



**OFFICE OF INSPECTOR GENERAL**

U.S. Department of Energy

# AUDIT REPORT

DOE-OIG-24-07

November 2023

**MANAGEMENT OF INDIRECT FUNDED  
MINOR CONSTRUCTION PROJECTS AT  
ARGONNE NATIONAL LABORATORY**



**Department of Energy**  
Washington, DC 20585

November 22, 2023

MEMORANDUM FOR THE DEPUTY DIRECTOR FOR OPERATIONS, OFFICE OF  
SCIENCE, AND ACTING MANAGER, ARGONNE SITE OFFICE

SUBJECT: Audit Report on Management of Indirect Funded Minor Construction Projects at  
Argonne National Laboratory

The attached report discusses our audit of the management of indirect funded minor construction projects at Argonne National Laboratory. This report contains four recommendations that, if fully implemented, should help ensure that the management of indirect funded minor construction projects complies with applicable laws, regulations, the Office of Science's and Argonne National Laboratory's policies and procedures, and Department of Energy guidance. Management fully concurred with our recommendations.

We conducted this audit from May 2022 through July 2023 in accordance with generally accepted government auditing standards. We appreciated the cooperation and assistance received during this audit.

A handwritten signature in black ink, appearing to read "Jennifer L. Quinones".

Jennifer L. Quinones  
Deputy Inspector General  
Office of Inspector General

cc: Deputy Secretary  
Chief of Staff  
Under Secretary for Science and Innovation



## Department of Energy Office of Inspector General

### Management of Indirect Funded Minor Construction Projects at Argonne National Laboratory (DOE-OIG-24-07)

#### WHY THE OIG PERFORMED THIS AUDIT

The Office of Inspector General has issued audit reports identifying weaknesses in managing minor construction projects such as the inappropriate use of indirect funding to complete projects that did not support multiple mission needs.

From fiscal year (FY) 2019 through FY 2021, Argonne National Laboratory (ANL) proposed 12 indirect funded minor construction projects for the Department of Energy's review and approval. The total estimated costs for these proposed Institutional General Plant Projects were \$18.2 million in FY 2019, \$31.8 million in FY 2020, and \$44.8 million in FY 2021. Out of the 12 proposed projects, the Department approved 10 Institutional General Plant Projects with approximate total project costs of \$46 million during the scope period.

We initiated this audit to determine whether ANL managed its indirect funded minor construction projects in accordance with applicable laws, regulations, the Office of Science's (Science) and ANL's policies and procedures, and Department guidance.

#### What Did the OIG Find?

ANL did not manage two of the five projects we reviewed in accordance with applicable laws, regulations, Science's and ANL's policies and procedures, and Department guidance. Specifically, we found one project, a \$2.2 million buildout of a laboratory space in Building 223, that did not clearly and consistently document the reason for the renovation and how it supported multiple mission needs. Additionally, we found a \$4.2 million redundant cooling towers system subproject that did not support multiple mission needs because it only benefited the Advanced Photon Source, a user facility. Department officials that approved these projects did not receive all available supporting documentation to verify whether a project supported multiple mission needs, and whether it was clearly defined. Without reviewing all available key documentation, Department officials can potentially misinterpret the intended purpose of a minor construction project and approve projects that are not of a general institutional nature or not for general purpose site-wide needs. Although Project Implementation Plans and other key documents are not required to be submitted for the Department's review and approval, there is an opportunity to improve Science's and ANL's policies and procedures to ensure the Department obtains a complete picture of the true purpose of proposed minor construction projects. In addition, there is a risk that changes from direct to indirect funding for a construction project may not meet the intent of the appropriated funds.

#### What Is the Impact?

By funding \$6.4 million program-specific minor construction projects through indirect funds, other Department programs paid for a share of projects that provided no multi-programmatic benefit. Additionally, with ANL's unclear documentation of the scope of minor construction projects, the Department cannot guarantee that its budget requests represent the necessary funding amount needed, which can lead to potential misstatements of funds in operations and line-item projects.

