

Chapter 3: Environmental Management Systems

CHAPTER 3

The Idaho National Laboratory (INL) and Idaho Cleanup Project (ICP) Environmental Management Systems (EMSs) implements 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, as well as taking actions to minimize the impact of INL Site operations and activities.

3. ENVIRONMENTAL MANAGEMENT SYSTEMS

The framework that the U.S. Department of Energy (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 13834, “Efficient Federal Operations,” and DOE O 436.1, “Departmental Sustainability,” which require federal facilities to put EMSs into practice. Sites must maintain their EMS as being certified to or conforming with the ISO 14001:2015 standard following the accredited registrar provisions or self-declaration instructions. NOTE: Executive Order 13834 sections were revoked per Executive Order 13990, “Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis.”

Idaho National Laboratory (INL) balances research, development, and demonstration; waste management; and decontamination and decommissioning activities in support of the INL mission with the protection and preservation of human health and the environment and compliance 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 along with the U.S. Department of Energy, Idaho Operations Office (DOE-ID), and includes the Idaho Falls campus (Figure 3-1) and the research and industrial complexes termed the ‘INL Site’ that is located 50 miles west of Idaho Falls (Figure 3-2). For the purposes of this report, INL consists of those facilities operated by Battelle Energy Alliance, LLC (INL contractor) or by Fluor Idaho (Idaho Cleanup Project [ICP] Core contractor). The INL and the ICP Core 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. INL has 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 to the Nuclear Quality Assurance Certification Program. Many elements of the Nuclear Quality Assurance-1 align with and complement the ISO 14001:2015 standard.



Figure 3-1. INL contractor's Idaho Falls Campus (left).



Figure 3-2. INL contractor's Advanced Test Reactor (right).

INL and ICP Core contractors have established EMSs for their respective operations and were last certified to the ISO 14001:2015 standard in 2020. Recertification of the EMS is required every three years. INL and ICP Core contractors will undergo a recertification audit in 2023 to the current standard. The EMS is audited annually to verify that it is operating as intended and in conformance with ISO 14001:2015 standards. The INL and ICP Core contractors were both audited in 2021 by an external, accredited auditor and was recommended for continued certification to the ISO 14001:2015 standard. Results from the INL contractor audit showed no nonconformities, four management system strengths, and no opportunities for improvement. Results from the ICP Core audit showed no nonconformities and 10 management system strengths.

3.1 Environmental Management System Structure

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

- Plan – incorporates defining work scope, identifying environmental aspects and analyzing hazards, and developing hold points and mitigations
- Do – incorporates implementing defined controls and performing the work scope
- Check – comprises evaluating performance, management reviews, and contractor's assurance practices
- Act – incorporates corrective actions, improvements, and incorporating lessons learned into practices.

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





3.2 Environmental Policy

INL and ICP Core contractors state their commitments to the environment through an overarching policy that is displayed to employees. The policy commits specifically to:

- Environmental protection
- Environmental compliance
- Pollution prevention
- Continual improvement.

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



3.3 Plan

3.3.1 Environmental Aspects

INL and ICP Core contractors have evaluated their activities, products, and services to identify the environmental aspects of its work activities having the potential to affect the environment, the public, or result in a noncompliance with regulatory requirements. INL and ICP Core 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 and ICP Core contractors use the National Environmental Policy Act planning tool for all proposed actions to take place onsite. INL uses the Environmental Compliance Permit Process, while ICP Core 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 have been identified that include the list 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 and ICP Core 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 impacts 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 and ICP Core 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 and ICP Core 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 waters of the U.S. or groundwater. INL and ICP Core contractors have spill prevention and response plans in place for areas that have the potential to contaminate waters of the U.S. or groundwater.

Drinking Water Contamination. Drinking water contamination activities 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 or Biological 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 to historical buildings and cultural sites before an activity begins.

Generating and Managing Waste. Regulated, hazardous, or radioactive material and waste packaging and transportation applies to activities that generate, store, treat, or dispose hazardous, radioactive, or industrial waste. INL and ICP Core 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 non-contaminated or previously contaminated locations. All INL and ICP Core 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 that they are cleaned up properly. 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 and ICP Core contractors have processes in place to identify PCBs in excess equipment and to comply with regulatory requirements related to the use, marking, storage, or disposal of PCB equipment or waste.

