of disturbed sites.

Using, Reusing, and Conserving Natural Resources. Using, reusing, and conserving natural resources applies to activities that use or recycle resources such as water, energy, fuels, minerals, borrow material, wood, or paper products and other materials derived from natural resources. This beneficial aspect also applies to waste disposition activities, including building demolition and activities implementing sustainable practices and conserving natural resources.

3.4 Do (Implementation and Operations)

3.4.1 Structure and Responsibility

The organizational structures INL Site contractors have in place establish roles and responsibilities for environmental management within research, development, and demonstration; operations; waste management; decontamination and decommissioning; and other support organizations within Environmental, Safety, Health, and Quality. Identified technical points of contacts communicate environmental regulatory requirements and required document submittals to the U.S. Environmental Protection Agency (EPA), the Idaho Department of Environmental Quality (DEQ), and other stakeholders. The technical points of contact work with the projects, researchers, and facilities to ensure the requirements are implemented.

3.4.2 Competence, Training, and Awareness

INL Site contractors training directorates conduct training analysis, designs, develop, and evaluate environmental training. Environmental training gives personnel the opportunity to gain experience, knowledge, skills, and the abilities necessary to accomplish the following:

- Perform jobs in a safe and environmentally responsible manner
- Comply with federal, state, and local environmental laws; regulations and permits; and INL requirements and policies
- Increase awareness of environmental protection practices and pollution and prevention/waste minimization opportunities
- Take action in an emergency.

3.4.3 Communication

INL Site contractors implement comprehensive communication programs that distribute timely information to interested parties such as the public, news media, regulatory agencies, and other government agencies. These programs provide communications about the environmental aspects of work activities, among other topics. Examples include the Media and Community Relations Program and the Strategic Initiatives Program, which distribute information to the public through public briefings, workshops, personal contacts, news releases, media tours, public tours, and news conferences. The programs also coordinate tours of INL for schools, members of the public, special interest groups, and government and elected officials. Internal communications regarding environmental aspects are available via intranet sites, procedures, emails, posters, brochures, booklets, trainings, and personal interaction with environmental staff.

3.4.4 Operational Control

Environmental personnel evaluate each work activity at INL to determine the level of environmental review needed. Environmental personnel also apply administrative and engineering controls. Administrative controls include procedures and best management practices. Engineering controls include using protective equipment and barriers to minimize or avoid environmental impact.

3.4.5 Document and Record Control

Environmental documents are prepared, reviewed, revised, and issued per INL Site contractors' standards and procedures. INL's document control system maintains the current version of documents and makes legible and dated copies available to employees.

3.5 Check

INL Site contractors internally monitor compliance with environmental laws and regulations through the Assurance Portfolio process in the Contractor Assurance System. INL Site contractors conduct assurance activities through performance metrics, observations, and assessments. Issues, trends, or improvements identified through these activities are rolled into the INL issues management database where corrective actions are assigned and tracked to completion. Examples of contractor assurance activities include monitoring progress toward environmental objectives for each organization and an internal assessment of the EMS against the ISO 14001:2015 standard. Contractor assurance activities in the environmental organization are documented in a management review.

Various regulators also perform external assessments. Idaho DEQ conducts several inspections annually to verify that INL is complying with state permits. EPA also participates in Federal Facility Act-driven inspections and, on a determined frequency, participates alongside Idaho DEQ in compliance evaluation inspections. Chapter 2, "Environmental Compliance Summary," provides results of the annual external agency audits and inspections of INL's Environmental Program.

Annually, INL Site contractors perform a surveillance audit as required by the ISO 14001 standard. Additionally, every three years, INL Site contractors are audited for recertification to the ISO 14001 standard. A qualified party outside the control or scope of the EMS must perform the formal recertification of the EMS audit. INL Site contractors have been certified to the ISO 14001 standard since 2005.

3.6 Act

INL Site contractors establish, implement, and maintain an issues management program in accordance with an internal procedure for contractor assurance. It deals with actual or potential conditions of nonconformity, such as Notices of Violation, nonconformities with regulation, and opportunities for improvement from internal assessments and audits. All employees have access to the issues management software and the authority to identify and document any conceived issue. Communication of these identified issues is performed through the management review process. Throughout all operations, environmental concerns, safety, and emergency preparedness issues are documented and submitted for management review.