#### What Is the Path Forward?

To address the issues identified in this report, we made four recommendations that, if fully implemented, should help ensure that the management of indirect funded minor construction projects complies with applicable laws, regulations, Department guidance, and Science's and ANL's policies and procedures.

## BACKGROUND

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Argonne National Laboratory (ANL) is managed and operated by UChicago Argonne, LLC for the Department of Energy. ANL is one of the Department's 10 Office of Science (Science) laboratories, and its mission is to serve the U.S. as a science and energy laboratory distinguished by its research and development capabilities jointly with its experimental and computational facilities. ANL is a multidisciplinary science and engineering research center where scientists and engineers work together on projects ranging from ways to obtain affordable clean energy to protecting humanity and the environment. According to its Annual Laboratory Plan for fiscal year (FY) 2021, the average age of ANL-operated facilities and infrastructure is 51 years old with 64 percent of the assets more than 50 years old.

ANL modernizes its infrastructure, in part, through minor construction projects using laboratory indirect funds from the General Plant Projects (GPPs) overhead cost pool to provide infrastructure upgrades such as the electrical supply for electric vehicle charging stations, site security upgrades, and electrical modernization. Department of Energy Order (Department Order) 430.1C, *Real Property Asset Management*, states that general purpose infrastructure assets are not exclusively dedicated to specific or explicit program requirements or core capabilities; rather, these assets support multiple mission needs. It is important to note that Department Order 430.1C no longer uses the term Institutional General Plant Projects (IGPPs); however, the update to the Department's *Financial Management Handbook*, Chapter 2.3, *Minor Construction*, dated April 2023, now refers to IGPPs as "Indirect Funded Minor Construction Projects," which serve the same purpose as IGPPs, and further states that the allocation of funds must be made to benefiting programs and follow Cost Accounting Standards. In addition, according to Science's procedure for acquiring assets via IGPPs, IGPPs could be funded by two or more programs at a site, but generally IGPPs refer to projects that support the entire site and, thus, are funded from site overhead. Furthermore, ANL's *Controller's Manual*, Section 5.6.5, *Institutional General Plant Projects*, states IGPPs are funded by laboratory indirect expense and are for miscellaneous, new plant projects of a general institutional nature that benefit multiple cost objectives and serve general purpose site-wide needs.

Science oversees many of the Department's National Laboratories, as well as various programs and facilities, that help achieve its mission of delivering major scientific discoveries, capabilities, and tools to transform the understanding of nature and to advance U.S. energy, economic, and national security. However, decades of underfunding across the Department's National Laboratories have put Science's mission at risk and threatened the U.S. scientific and technological competitive edge. Science received an additional \$1.5 billion in FY 2022 funding from the Inflation Reduction Act of 2022, of which \$133 million is allocated to modernize infrastructure.

In a prior Office of Inspector General audit report issued in February 2015, the audit found that ANL may have inappropriately used, or planned to use, indirect funding to complete 4 of the 10 minor construction projects funded as IGPPs contrary to Department Order 430.1B Change 2, *Real Property Asset Management*. Given the importance of infrastructure to the achievement of the Department's mission, we initiated this audit to determine whether ANL managed its indirect

funded minor construction projects in accordance with applicable laws, regulations, Science's and ANL's policies and procedures, and Department guidance.

## **DOCUMENTATION DID NOT CLEARLY SUPPORT MULTIPLE MISSION NEEDS**

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ANL did not manage two of the five projects we reviewed in accordance with applicable laws, regulations, Science's and ANL's policies and procedures, and Department guidance. Specifically, we found two projects, a \$2.2 million minor construction project to renovate a laboratory space in Building 223, where the documentation did not support how the buildout supported multiple mission needs, and a subproject for a \$4.2 million redundant cooling towers system that did not support multiple mission or institutional needs because it only benefited the Advanced Photon Source (APS), a user facility, which is funded by the Basic Energy Sciences program.