Interaction with Wildlife/Habitat. Interaction with wildlife/habitat activities with the potential to disturb or affect wildlife or their habitat or activities involving revegetation and weed control. INL and ICP Core 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 process 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 of natural resources.

3.4 Do (Implementation and Operations)

3.4.1 Structure and Responsibility

INL and ICP Core contractors organizational structure establishes 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, the Idaho Department of Environmental Quality (DEQ), and other stakeholders. The technical points of contact work with the projects, researchers, and facilities to ensure that they implemented.

3.4.2 Competence, Training, and Awareness

INL and ICP Core contractors training directorates conduct training analysis and designs, develops, and evaluate environmental training. Environmental training gives personnel the opportunity to gain experience, knowledge, skills, and abilities necessary to:

- Do their 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 actions in an emergency.



3.4.3 Communication

INL and ICP Core contractors implement comprehensive communication programs that distribute timely information to interested parties like 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 utilizing protective equipment and barriers to minimize or avoid impacts to the environment.

3.4.5 Document and Record Control

Environmental documents are prepared, reviewed, revised, and issued per INL and ICP Core 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 and ICP Core contractors internally monitor compliance with environmental laws and regulations through the Assurance Portfolio process in the Contractor Assurance System. INL and ICP Core 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 the INL is complying with state permits. The Environmental Protection Agency also participates on Federal Facility Act-driven inspections and, on a determined frequency, participates alongside Idaho DEQ in compliance evaluation inspections. Chapter 2, "Environmental Compliance Summary," lists and gives results of the annual external agency audits and inspections of INL's Environmental Program.

Annually, INL and ICP Core contractors perform a surveillance audit as required by the ISO 14001 standard. Additionally, every three years INL and ICP Core 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 and ICP Core contractors have been certified to the ISO 14001 standard since 2005.

3.6 Act

INL and ICP Core 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 rolled up for management review.



INL and ICP Core contractors' management review of the EMS occurs through a process that includes weekly, monthly, quarterly, and annual meetings with committees and councils. Management review includes identifying issues that carry the largest environmental risks and providing 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 rolled up 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 the environmental performance.

3.7 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 from extreme weather events.

As outlined in Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," the DOE Climate Adaptation and Resilience Plan (CARP) issued in August of 2021, and the Climate Adaptation Policy Statement build upon prior DOE actions taken to bolster adaptation and increase the resilience of DOE facilities and operations. These values and ideals are paired well with the INL mission.

3.7.1 Performance Status

All sustainable activities support energy resiliency and, by default, make the INL Site a more resilient institution. Sustainable activities include:

- Replacement an aged underground diesel storage tank with an above ground version, thereby increasing environmental protection and lessening the impact on the environment. This is an interim step as INL moves toward net-zero emissions.
- Added sustainable acquisition clauses in electronics acquisition blanket purchase orders. As noted in the INL Green Purchaser award, using Electronic Product Environmental Assessment Tool (EPEAT) products reduces energy use, thus helping reduce electric load and demand.
- Ensuring procurement requirements lend preference to use local suppliers and manufacturers, thereby shortening the supply chain and reducing the chances of delivery disruptors.
- Completing the annual update of operational procedures and processes to address sustainability, emergency planning, and operational resiliency.
- Completing numerous energy and water-reduction projects resulting in lower energy use and load demands on the servicing utility.
- Evaluating and considering alternative energy solutions ranging in scope from microgrid renewable generation to potential small modular reactor projects capable of providing local clean alternative energy.

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 like water balance, nutrient cycling, wildlife habitat availability, and carbon sequestration. A brief list of activities that support ecosystem sustainability are included here, but additional information can be found in Chapter 9:

- Continued to implement conservation planning documents for sage-grouse, bats, migratory birds, and their habitats.
- Managed the Sagebrush Steppe Ecosystem Reserve according to the Environmental Assessment and Management Plan.
- Restored sagebrush to several hundred acres where it had been lost to wildland fire and continued to monitor natural vegetation recovery according to current fire recovery plans.
- Stabilized disturbed soils using revegetation of native species, where appropriate.



- Controlled noxious weeds to limit the risk of spread and maintain the integrity of native plant communities.
- Continued monitoring the abundance and distribution of vegetation and several wildlife taxa across the INL Site.
- Facilitated ongoing ecological research led by university collaborators through the National Environmental Research Park.