INL Site contractors' management review of EMS occurs through a process that includes weekly, monthly, quarterly, and annual meetings with committees and councils. Management review identifies issues that carry the largest environmental risks and provides mitigations and hold points. Through the Contractor Assurance System, EMS performance trends, audit findings, objectives and targets, improvements, and risks are documented in a management review that is sent to senior management. Through this process, senior management is aware of the largest environmental risks to the INL Site. Senior management evaluates the management review and recommends actions to continually improve environmental performance.

3.7 INL Contractor Environmental Operating Experience

The INL EMS for 2023 achieved a "Green" score in the DOE EMS Site Information Database, showcasing its commitment to environmental performance and operational excellence. Environmental operating experience and performance measurement is an integral component of an EMS. Many best practices, initiatives, and implementation challenges were identified and summarized, as outlined in the following sections.

3.7.1 EMS Best Practices

During the EMS ISO 14001 audits, best practices are identified. The following system strengths were identified during the 2023 ISO 14001 recertification audit:

- Participating in internal audits at other laboratory locations provides an avenue to benchmark the EMS, provides best practices, and allows other internal auditors to participate in INL's internal audit program.
- The EMS Technical Points of Contact List provides a means for quick access to environmental subject matter experts (SMEs), which facilitates readily obtaining the information needed for making informed decisions.
- The risk management process includes searching for all relevant risks, which are then tracked and dealt with when a risk level rises to an unacceptable level. This facilitates effectively managing risks so that they do not interfere with the goals of a project.
- Management participation in the review of corrective actions contributes to ensuring effective corrective action plans.
- An extremely robust and thorough system for identifying new compliance regulations to ensure the organization is aware of and addresses each new relevant requirement.
- The organization maintains a great handle on document control.

These best practices demonstrate a strong commitment to environmental management and continuous improvement. Participating in internal audits at other laboratory locations not only allows for benchmarking and sharing of best practices but also enriches the internal audit program by involving auditors from different areas within the DOE complex. The EMS Technical Points of Contact List allows easy access to relevant information and empowers decision-makers with the necessary knowledge to make informed choices promptly, thus enhancing overall environmental performance. The robust risk management process that involves identifying, tracking, and addressing risks effectively is crucial for ensuring project success. By proactively managing risks and intervening, when necessary, potential obstacles are mitigated, safeguarding project goals and environmental objectives. Management's active involvement in reviewing corrective actions underscores a culture of accountability and a commitment to continuous improvement. This participation ensures that action plans are thorough, effective, and aligned with organizational goals, driving positive outcomes. These strengths reflect a proactive approach towards environmental management excellence and showcase a dedication to sustainability principles within the organization.

3.7.2 EMS Initiatives

Internal Audit Improvements

ISO 14001 clause 9.2 requires an internal audit program where DOE sites must audit themselves for nonconformities and opportunities for improvement. INL collaborated with the Battelle community of practice to exchange SMEs to assist with internal ISO 14001 audits both at INL and other Battelle locations. This collaboration allows for knowledge-sharing across Battelle-operated national laboratories to enhance the EMS. INL actively participated in internal audits at Pacific Northwest National Laboratory and Brookhaven National Laboratory while inviting experts from Oak Ridge National Laboratory to INL to perform INL's internal audit. The collaboration between INL and the Battelle community of practice to exchange SMEs for internal ISO-14001 audits demonstrates a proactive approach to enhancing the EMS within Battelle-operated national laboratories. This collaborative effort aligns well with the requirements of ISO 14001 clause 9.2, emphasizing the importance of self-auditing for nonconformities and opportunities for improvement within DOE sites. Such initiatives not only help ensure compliance but also foster a culture of excellence and shared lessons learned within the DOE national laboratory complex.

Environmental Justice

INL has continued efforts to integrate Environmental Justice (EJ) into the INL EMS by considering EJ as a significant environmental aspect and incorporating it into its Environmental Review Process (ERP). INL has considered EJ in past environmental assessments and environmental impact statements for large projects, but the addition to the ERP will now include every project to determine whether any disadvantaged communities would be affected. It ensures that all

communities surrounding the INL Site are not negatively impacted by INL's activities. By integrating EJ into the INL EMS and the ERP, INL is taking a proactive step towards ensuring that all communities are considered and protected from any potential negative impacts. This commitment reflects a strong environmental stewardship ethos and demonstrates a genuine concern for the well-being of surrounding communities. Further details on INL's initiatives concerning EJ are found in Chapter 2, Section 2.3.