### **Building 223 Laboratory Renovations**

Although ANL stated that the experiments to be conducted in the laboratory buildout in Building 223 were part of a larger Science initiative, the supporting project documentation showed that a single physicist's work was the impetus for the renovation. The project documentation that showed the physicist's work only benefited one program and not multiple mission needs was not provided to the Department because it was not required. According to the Department officials approving indirect funded minor construction projects, without reviewing all related project documents, the lack of sufficient documentation could lead to a misinterpretation regarding whether the project meets the site-wide institutional requirement when, in fact, additional documentation would result in additional questions about the project's purpose.

Department Order 430.1C states that general purpose infrastructure assets are active, real property assets providing functions, services, or utilities essential to enable or support the Department's mission at a site. Further, it states that these assets are not exclusively dedicated to specific or explicit program requirements or core capabilities; rather, these assets support multiple mission needs. Based on the documentation provided to the Department for project approval (e.g., an evaluation checklist), the justification for Building 223 Laboratory Renovations showed it was for modernization of a laboratory space. However, the Project Implementation Plan (PIP), *Bldg 223 Lab D034 Buildout Project*, and an associated conceptual design study which included one scientist's space requirements, were not provided to the Department as part of the approval process. However, as noted in the following paragraph, these documents were developed and available prior to the Department's approvals in January 2021 and February 2021.

In October 2020, ANL hired a design consultant to prepare a conceptual design study for Building 223. As noted in the conceptual design study, the space program and design solutions respond to information provided by a physicist regarding the equipment needs, environmental requirements, and utility systems required in his laboratories. The design study identifies that the physicist's space will occupy three laboratory modules in Building 223 based on: (1) the building's vacancy (space was currently unoccupied and the project must be completed quickly); (2) the availability of many laboratory utilities needed to support the laboratory function; and (3)

the suitability of existing space to house equipment and data collection activities that requires minimal vibration. The study states that the new laboratory will help ANL further cement its status as a leader in the realm of quantum science. Moreover, the study notes that the new laboratory space will be configured into two distinct spaces, where different research efforts will be executed:

- CeNTREX, where a cryogenic beam source will be directed through a vacuum chamber, and energy shifts in molecules will be measured using spectroscopy, and
- ZOMBIES, where a molecular beam source will be directed through a strong electromagnetic field to detect and measure electroweak forces.

The recommended scope of work as described in the PIP did not demonstrate how this project could benefit multiple mission needs, areas of Building 223 other than the physicist's space, or the overall site. Rather, the scope appeared to be based on priority items and how each would potentially impact the user's operations once active. As mentioned in the design study, "[T]he scope of work recommended by this report includes base, or required, scope items to meet the needs of the user as well as high priority items that would impact the user's research activities if performed after lab occupancy." In comparison to the high priority items, which are incorporated into the scope of Building 223 Laboratory Renovations, we determined the low priority items such as fire alarm and sprinkler upgrades, office upgrades to the north and south of the physicist's space, and replacement of various building equipment, would fit the criteria of Department Order 430.1C, Science's procedure for acquiring assets via IGPPs, and ANL's *Controller's Manual*, Section 5.6.5.

In November 2020, ANL's Project Management Office and the physicist developed and approved the PIP for the Building 223 Laboratory Renovations project. The previously mentioned conceptual design study was included as an appendix to the PIP. The PIP reiterates details from the study and further detailed the project's description that it was part of ANL's goal towards advancing quantum information science and technology, and the laboratory was investing in top-tier research facilities to attract talent and drive innovation. The PIP further mentions that the location was selected as the site for this laboratory due to its vacancy; that is, the laboratory space was currently unoccupied, and the project needed to be completed quickly.

ANL officials provided information to justify the purpose of the buildout throughout our audit. At the conclusion of our fieldwork, information from an All-Hands meeting at ANL held in October 2022 was subsequently provided to demonstrate that the physicist's research efforts contribute towards a site-wide initiative supporting ANL's broad scientific mission and capability, Quantum Information Science. We found that the physicist's research efforts, called Fundamental Symmetries, were described as part of the Nuclear Physics program in Science's FY 2021 *Congressional Budget Justification*. The budget justification specifically states that one of the Nuclear Physics' FY 2021 ongoing research initiatives was Quantum Information

Science.<sup>1</sup> When we interviewed the Physics Division Director and the researcher, neither individual could explain how renovation of this laboratory space benefitted other organizations within ANL. The Director further stated that the program is not fully defined yet, and he hopes that wider relationships will develop over time. Moreover, as discussed previously, the renovations to the laboratory space had uniquely defined specifications for the laboratory user's research aimed at the management of Fundamental Symmetries of Nuclear Physics. Based on our review of this information, the Building 223 Laboratory Renovations project does not demonstrate that it benefitted multiple mission needs or provided an institutional benefit in accordance with Department Order 430.1C and ANL's *Controller's Manual*, Section 5.6.5.