Comprehensive emergency response procedures are in place that cover all INL Site facilities:

- The INL contractor procedures include PLN-114, “Idaho National Laboratory (INL) Emergency Plan/Resource Conservation and Recovery Act (RCRA) Contingency Plan,” which addresses the elements of, and is the primary component in defining and directing the INL Emergency Management Program. The plan implements DOE policy and requirements for an EMS and a RCRA contingency plan specified in INL Requirements Document 16100, “Emergency Management System,” which includes citations to DOE O 151.1D, “Comprehensive Emergency Management System,” and other DOE requirements. The plan was updated in FY 2021.
- The ICP Core contractor procedures include PLN-2012, “ICP Core Emergency Plan/RCRA Contingency Plan,” and the emergency response elements that are required in DOE O 151.1D, “Comprehensive Emergency Management System,” for the Idaho Nuclear Technology and Engineering Center (INTEC), the Radioactive Waste Management Complex (RWMC), the Advanced Mixed Waste Treatment Project (AMWTP) and Accelerated Retrieval Project, and the ICP Core contractor operated buildings in Idaho Falls.

Several INL Emergency Management procedures were updated to better prepare the INL Site for naturally occurring phenomenon, including PLN-4267, “INL Continuity of Operations Plan.” INL’s emergency plans and emergency plan implementing procedures (EPIs) are reviewed at least annually and revised if necessary. The plans and EPIs may be revised based on:

- Changes in emergency planning or company operations, policy, concept of operations, procedures, organization and staffing, and facility operations and/or mission
- Direction of the DOE-ID Emergency Management Program administrator
- Failure of emergency plan implementing procedures during drills, exercises, and real events
- Results of audits, evaluations, appraisals, and self-assessments
- New facility information.

3.7.2 Plans and Projected Performance

The concept of resiliency is evolving in real-time. The COVID-19 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 reconsiderations, and it will fall to facility management to promote a building culture that stands on the pillars of safety, quality, and efficiency.

INL and ICP Core contractors 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 that exposure into potential impacts, prioritizing risk, devising solutions, and securing funding. INL and ICP Core contractors will work with internal and external stakeholders to address threats to missions and programs. Priority actions include:

- Developing a plan and commencing the implementation of the five priority adaptation actions found in the CARP: (1) Assess Vulnerabilities and Implement Resilience Solutions; (2) Enhance Climate Adaptation and Mitigation Co-benefits; (3) Institutionalize Climate Adaptation and Resilience Across INL Policies, Directives, and Processes; (4) Provide Climate Adaptation Tools, Technical Support, and Climate Science Information; and (5) Advance Deployment of Emerging Climate Technologies.
- Updating the existing Climate Vulnerability Assessment (e.g., priority 1 of the CARP) and incorporate all the requirements of the Vulnerability Assessment and Resiliency Plan (VARP). The classic planning approach as adopted from the VARP itself will be used to:
 - Establish a planning team (first quarter of FY 2022)



- Update a critical asset and infrastructure (second and third quarter of FY 2022; and continuous)
- Validate the previously characterization of climate trends and events (second quarter of FY 2022)
- Determine the likelihood of climate change hazards (third quarter of FY 2022)
- Characterize the impacts, which is a continuation and refinement previously completed work (third quarter of FY 2022)
- Develop a risk matrix (third quarter of FY 2022)
- Identify solutions (fourth quarter of FY 2022)
- Develop a portfolio of solutions, including funding pathways (fourth quarter of FY 2022)
- Reassess the plan and monitor the results (FY 2023 and beyond).
- Investing in research and supplying critical data and information
- Implementing actions that highlight the benefits of new technologies, innovative resource management, and infrastructure improvements that will improve the resiliency of DOE-ID's operating footprint.
- Investigating and evaluating the possibility of using the Federal Energy Management Program's Technical Resilience Navigator or the Leadership in Energy and Environmental Design's RELi 2.0 Rating Guidelines for Resilient Design and Construction.

INL continues the process of incorporating resilient design into new and existing buildings. Program leads and engineers are well-versed on the trends associated with resilient design. As this new field emerges and expertise becomes more refined, controlling documents will be targeted for incorporating resiliency tactics. A fully mature program is still being defined.

Highly energy-efficient lighting, roofing, and automation systems continue to be installed in new buildings and during retrofit activities. The result is not just an increase in the resilience of the building, but of the surrounding community as well, by decreasing demand on available resources and infrastructure.