3.7.3 EMS Implementation Challenges

There were two identified major challenges working against the EMS system during 2023.

- During the 2023 ISO recertification audit, a chance for enhancement to the EMS objectives and targets was recognized. The implementation of EMS objectives and targets proved to be successful as multiple line organizations from across INL participated in the effort. The auditors suggested INL could gain advantages by introducing a "best practice" format that would enable standardization in objective management across line organizations. This standardization would ensure the objectives are measurable and aligned with INL's enterprise environmental goals, including Net-Zero.
- The EMS continues to face challenges related to an aging infrastructure. Throughout 2023, specific parts of the infrastructure have deteriorated or experienced failures, resulting in distinct compliance problems. INL encountered a situation where a pipe connected to an underground storage tank system failed, leading to a release of petroleum. Additionally, an aged firewater service line broke under the Test Area North Fire Station. The notification, reporting, and mitigation of these incidents allowed INL staff-members to navigate complex issues and test procedures related to problem management. Although the mitigations were successful, INL anticipates that aging infrastructure will continue to deteriorate and fail, requiring resources and staff time for mitigation efforts.

3.8 ICP Environmental Operating Experience

The ICP EMS for 2023 also achieved a "Green" score in the DOE EMS Site Information Database. The ICP contractors' high-level of commitment to the environment is reflected in their strong Environmental Policy.

3.8.1 EMS Best Practices

The recently awarded ICP contract includes activities at the Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation located in Platteville, Colorado. In 2023, an EMS ISO 14001 recertification audit was conducted independently at both facilities in preparation to combine future audits under one contract. Five noteworthy practices were documented at the INL facility and one at FSV. An opportunity for improvement was also suggested for operations at FSV. Noteworthy practices identified during the 2023 ISO 14001 recertification audits are:

- The Management Worksite Visit program provides managers with a good mechanism for observing how the organization functions by going to where the work is done. This provides managers with the knowledge needed to make informed and prudent decisions.
- ICP's sustainability program is robust, current, and well-documented. Efficient and accurate documentation provides the information needed to make informed decisions for implementing an enduring sustainability program.
- The Environmental Data Systems Warehouse uses ICP-developed software. The software development processes are well-executed. This ensures a quality and reliable product that is well-aligned with the user's needs to ensure ease of maintainability and evolution.
- The Environmental Checklist is an effective tool for ensuring that the full project life-cycle environmental impacts are minimized, and that compliance matters are addressed.
- ICP personnel were found to have a keen awareness of their cleanup mission, and of the necessity to follow their established procedures in order to minimize the negative environmental impact of their cleanup activities.
- The management team at FSV Independent Spent Fuel Storage Installation has a desire to improve and support the integration process with ICP.

3.8.2 EMS Challenges

The ICP contractor has a robust and mature EMS program, however, as with many companies, ICP is experiencing a large exodus of seasoned employees, primarily due to retirement. This leaves gaps in historical and institutional knowledge. An opportunity for improvement identified during the recertification audit was to provide ISO 14001 awareness refresher training and ISO 14001 Lead Auditor training as part of the ICP integration plan to those who are back-filling those roles.

3.9 INL Site Resiliency

Resilience includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents. Energy resiliency is the ability to prepare, prevent, and recover from energy and water disruptions that impact mission assurance on federal installations. This means providing reliable power under routine and off-normal conditions, including those caused by extreme weather events. Adaptation refers to actions taken to reduce risks from changed climate conditions and to prepare for expected future changes.

As outlined in Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," the DOE Climate Adaptation and Resilience Plan issued in August of 2021 and the Climate Adaptation Policy Statement build upon prior DOE actions that were taken to bolster adaptation and increase the resilience of DOE facilities and operations. INL Site contractors completed the studies for the Climate Vulnerability Assessment and Resilience Plan (VARP) (INL 2022) in 2022 as a tool for decision-makers to establish resilient priorities across INL and its associated communities.

3.9.1 Performance Status

Resilient solutions in 18 categories were identified during the vulnerability assessment and resilience planning completed by the INL contractor in fiscal year (FY) 2023. These solution categories include almost 300 individual measures to secure additional adaptive capacity for assets of high-impact. Resilient solutions in five categories were identified during the ICP contractor vulnerability assessment and resilience planning ahead of FY 2023. These solution categories include nine individual measures to secure additional adaptive capacity for high-impact assets. Resilience projects completed by the INL Site contractors in FY 2023 are shown in Table 3-1.