### **Chilled Water Capacity Upgrades**

We found that one of the subprojects in the Chilled Water Capacity Upgrades project did not support multiple mission or institutional needs because it only benefitted the APS, a user facility, which is funded by the Basic Energy Sciences program. Specifically, the Chilled Water Capacity Upgrades project consisted of two subprojects with different scopes of work for Building 450 (base) and Building 371 (option). In its evaluation checklist dated November 18, 2019, which ANL provided to the Department for its review and approval, ANL stated that the Chilled Water Capacity Upgrades project would use indirect minor construction funds to add additional chilled water-cooling capacity to the campus' chilled water infrastructure utility to address site growth and reduce the risk of impacting operations due to aging equipment failure. The evaluation checklist added that this project focuses on Area 400 of the campus through the installation of additional cooling towers required to support operational and maintenance activities. ANL further stated that optional activities to be pursued based on available funding include filtration and chiller replacements in Area 300.

ANL utilizes chilled water for process and comfort cooling on-site in many of the major buildings. Reliable chilled water systems are crucial to buildings, as the loss of cooling for even short times can invalidate long-term experiments. In October 2019, ANL's PIP, *Chilled Water Capacity Upgrade Project*, describes the poor condition of the existing cooling towers for Building 450 that could lead to a risk of exceeding heat rejection capacity and the potential for a single point of failure regarding the underground piping to and from the cooling towers. The PIP further states that the construction of the new cooling towers, known as the "Redundant Cooling Towers," will be located on the east side of Building 450 for a total project cost of \$4.2 million. Finally, the PIP states that having adequate redundancy or backup capacity is critical to the success of APS operations even during the future APS upgrade project<sup>2</sup>.

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<sup>1</sup> Although included as part of the Nuclear Physics' budget justification, the scientist's experiments are paid through an indirect funding source, Laboratory Directed Research and Development. Congress has authorized and encouraged National Laboratories to devote a small portion of their research effort to creative and innovative work that serves to maintain their vitality in science and technology disciplines relevant to the missions of the Department and national security. The maximum funding level established for Laboratory Directed Research and Development must not exceed 8 percent.

<sup>2</sup> The APS will undergo an \$815 million upgrade to the facility's electron storage ring, scheduled to begin in April 2023, that will increase the brightness of the X-rays by up to 500 times and enable new discoveries and innovations.

ANL's *Ten-Year Site Plan, FY 2009–FY 2018* states the APS chilled water system serves only the APS complex, and its chillers are in Building 450 with another chiller in Building 437 that provides some reserve capacity. We inquired of ANL personnel whether this base subproject only benefits Area 400 or the entire site. The ANL official stated that the “Redundant Cooling Towers” on the east side of Building 450 do not extend outside Area 400. Based on the utilities map provided by ANL, we determined that the chilled and condenser water lines do not connect outside Area 400. Therefore, according to the PIP, the Building 450 base subproject only benefits the APS since the current need was to address the existing cooling towers that struggled during the summer.