Processes and actions for future activities include the following (for both new and existing buildings):

- Incorporating resilient design and management into the INL facilities planning process
- Identifying and evaluating vulnerabilities to natural hazard risks (e.g., storm events, localized flooding, extreme temperatures, and wildfires)
- Considering enhanced fire-proofing strategies and designs
- Considering designs for enhanced drought tolerance
- Ensuring continuity of operations and access to electricity in the event of an extended power outage
- Improving energy performance of building envelopes, such as new compressors to increase reliability and efficiency at INTEC and Integrated Waste Treatment Unit
- As appropriate, using information modeling to assess design options and to improve decisions based on life-cycle analysis
- When cost-effective, adopting passive and natural design strategies over active and mechanical systems.

INL is well-positioned to address the need for organizational resilience elements in future plans. With leadership commitment, INL will continue to ensure that appropriate events and risk elements are considered as part of INL Site programs and planning activities. Policies and procedures will be evaluated to determine whether they should be modified to consider organizational risks. Emergency response, workplace safety and health, and the most updated scientific knowledge will continue to be incorporated into all facets of organizational resilience.



3.8 Sustainability Goals

In 2021, Executive Order 14057, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,” was issued. The executive order establishes sustainable environmental stewardship goals that advance sustainable practices. Specifically, it directs agencies to reduce emissions across federal operations, invest in American clean energy industries and manufacturing, and create clean, healthy, and resilient communities. The President’s executive order directs the federal government to use its scale and procurement power to achieve five goals:

1. 100% carbon pollution-free electricity by 2030, at least half of which will be locally supplied clean energy to meet 24/7 demand.
2. 100% zero-emission vehicle acquisitions by 2035, including 100% zero-emission light-duty vehicle acquisitions by 2027.
3. Net-zero emissions from federal procurement no later than 2050, including a ‘Buy Clean’ policy to promote use of construction materials with lower embodied emissions.
4. A net-zero emissions building portfolio by 2045, including a 50% emissions reduction by 2032.
5. Net-zero emissions from overall federal operations by 2050, including a 65% emissions reduction by 2030.

The evolving priorities for sustainability incorporated into planning for FY 2022 and beyond were considered in completing planned sustainability work at the end of FY 2021. The *FY 2022 Idaho National Laboratory Site Sustainability Plan* (DOE-ID 2021) describes the overall sustainability strategy for INL and ICP Core contractors during FY 2022, and includes a status of FY 2021 performance in the areas of greenhouse gas emission reduction, energy management, water management, waste diversion, fleet management, clean and renewable energy, green buildings, and other areas. Each sustainability goal, INL and ICP Core contractor’s performance status, and planned actions are detailed in Table 3-1.

3.9 Environmental Operating Objectives and Targets

INL establishes objectives based on the environmental policy, legal and other requirements, environmental aspects, INL’s Strategic Plan, and the views of its stakeholders. The INL contractor plans, implements, monitors, and reports on these objectives and targets quarterly in management review reports and an annual Performance Evaluation and Measurement Plan. The ICP Core 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 93% of the EMS Objectives and Targets in FY 2021. Each year, the ICP Core contractor develops measurable goals for environmental improvement in the Environmental Compliance Performance Index. The ICP Core contractor had 16 objectives implemented by 19 targets in FY 2021; 58% of the EMS Objectives and Targets were completed.

3.10 Accomplishments, Awards, and Recognition

The INL and ICP Core contractors were both audited in 2021 by an external, accredited auditor and achieved recertification for conformance to the ISO 14001:2015 standard. The result from the INL contractor audit were no nonconformities, four management system strengths, and no opportunities for improvement. Results from the ICP Core audit showed no nonconformities and 10 management system strengths.

INL and ICP Core contractors’ EMS performance data was submitted to DOE’s EMS Database Application and received a ‘Green’ score for the EMS performance metrics listed below:

- Environmental aspects were identified or reevaluated using an established procedure and updated as appropriate.
- Measurable environmental goals, objectives, and targets were identified, reviewed, and updated as appropriate.
- Operational controls were documented to address significant environmental aspects 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, carried out, 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), as well as 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 at the end of the FY, at least 80% of them 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.
- 80 to 100% of applicable Executive Order 13834 goals are addressed in the EMS.