Table 3-1. FY 2023 resiliency improvement projects.

SOLUTION CATEGORY	PROJECT DESCRIPTION	COST
Infrastructure Upgrades	Replaced heating, ventilation, and air conditioning (HVAC) units on five buildings	$1,590k
Infrastructure Upgrades	Replaced windows and doors on four buildings	$750k
Fire-Safe Design	Replaced nine fire hydrants that were more than 50 years old	$361k
Harden Road Infrastructure	Installed solar lighting panels at two intersections	$675k
Harden Road Infrastructure	Resurfaced three large parking lots	N/A
Infrastructure Upgrades	Performed light-emitting diode (LED) lighting upgrades in 29 CFA buildings	N/A
Harden Energy Supply	Completed the design for the Power Utility Building	N/A

The Power Utility Building is essential to meeting the mission needs of the laboratory as it grows. This building will help address the most important mission needs for managing forecasted electricity growth and load demands on the INL-owned power grid by providing a state-of-the-art power dispatch center from which to dispatch resources, perform dynamic load management, maintain safe operating conditions, manage faults and outages, and respond to emergencies in real-time, 24 hours a day, and 365 days a year. The project is fully funded at $22.5M.

Ecosystem resiliency is also an integral component of sustainability. Because much of the INL Site is managed as a native sagebrush steppe ecosystem, it is vulnerable to the effects of climate change. Proactive land stewardship

practices can mitigate the effects of climate change and preserve natural ecosystem services such as water balance, nutrient cycling, wildlife habitat availability, and carbon sequestration. Additional information can be found in Chapter 9.

3.9.2 Plans and Projected Performance

The concept of resiliency is evolving in real-time. The Net-Zero era will require professionals to be strategic overseers with a lens for long-term outcomes. In this season of change, all built environments will require careful reconsideration, and facility management will be responsible to promote a building culture that stands on the pillars of safety, quality, and efficiency.

INL plans to implement a formalized tracking process to capture large-scale resilience projects. Enhanced tracking abilities will aid in ensuring that vulnerability assessment and resilience planning solutions are considered and implemented in all identified projects planning. Continued collaboration across organizations and campuses will be critical in achieving a formalized tracking process where periodic updates will inform resilience solutions status and implementation. Budget remains the greatest challenge for large-scale resilience projects.

INL will be guided by science to build resilience into DOE-ID-managed lands, facilities, and equipment. A general framework used in resiliency planning includes identifying exposure, translating exposure into potential impacts, prioritizing risk, devising solutions, and securing funding. INL will work with internal and external stakeholders to address threats to missions and programs.

3.10 Sustainability Goals

In 2023, DOE Order 436.1A, “Departmental Sustainability,” was issued. The order advances sustainable, efficient, reliable, and resilient energy for the future; promotes conservation of natural resources; and ensures DOE achieves its sustainability goals pursuant to applicable law, regulations, and Executive Orders.

The evolving priorities for sustainability are incorporated into the annual update of the “Idaho National Laboratory Site Sustainability Plan“ (DOE-ID 2023) at the beginning of each new FY. It describes the overall sustainability strategy for the INL Site contractors during the current FY and includes a performance status in the areas of greenhouse gas (GHG) emission reduction, energy management, water management, waste management, fleet management, clean and renewable energy, sustainable buildings, and other areas for the completed FY. Each sustainability goal, INL Site contractors’ performance status, and planned actions are detailed in Table 3-2.

3.11 Environmental Operating Objectives and Targets

The INL Site contractors establish objectives based on the environmental policy, legal, ISO 14001, environmental aspects, INL’s Strategic Plan, and the perspectives of its stakeholders. The INL contractor plans, implements, monitors, and reports triannually on these objectives and targets in management review reports and in an annual Performance Evaluation and Measurement Plan. The ICP contractor develops its objectives and targets annually and reports the status biannually to senior management through the Executive Safety Review Board.

The INL contractor completed 86% of the EMS objectives and targets in FY 2023.

Each year, the ICP contractor identifies environmental objectives and targets to be met during the FY. During FY 2023, the ICP contractor identified 12 objectives implemented by 14 targets. All objectives and targets were completed during the FY.