ANL did not clearly document the way the two subprojects, which are served by separate chilled water systems, relate to each other under the main project, Chilled Water Capacity Upgrades. Specifically, the minimally required documentation submitted for the Department's review and approval states that the project invests in the chilled water utility system, which is enabling infrastructure. When we inquired about the relationship between Building 450 (base) and Building 371 (option), the ANL official explained that the Chilled Water Capacity Upgrades project was phased into two subprojects, and the option was made part of the base. We obtained the updated PIP now titled *Chilled Water Upgrade Project* (November 2020). The scope in this updated PIP focused on the replacement of new chiller units in the central chilled water plant in Building 371 that serves Area 200 buildings. Chillers generate chilled water, which is used to provide air conditioning in buildings. This updated PIP states that during FY 2020, the redundant cooling towers were successfully installed on the east side of Building 450 to add additional heat rejection capability for APS operations. However, the information for the redundant cooling towers is not part of the project information and scope of this updated PIP. Therefore, we conclude that Building 450 (base) and Building 371 (option) are two separate projects with different scopes, so they should have been treated as two separate, distinct projects. According to the utilities map, the chilled water lines connect to most of the buildings in Area 200 from the chiller plant in Building 371 (option), which addresses general purpose site-wide needs. This differs from Building 450 (base) that only benefited the APS user facility and does not fit the criteria of Department Order 430.1C and ANL's *Controller's Manual*, Section 5.6.5.

### **Information Submitted for Department Approval**

The Department's approving officials for the Building 223 Laboratory Renovations and Chilled Water Capacity Upgrades projects received annual program letters and evaluation checklists for the projects which detail modernization of the laboratory space and investment in the chilled water utility system. As described in ANL's IGPPs workflow process, once capital improvement needs have been identified, a program letter and a *Minor Construction/IGPPs Evaluation Checklist* (evaluation checklist) for each project are prepared and submitted for the Department's approval. Each year, the Department reviews ANL's proposed projects, as described in the program letter and the evaluation checklist, and then notifies ANL project managers of the approved IGPPs.

Specifically, in December 2020, ANL submitted a program letter for its FY 2021 *IGPPs/General Purpose Equipment*, which proposes multiple new project starts “that were consistent with the objectives of the Annual Laboratory Plan and classified as betterments to Plant assets.” The



program letter indicates that the Building 223 Laboratory Renovations project would renovate existing, outdated, and underutilized space to provide flexible and modern laboratories and upgrade support utilities. Further, it states that this space would be renovated and address deferred maintenance and repair needs. Finally, the program letter states that the renovated laboratory would initially provide experimental space for several on-going programs, including specific experiments for CeNTREX and ZOMBIES and other laboratory initiatives. The evaluation checklist for Building 223 Laboratory Renovations includes a similar project description as stated in the program letter. The evaluation checklist asserts that all programs would benefit from this project since the laboratory renovations are modular and flexible in nature. Additionally, the evaluation checklist includes the broad statement, “Currently the space is unutilized and non-functional due to age. This investment will enable the space to support modern science and will be suitable for any laboratory-based research at Argonne.”

In its FY 2020 program letter *IGPPs/General Purpose Equipment*, ANL states that the Chilled Water Capacity Upgrades project adds additional chilled water-cooling capacity to the campus chilled water infrastructure utility to address site growth and reduce risk of impacting operations due to aging equipment failure. The evaluation checklist notes that the project focuses on Area 400 of the campus through the installation of additional cooling towers required to support operational and maintenance activities, which pertain to the Building 450 base subproject. The evaluation checklist asserts that all programs would benefit because this project is an investment in the laboratory utility system (i.e., chilled water). In its FY 2021 program summary letter to the Department, ANL notes that the Chilled Water Capacity Upgrades project is a continuation from FY 2020 to address upgrades to the chillers. ANL further stated that the chiller upgrades were included as optional scope but were not implemented in FY 2020 due to funding limitations. We asked ANL whether there was an updated evaluation checklist for FY 2021, considering Building 371 was an option and that the evaluation checklist for FY 2020 is dated November 18, 2019. ANL informed us that the evaluation checklist is not resubmitted, and the FY 2021 program summary letter contains a column called “DOE Review Completed” in which “Yes” was noted for Chilled Water Capacity Upgrades. According to ANL’s *Ten-Year Site Plan, FY 2009–FY 2018*, and its utilities map, Building 450 and Building 371 are served by distinctly separate chilled water systems. Based on our review of the PIPs, Building 450 (base) pertains to a redundant or backup cooling towers system for APS operations whereas Building 371 (option) is for the replacement of chillers at the central chilled water plant, which serves most buildings in Area 200.