INL was named one of 76 winners nationwide of the 2021 EPEAT Purchaser Awards. The EPEAT awards recognize leadership in the procurement of sustainable electronics. The INL has earned the annual prestigious award since 2015 and earned the 5-star award level two years in a row.

Now in the award program's seventh year, the Green Electronics Council—the organization that manages the EPEAT ecolabel—recognized the INL for contributing to DOE reaching a savings of \$10.2 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 2021 EPEAT winners July 28 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 5-star winner.



Table 3-1. Summary table of DOE sustainability goals (DOE-ID 2022).

PRIOR 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.	Energy-use intensity was 141,958 Btu/ft ² for FY 2021, which represent a decrease of 8.0% from FY 2015 and 5.7% from FY 2020.	<p>Seven light emitting diode (LED) lighting and controls projects are planned for FY 2022, providing \$111K (1,820 MWh) in energy savings at total costs of \$683K.</p> <p>Develop a large energy-reduction performance contract project from the compiled results of the energy and water audits.</p>	<p>Medium/Financial Low cost of energy and water make project payback difficult to justify on a life-cycle basis.</p>
Energy Independence and Security Act Section 432 continuous (four-year cycle) energy and water evaluations.	<p>Energy and water evaluations were completed in 18 covered buildings in FY 2021.</p> <p>These audits represent 18% of the current covered buildings for the first 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.</p>	<p>Complete annual energy audits for 25% of INL’s 104 covered buildings for each year of the third four-year audit cycle (June 1, 2020, through May 31, 2024).</p> <p>INL plans to audit 17 buildings in FY 2022.</p>	<p>Low/None INL’s building audit program is fully established.</p>
Meter individual buildings for electricity, natural gas, steam, and water, where cost-effective and appropriate.	100% of natural gas and 65.1% of electric usage metered at the building level.	<p>One new INL building is planned for completion in FY 2022 and will have advanced metering.</p> <p>Work completed in FY 2021 on ICP Core’s Utility Control System project at INTEC will provide the capability to capture electrical power use in facilities fed through substations and load centers.</p> <p>Meter 100% of appropriate covered buildings.</p>	<p>Low/None New INL buildings are specified for advanced metering and selected appropriate buildings are specified for sub-metering.</p>
Reduce potable water-use intensity (gal per gross square foot).	Water intensity was 140.2 gal/ft ² in FY 2021, which represent a decrease of 19.4% from FY 2007 and 1.4% from FY 2020.	<p>Prepare and implement a water balance evaluation to identify high water-use intensity processes and buildings.</p> <p>Implement audit-identified low and moderate cost water conservation measures in covered</p>	<p>Medium Water usage is highly dependent upon the varying process water consumption at the Advanced Test Reactor Complex.</p>



Table 3-1. continued.

PRIOR DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
WATER MANAGEMENT			
Reduce non-potable freshwater consumption (gal) for industrial, landscaping, and agricultural.	Not applicable. Water obtained from the Snake River Plain Aquifer and is considered potable.	facilities, including high-efficiency water technologies. Industrial, landscape, and agricultural (water is not applicable).	Low/None Industrial, landscape, and agricultural water is not used.
WASTE MANAGEMENT			
Reduce non-hazardous solid waste sent to treatment and disposal facilities.	Generated 2,695,757.0 lbs (1,222.8 MT) of non-hazardous Municipal Solid Waste (MSW) in FY 2021. In FY 2020, 2,562,397.5 lbs (1,162.3 MT) was generated, resulting in an increase of MSW generated of 5.2% year-over-year (YOY). Diverted 59.6% of non-hazardous solid waste in FY 2021 by recycling 1,607,025.1 lbs. (728.9 MT) of materials.	Continue to educate personnel emphasizing the priority of waste reduction from the previous year. Continue to evaluate potential outlets and expansion of recyclable waste streams and impacts from COVID-19 telework directive. Explore glass recycle partnership with the city of Idaho Falls. Investigate and develop regional composting facility based on West Yellowstone pilot project.	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 23,184.3 MT of construction and demolition (C&D) waste in FY 2021, compared to 20,041.5 MT in FY 2020, resulting in an increase of 15.68% of C&D waste generated YOY. Diverted 58.0% (29,657,122.3 lbs or 13,452.2 MT) of its C&D waste in FY 2021.	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.
FLEET MANAGEMENT			
Reduce petroleum consumption.	<i>Preliminary data indicate</i> 800,420 gasoline-gallon equivalents of petroleum-based fuels was used in FY 2021, which is	As INL implements its newly developed Net-Zero Plan, a greater emphasis will be placed on acquiring electric buses and heavy equipment	Medium The petroleum reduction goal will be challenging due to the cost and availability of electric motor coaches and heavy equipment.