3.12 Accomplishments, Awards, and Recognition

The INL Site contractors were both audited in 2023 by an external, accredited auditor and achieved recertification for conformance to the ISO 14001:2015 standard. The results from the INL contractor audit found no nonconformities, six management system strengths, and two opportunities for improvement. Results from the ICP audit showed no nonconformities and five management system strengths.

The INL Site contractors' EMS performance data was submitted to DOE's EMS Database Application and received a "green" for the EMS performance metrics listed below:

- Environmental aspects were identified or reevaluated using an established procedure and were updated as appropriate.
- Measurable environmental goals, objectives, and targets were identified, reviewed, and updated as appropriate.
- Operational controls were documented to address how significant environmental aspects that were consistent with objectives and targets were fully implemented.
- Environmental training procedures were established to ensure that training requirements for individual competence and responsibility were identified, conducted, monitored, tracked, recorded, and refreshed, as appropriate, to maintain competence.
- EMS requirements were included in all appropriate contracts. Contractors fulfilled defined roles and specified responsibilities.
- EMS audit/evaluation procedures were established, audits were conducted, and nonconformities were addressed or corrected. Senior leadership review of the EMS was conducted, and management responded to recommendations for continual improvement.
- Using an established procedure(s), previously identified activities, products, and services (and their associated environmental aspects) and all newly identified activities, products, and services (and their associated environmental aspects) were evaluated for significance within the past FY. In addition, the results of the analysis were documented, and any necessary changes were made or are scheduled to be made. Documented, measurable environmental objectives are in place at relevant functions and levels, and by the end of FY 2023, at least 80% of the objectives had either already been accomplished or scheduled to be met.
- Within the past FY, operational controls associated with identified significant environmental aspects are established, implemented, controlled, and maintained in accordance with operating criteria.
- Within the past FY, an environmental compliance audit program was in place, audits were completed according to schedule, audit findings were documented, and corrective and preventative actions were defined/documented and on schedule for completion by an established date.

INL was named one of 76 winners nationwide for the 2023 Electronic Product Environmental Assessment Tool (EPEAT) Purchaser Awards. The EPEAT awards recognize leadership in the procurement of sustainable electronics. INL has earned the prestigious annual award since 2015 and earned the 5-star award level two years in a row.

Now in the award program's ninth year, the Green Electronics Council—the organization that manages the EPEAT ecolabel—recognized INL for contributing to DOE reaching a savings of $10.8 million from their purchases of IT products. Winners were recognized for their purchases from six EPEAT product categories: (1) computers and displays, (2) imaging equipment, (3) mobile phones, (4) servers, (5) televisions, and (6) photovoltaic modules.

The council honored the 2023 EPEAT winners on July 27, 2023, at a virtual ceremony. Award winners earned one star for each product category in which they purchased EPEAT registered products, and INL was recognized as a 4-star winner.

Table 3-2. Summary table of DOE sustainability goals (DOE-ID 2023).

DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
ENERGY MANAGEMENT			
Reduce energy-use intensity (Btu per gross square foot) in goal-subject buildings by 50% by the end of FY 2030.	Energy-use intensity was 153,272.6 Btu/gross square feet (GSF) for FY 2023, which represents a decrease of 0.7% from FY 2015 and an increase of 5.0% from FY 2022.	Seventeen LED lighting and other projects are planned for FY 2024, providing an estimated $66K (1,076 megawatt hours [MWh]) in annual energy savings at a total cost of $224K.	**Medium/Financial** Low-cost of energy and water make project payback difficult to justify on a life-cycle basis.
Achieve a Net-Zero emissions building portfolio by 2045 through building electrification and other efforts.	The IF-655 HVAC system was electrified in FY 2023, and work started on the IF-657 building.	Complete the electrification project for IF-657.	**Medium/Financial** Funding has yet to be secured for all planned electrification projects.
Energy Independence and Security Act Section 432 continuous (four-year cycle) energy and water evaluations.	Energy and water evaluations were completed in 58 covered buildings in FY 2023. These audits represent 43% of the current covered buildings for the third year of the third four-year audit cycle (June 1, 2020, through May 31, 2024). INL is on track with its planned and scheduled audits.	Complete annual energy audits in FY 2024 for the remaining 21 buildings of the 135 covered buildings of the third four-year audit cycle (June 1, 2020, through May 31, 2024).	**Low/None** INL contractor's building audit program is fully established.
Meter individual buildings for electricity, natural gas, steam, and water to adhere to federal metering guidance.	In Idaho Falls, 36 buildings are metered for electricity with either standard or advanced metering. Twenty-eight buildings use and are metered for natural gas with standard meters. Twenty-five buildings are metered for water with standard meters. In the research and industrial complexes, 76 buildings have electric meters, 55 of which have advanced meters.	New INL buildings planned for completion will have advanced metering. Advanced electric and natural gas meters are planned in INL's Idaho Falls buildings (approximately 36 meters) to connect to the SkySpark energy management system. This activity is planned for FY 2024.	**Low/Medium** New INL buildings are specified for advanced metering. The cost to meter all utilities for buildings at the INL research and industrial complexes remains a challenge.