### **Department Approval Did Not Include Review of Key Project Documents**

As part of the Department’s approval process for proposed new project starts, key documents, which provided additional clarity on the project’s scope and proposed funding, are neither considered required documents nor submitted by ANL for review/approval by the Department. Instead, ANL only submitted the required documents to the Department (i.e., program letter and evaluation checklist) that showed these projects were to renovate laboratory space to provide flexible and modern laboratories and invest in the utility system (i.e., chilled water). However, documents detailing each project’s scope and funding—the PIP, conceptual design study, and Annual Laboratory Plan—were not included or referred to as part of the Department’s approval process. These documents, rather than brief scope descriptions in the evaluation checklists,

would have provided additional information or different perspectives to Department officials regarding the purpose of the two projects.

The lack of key project documents occurred because Department officials we spoke with relied on the evaluation checklist, as well as inquiry or meetings to resolve questions, but did not request supplemental documentation on the two projects. While ANL's current policies and procedures do not require PIPs and other supporting documents to be included as part of the approval of IGPPs, the Department would have benefited from requesting and receiving these documents to facilitate a more comprehensive review and validation of the institutional benefit or multiple mission needs of the Building 223 Laboratory Renovations and the Chilled Water Capacity Upgrades projects. ANL's *Controller's Manual*, Section 5.6.5, states that IGPPs are funded by laboratory indirect expense and are for miscellaneous, new plant projects of a general institutional nature that benefit multiple cost objectives and serve general purpose site-wide needs. According to the Department's *Financial Management Handbook*, Chapter 24, *Minor Construction* (March 2019)<sup>3</sup>, a minor construction project must have a clear project definition. PIPs provide more in-depth information and a clear definition regarding a project's scope. Building 223's project scope was defined in documents<sup>4</sup>, prior to submission of the required evaluation checklist in December 2020. The installation of the redundant cooling towers system on the east side of Building 450, which benefited operations of the APS, was documented in the PIP in October 2019 prior to the evaluation checklist dated November 2019.

Science's procedure for IGPPs allows site office officials to solicit additional information as needed. According to Department officials who we spoke with, had they reviewed the PIP, conceptual design study, and ANL's Annual Laboratory Plan, they would have had complete information, exercised more due diligence, and performed further verification, including discussions, to ensure that the Building 223 Laboratory Renovations project was benefiting multiple mission needs. A Department official told us that the Department's final decision may have been different or prompted further discussions if they had more specific information during the review process to determine whether to approve the projects or not. PIPs and supporting project documents (e.g., conceptual design study) contain crucial information needed by the Department to make an informed decision when determining whether proposed projects meet the Department's requirements. To ensure a complete package is submitted for review, PIPs and other supporting documentation should be provided to the Department as part of the IGPPs review process.

Without a more comprehensive submission of accurate and timely project proposal information to verify whether a project is of a general institutional nature and is clearly documented, Department officials or external parties could potentially misinterpret the true purpose of a minor construction project, which could lead to a misuse of indirect funds.

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<sup>3</sup> The Department's *Financial Management Handbook*, Chapter 24, *Minor Construction*, was revised in April 2023 to Chapter 2.3, *Minor Construction*. The minor construction definitions referred to are the same in the previous and current chapters of the *Financial Management Handbook*. Chapter 24 is referred to in this report, as it was in effect during the scope of our audit.

<sup>4</sup> The project scope for Building 223 Laboratory Renovations was defined in a conceptual design study for Building 223 in October 2020 and the PIP, *Bldg 223 Lab D034 Buildout Project*, in November 2020.