Table 3-1. continued.

PRIOR DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
	<p>a 14.7% reduction from FY 2005 and a 24.1% increase from FY 2020.</p>	<p>along with electrifying its light-duty fleet and the installation of supporting charging stations.</p> <p>Optimize and right-size fleet composition by reducing vehicle size, eliminating underutilized vehicles, and acquiring vehicles to match local fuel infrastructure.</p>	
<p>Increase alternative fuel consumption.</p>	<p><i>Preliminary data indicate</i> 35,657 gasoline-gallon equivalents of alternative fuels was used in FY 2021, which represents a 53.4% decrease from FY 2005 and a 68.1% decrease from FY 2020.</p>	<p>Determine less-costly sources of R99 for the interim while electric buses are being evaluated and procured.</p>	<p>Medium The alternative fuel increase goal will be challenging due to cost and availability of electric vehicles (EVs) and the excessive cost of renewable diesel.</p>
<p>Acquire alternative fuel and EVs.</p>	<p>Acquired 50 new light-duty vehicles in FY 2021, 12 of which were alternative fuel vehicles (AFVs) or EVs.</p>	<p>Identify the next group of petroleum-fueled vehicles for replacement with AFVs or EVs and ensure that all existing AFVs are replaced EVs when available.</p> <p>Work with General Services Administration to achieve 75% or greater AFV and EV light-duty acquisitions.</p>	<p>Medium This goal has historically been met but it may be difficult to reach in the future due to the availability of appropriate EV light-duty vehicle fuel types supplied by General Services Administration.</p>
CLEAN AND RENEWABLE ENERGY			
<p>Increase consumption of clean and renewable electric energy.</p>	<p>Procured 17,977 MWh of renewable energy certificates from Idaho Falls Power at a total cost of \$85,390.</p> <p>This purchase of new renewable energy certificates (RECs), in addition to the 41.9 MWh of onsite generation (e.g., microgrid and, small photovoltaic) plus bonuses, totals 18,680 MWh (8.5%) of renewable energy for FY 2021.</p>	<p>As INL implements its recently developed Net-Zero Plan, a greater emphasis will be placed on the internal applications of renewable energy generation to meet this goal.</p> <p>Incremental increases of purchased renewable energy certificates will continue to be made along with onsite generation to meet a minimum of the 7.5% goal each YOY.</p>	<p>Low Established process for procuring RECs.</p>
<p>Increase consumption of clean and renewable non-electric thermal energy.</p>	<p>Two buildings with solar transpired walls to provide make-up air preheating.</p>	<p>Investigate the additional use of solar water heating, make-up air preheating, or ground source heat pumps in select locations.</p>	<p>Medium Due to the low cost of electric energy, it is challenging to justify the installation of thermal renewable energy.</p>



Table 3-1. continued.

PRIOR DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
SUSTAINABLE BUILDINGS			
<p>Increase the number of owned buildings that are compliant with the Guiding Principles for Sustainable Buildings.</p>	<p>At the end of FY 2021, 25 DOE-owned buildings were compliant with the Guiding Principles, which represents 25.25% of buildings. This includes six buildings less than 10,000 gross square feet.</p>	<p>Document Guiding Principles compliance on one new construction building in FY 2022 and three additional new construction buildings by the end of FY 2024.</p> <p>Implement additional audit-identified low- and moderate-cost Engineering Change Managements at covered facilities that are targeted to document the Guiding Principles.</p>	<p>Low The 15% goal was achieved.</p>
ACQUISITIONS AND PROCUREMENT			
<p>Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring all sustainability clauses are included as appropriate.</p>	<p>100% of the contracts in FY 2021 contained applicable clauses.</p>	<p>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.</p>	<p>Low The goal continues to be achieved.</p>
EFFICIENCY AND CONSERVATION MEASURE INVESTMENTS			
<p>Implement life-cycle cost-effective efficiency and conservation measures with appropriated funds and/or performance contracts.</p>	<p>Six energy-reduction projects were completed in FY 2021 providing over \$19K in energy cost-savings.</p> <p>No additional Energy Savings Performance Contract (ESPC) projects were developed in FY 2021.</p>	<p>LED lighting projects are planned for 11 buildings.</p> <p>Continue to evaluate the cost effectiveness of ESPC options.</p>	<p>Low While there are no current plans for an additional ESPC project, the INL Site does have established plans and goals for projects awarded and targeted in FY 2022.</p>
ELECTRONIC STEWARDSHIP AND DATA CENTERS			
<p>Electronics stewardship from acquisition, and operations, to end of life.</p>	<p>In FY 2021, 100% of electronic devices were reused or recycled; however, only 74.3% were recycled with a certified recycler.</p>	<p>100% of electronics are reused or recycled unless federal requirements dictate otherwise. Continue to partner with Information Management (IM) and Property Disposal Services to improve electronics end-of-life disposition.</p>	<p>Low This goal continues to be achieved.</p>