Table 3-2. continued.

DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
Reduce potable water-use intensity (gal per gross square foot).	Water intensity was 121.8 gal/GSF in FY 2023, which represents a decrease of 30% from FY 2007 and an increase of 1.8% compared to FY 2022.	A detailed water assessment will be completed in FY 2024. Investigate funding to implement audit-identified low and moderate cost water conservation measures, including high-efficiency water technologies.	**Medium** Water usage is highly dependent upon process water consumption at the Advanced Test Reactor Complex and Idaho Nuclear Technology and Engineering Center.
WASTE MANAGEMENT			
Reduce nonhazardous solid waste sent to treatment and disposal facilities.	Generated 2,921,342.01 lbs (1,325.1 metric tons [MT]) of nonhazardous municipal solid waste in FY 2023. In FY 2022, 2,748,832.5 lbs (1,246.9 MT) was generated, resulting in an increase of 6.3% year-over-year (YOY). Diverted 50.2% of nonhazardous solid waste in FY 2023 by recycling 1,466,632.1 lbs (665.3 MT) of materials. INL initiated a new waste reduction initiative that includes reusable to-go containers in the cafeterias.	Continue to educate personnel emphasizing the priority of waste reduction. Explore a glass recycling partnership with the City of Idaho Falls. INL will have a consultant assess waste processes and help identify a strategy to increase waste diversion. INL will install two new, modern digital signage waste and recycle bins to help with employee education and engagement in the waste diversion program.	**Medium** Fluctuations in building use, including classified spaces, employee engagement, and market forces, greatly affect this goal.
Reduce construction and demolition materials and debris sent to treatment and disposal facilities.	Generated 16,431.4 MT of construction and demolition (C&D) waste in FY 2023, compared to 11,794.4 MT in FY 2022, resulting in an increase of 39.32% of C&D waste generated YOY. Diverted 47.6% (17,233,255.4 lbs or 7,816.9 MT) of its C&D waste in FY 2023.	Continue employee education and contract language inclusion and incorporate additional materials into current C&D waste diversion processes. Work with regional industrial recycle entities and develop a strategy to recycle two construction waste streams: concrete and gypsum.	**Medium** Construction continues to increase while markets accepting construction debris are limited. The cost of transporting to an acceptable recycler is a major factor in the decision process.

Table 3-2. continued.

DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
FLEET MANAGEMENT			
Reduce petroleum consumption.	Fuel usage data indicate 544,313 gasoline-gal equivalents of petroleum-based fuels was used in FY 2023, which is a 42.0% reduction from FY 2005. INL resumed its use of R99 renewable diesel as a sustainable alternative to aid INL in reaching its zero-emission goals.	Optimize and right-size fleet composition by reducing vehicle size, eliminating underutilized vehicles, and acquiring vehicles to match local fuel infrastructure.	**Medium** The petroleum reduction goal will be challenging due to the cost and availability of alternative fueled motor coaches and heavy equipment.
Increase alternative fuel consumption.	Data indicates 276,977 gasoline-gal equivalents of alternative fuels were used in FY 2023, which is a 262.4% increase from FY 2005. INL contractor installed three additional electric vehicle (EV) charging stations for a total of 23 and installed one electric bus charging station.	As INL implements its Net-Zero Plan, a greater emphasis will be placed on acquiring zero-emission light-duty vehicles and installing supporting charging stations. Hydrogen-powered vehicles are also being considered.	**Medium** The alternative fuel increase goal will be challenging due to the cost and availability of EVs and the high-cost of renewable diesel.
Achieve 100% zero-emission vehicle (ZEV) acquisitions by 2035, including 100% zero-emission light-duty vehicle acquisitions by 2027.	Acquired 14 new light-duty EVs and one electric motor coach in FY 2023, for a total of 25 ZEVs. A total of 74 light-duty vehicles were acquired in FY 2023 resulting in 18.9% of those being ZEV acquisitions.	Identify the next group of petroleum-fueled vehicles for replacement with ZEVs.	**Medium** This goal may be difficult to meet due to the availability of appropriate ZEV light-duty vehicle fuel types supplied by the General Services Administration.
CLEAN AND RENEWABLE ENERGY			
Achieve 100% carbon pollution-free electricity on a net annual basis by 2030, including 50% 24/7 carbon pollution-free electricity.	Procured 16,292 MWh of Renewable Energy Credits (REC) in FY 2023 at a total cost of $97,753. This purchase of RECs, in addition to the 83.4 MWh of onsite generation (microgrid and small photovoltaic) and bonuses, totals 16,876 MWh (7.1%) of renewable energy for FY 2023.	As INL implements its Net-Zero Plan, a greater emphasis will be placed on internal applications of renewable energy generation to meet this goal. Purchased RECs will continue to be made along with onsite generation to meet the 7.5% annual goal.	**Low** Established a process for procuring RECs. Explored multiple paths with local utility providers for 100% carbon pollution-free electricity.