Table 3-1. continued.

PRIOR DOE GOAL	CURRENT PERFORMANCE STATUS	PLANNED ACTIONS AND CONTRIBUTIONS	OVERALL RISK OF NON-ATTAINMENT
<p>Increase energy and water efficiency in high-performance computing and data centers.</p>	<p>Continued consolidating server infrastructure in the old high-performance computing data center by virtualizing physical machines and taking advantage of cloud and container hosting options</p>	<p>Install and monitor advanced energy meters in all data centers and accurately quantify Power Usage Effectiveness (PUE).</p>	<p>Medium Low energy costs and long construction times may prohibit major investments in updated resiliency measures.</p>
ORGANIZATIONAL RESILIENCE			
<p>Implement climate adaptation and resilience measures.</p>	<p>INL emergency plans and EPIs were reviewed and revised, as necessary. Operating policies and procedures were evaluated to determine whether they should be modified to consider organizational risks. Internal procedures were modified or developed to face the challenge of the pandemic.</p>	<p>Conduct detailed vulnerability assessments using the Vulnerability Assessment and Resiliency Planning process to identify projects that increase resilience. Emergency response, workplace safety and health, and updated scientific knowledge will be incorporated into all facets of organizational resilience, procedures, and protocols. Pursue life-cycle cost-effective energy resilience solutions that provide the most reliable energy to critical mission operations.</p>	<p>Low to Medium Investment upgrades in existing buildings are a long-term process. New buildings are being built to include resiliency measures.</p>
MULTIPLE CATEGORIES			
<p>Reduce Scope 1 & 2 greenhouse gas emissions.</p>	<p><i>Preliminary data indicate</i> Scope 1 & 2 emissions were 89,391.4 metric tons of carbon dioxide equivalent (MT CO₂e) compared to 84,019.9 MT CO₂e in FY 2020, for a YOY increase of 6.4% and a 36.6% reduction from the FY 2008 baseline.</p>	<p>Refine a targeted list of high-value, low-cost Engineering Change Management projects with a focus on those reducing total emissions 45% by the end of FY 2024. Reduce or minimize the quantity of toxic and hazardous chemicals acquired, used, or disposed that will assist INL in pursuing agency greenhouse gas reduction targets.</p>	<p>Medium INL has committed to be carbon net-zero by the end of FY 2031. Significant progress was made toward exceeding the overall goal, but YOY Scope 1 and 2 greenhouse gases emissions may continue to vary.</p>
<p>Reduce Scope 3 greenhouse gas emissions.</p>	<p><i>Preliminary data indicate</i> FY 2021 Scope 3 emissions were 15,586.6 metric tons of carbon dioxide equivalent (MT CO₂e) compared to 19,042.6 MT CO₂e in FY 2020, for a YOY reduction of 18.1% and a 55.8% reduction from the FY 2008 baseline.</p>	<p>Continue to encourage teleworking, video conferencing, and carpooling as effective ways to reduce the amount of air and ground travel, including employee commuting. Achieve a YOY 2% annual reduction for five years for a total 10% reduction.</p>	<p>Medium Significant progress was made toward exceeding the overall goal, primarily due to ongoing telework and travel restrictions. YOY Scope 3 greenhouse gases emissions may continue to vary.</p>



3.11 References

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