Table 3-2. continued.

DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
Increase consumption of clean and renewable non-electric thermal energy.	Two buildings have solar-transpired walls to provide make-up air preheating.	Investigate the additional use of solar water heating, make-up air preheating, or ground source heat pumps in select locations.	**Medium** Due to the low cost of electric energy, it is challenging to justify the installation of thermal renewable energy.
SUSTAINABLE BUILDINGS			
Increase the number of owned buildings that are compliant with the Guiding Principles for Sustainable Buildings.	At the end of FY 2023, 26 DOE-owned buildings were compliant with the Guiding Principles for Sustainable Federal Buildings (Guiding Principles), which represents 45.6% of applicable buildings. This includes 21 buildings that are less than 25,000 GSF. None of the new construction buildings planned to achieve the Guiding Principles were completed in FY 2023. Completed update to *INL High Performance and Sustainable Building Strategy*.	Document Guiding Principles compliance on new construction buildings completed in FY 2024. Implement a program to reassess buildings on a four-year cycle per the 2020 Guiding Principles.	**Low** The goal was achieved.
ACQUISITIONS AND PROCUREMENT			
Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring all sustainability clauses are included as appropriate.	A total of 98.7% of the contracts in FY 2023 contained applicable clauses.	Achieve 100% compliance. Continue to incorporate improvements to the Sustainable Acquisition Program, including procedures, policies, and enhanced work processes that increase visibility, availability, and use of sustainable products.	**Low** The goal continues to be achieved.

Table 3-2. continued.

DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
INVESTMENTS: IMPROVEMENT MEASURES, WORKFORCE, & COMMUNITY			
Implement life-cycle cost-effective efficiency and conservation measures with appropriated funds or performance contracts.	Twenty-one energy-reduction projects were completed in FY 2023, providing $41K in energy cost-savings. No additional Energy Savings Performance Contract projects were developed in FY 2023.	LED lighting and other projects are planned for 17 buildings. Use the results of an internal assessment tool to engage energy service companies on the viability of an energy-savings performance contract project based on INL energy and water audits.	**Low** Low utility rates and budgeting for energy and water projects remain a challenge.
ELECTRONIC STEWARDSHIP			
Increase the acquisition of sustainable electronics and promote sustainable operations and end-of-life practices.	In FY 2023, 100% of electronic devices were reused or recycled; however, only 97.9% were recycled with a certified recycler, by weight. INL received the Electronics Council's 2023 EPEAT Purchaser Award for the eighth year in a row.	Unless federal requirements dictate otherwise, 100% of electronics are reused or recycled. Continue to partner with Information Technology and Property Disposal Services to improve electronics end-of-life disposition.	**Low** This goal continues to be achieved.
Increase energy and water-efficiency in high-performance computing and data centers.	INL enterprise operations data center hardware has been consolidated and virtualized where possible.	INL enterprise operations data center will engage INL organizations to promote the benefits of co-locating small data center equipment. Study to right-size/decommission oversized cooling towers.	**Medium** Low-energy costs and long construction times may prohibit major investments in updated resiliency measures.

Table 3-2. continued.

DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
ORGANIZATIONAL RESILIENCE			
Implement climate adaptation and resilience measures.	INL completed over $3M in resilience projects in FY 2023. Infrastructure upgrades include LED lighting in 29 buildings, HVAC systems being replaced in five buildings, and an improved envelope on four buildings. Harden Road Infrastructure: resurfaced three parking lots and installed solar road lighting. Fire-Safe Design: nine fire hydrants replaced that were more than 50 years old.	Continue to implement life-cycle cost-effective energy/resilience solutions that improve the reliability and energy efficiency of critical mission operations.	**Low to Medium** Investment upgrades in existing buildings are a long-term process. New buildings are being built to include resiliency measures.
MULTIPLE CATEGORIES			
Reduce Scopes 1 and 2 GHG emissions.	Scopes 1 and 2 emissions were 87,376.1 MT of carbon dioxide equivalent (MT CO_2e) in FY 2023, which was 12.2% higher compared to 77,847.8 MT CO_2e in FY 2022. FY 2023 was 38.0% lower than the baseline year FY 2008 value of 141,005.1 MT CO_2e.	Refine targeted list of high-value, low-cost energy conservation measure projects with a focus on those reducing total emissions 45% by the end of FY 2025. INL will complete a landfill gas monitoring study, which will identify emitted gases and volumes to better inform the fugitive emissions from the onsite landfill.	**Medium** INL contractor has committed to be carbon Net-Zero by the end of FY 2031.
Reduce Scope 3 GHG emissions.	FY 2023 Scope 3 emissions were 24,329.4 MT CO_2e compared to 20,366.8 MT CO_2e in FY 2022, for a YOY increase of 19.5% and a 31.0% reduction from the FY 2008 baseline. The increase from the previous year is due mainly to lifting restrictions on business travel.	Continue to encourage teleworking, video conferencing, bike-commuting, and carpooling as they are effective ways to reduce the amount of air and ground travel, including employee commuting.	**Medium** Progress has been made toward exceeding the overall goal, primarily due to ongoing telework. YOY Scope 3 GHG emissions may continue to vary.

3.13 References

DOE-ID, 2023, "FY 2024 Idaho National Laboratory Site Sustainability Plan," DOE/ID-11383, Rev. 15, Idaho National Laboratory, December 2023, Idaho National Laboratory, Idaho Falls, ID.

DOE O 436.1A, 2023, "Departmental Sustainability," April 25, 2023, U.S. Department of Energy, Washington, D.C., https://sustainabilitydashboard.doe.gov/PDF/Resources/o436.1A.pdf.

DOE O 458.1, 2020, "Radiation Protection of the Public and the Environment," Administrative Change 4, U.S. Department of Energy, Washington, D.C., https://www.directives.doe.gov/directives-documents/400-series/0458.1-BOrder-chg4-ltdchg/@@images/file.

Endangered Species Act (ESA) of 1973 (16 USC § 1531 et seq.), Washington, D.C., https://www.fisheries.noaa.gov/national/endangered-species-conservation/endangered-species-act#:~:text=The%20Endangered%20Species%20Act%20of,habitats%20both%20domestically%20and%20abroad.

Executive Order 14008, 2021, "Tackling the Climate Crisis at Home and Abroad," Washington, D.C., https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climatecrisis-at-home-and-abroad.

Executive Order 14057, 2021, "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability," Washington, D.C., https://www.federalregister.gov/documents/2021/12/13/2021-27114/catalyzing-clean-energyindustries-and-jobs-through-federal-sustainability.

INL, 2022, "Climate Vulnerability Assessment and Resilience Planning for Idaho National Laboratory," INL/RPT-22-68812, September 2022, Idaho National Laboratory, Idaho Falls, ID.

ISO 14001:2015, "Environmental Management Systems – Requirements with Guidance for Use," International Organization for Standardization, September 15, 2015.

Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 USC § 703 et seq.), Washington, D.C., https://www.gpo.gov/fdsys/pkg/USCODE-2010-title16/pdf/USCODE-2010-title16-chap7- subchapII-sec703.pdf.

National Environmental Policy Act of 1969 as amended (42 U.S.C. 4321 et seq), Public Law 91-190, Washington, D.C., https://www.gpo.gov/fdsys/pkg/USCODE-2010-title42/pdf/USCODE-2010-title42- chap55-sec4321.pdf.