## **Funding Limitations on Office of Science Laboratories Infrastructure Program**

Funding limitations to support infrastructure modernization within Science may cause National Laboratories to use indirect funds to modernize their facilities instead of the original proposed funding source. Overall, Science invests over \$400 million annually in needed maintenance, repairs, and upgrades. According to the Department's website, the Science Laboratories Infrastructure (SLI) program's primary focus is on long-term modernization of Science laboratory facilities and infrastructure to ensure the mission readiness with state-of-the-art facilities and infrastructure that are flexible, reliable, and sustainable in support of scientific discovery. According to a Department official with the Consolidated Service Center, about 70 percent of SLI funding goes towards new construction, and there has been an underfunding for the maintenance needs across the National Laboratories. Further, another Department official within SLI explained that the SLI program focuses on funding infrastructure needs, not maintenance. ANL's Annual Laboratory Plan identifies its investment strategy to meet its mission readiness, performance goals, and mitigate event-recovery and performance gaps. Each year, ANL identifies its infrastructure objectives to assure mission readiness to support its science strategy, construct replacement facilities and complete targeted renovations, repair and modernized support infrastructure, and eliminate legacy waste and excess facilities. ANL also identifies its plans on what funding sources will be used to support the identified projects, which includes line-item projects in the Federal budget; GPPs funded from program funds or the SLI program; and indirect and direct funded projects for excess facilities disposition, decontamination, and demolition.

Throughout our audit of the Building 223 Laboratory Renovations project, an ANL official informed us that many of the ANL buildings are very old and unable to support modern science. In its *FY21 Annual Laboratory Plan*, ANL states that it proposes to draw on Science Laboratories Infrastructure-General Plant Project (SLI-GPP) funding for larger needs beyond the level that the laboratory can provide. Building 223, as listed in each of ANL's Annual Laboratory Plans from FY 2019 through FY 2021, proposes SLI-GPP funding to renovate, modernize, and refurbish the aging infrastructure. Specifically, in its *FY2019 Annual Laboratory Plan* and *FY20 Annual Laboratory Plan* ANL proposes renovations to Building 223 as a GPP with funding through the Department's SLI program for \$16.5 million with projected investments in FY 2022. In its *FY21 Annual Laboratory Plan*, ANL proposes four SLI-GPP projects that focus on substandard building conditions and high concentrations of deferred maintenance. One of these projects listed, once again, was for large-scale renovations in Building 223 that were needed to address aging interior infrastructure, including space refurbishments and plumbing, heating, cooling, mechanical, and electrical systems in the amount of \$19.5 million in FY 2022. As for the major utilities repair and modernization identified in its Annual Laboratory Plans, ANL proposes \$90 million SLI (FY 2019) and \$215 million SLI (FY 2020 and FY 2021).

However, an ANL official informed us that the laboratory does not receive enough SLI funding to cover modernization needs. ANL had total enacted SLI funding for FY 2019, FY 2020, and FY 2021 of \$53.4 million, \$41.3 million, and \$500,000 respectively. According to the ANL official, since SLI funding was not received, IGPPs funding was used to complete renovating the

laboratory space in Building 223. ANL's *Controller's Manual*, Section 5.6.5, states that IGPPs do not include projects whose benefit can be directly attributed to a specific or single program.

IGPPs are not intended for use in incremental segments to construct larger facilities, and IGPPs must result in a complete and usable facility. Therefore, there is a potential risk that when one funding source is not secured for a project, other sources, such as IGPPs, could be inappropriately used, and the project could be broken down into smaller pieces to circumvent requirements, as laboratories can address needs faster with IGPPs compared to a line-item or SLI-GPP. As a result, the source of funding used for the project may not meet the intent of the appropriated funding. In addition, according to an ANL official, original project estimates are not revised for the completed portions of projects covered by indirect funds, as the project contingency would take the reduced costs into consideration.

In its *FY2019 Annual Laboratory Plan*, ANL noted that multiple investments are required to modernize Area 400 to assure that several mission-critical facilities—the APS, Center for Nanoscale Materials, and the Advanced Protein Characterization Facility—can continue to function as scientific-user facilities 24 hours, 7 days a week. These investments for Area 400 were proposed as mechanical and electrical GPPs totaling \$15.5 million. Based on the *FY2019 Annual Laboratory Plan*, the FY 2020 evaluation checklist, the PIPs, and the utilities map, Building 450 (base) benefited only the APS under the Chilled Water Capacity Upgrades project since it was ANL's original plan to modernize Area 400 addressed with GPPs, not IGPPs. Further, the *FY2019 Annual Laboratory Plan* notes that direct funding was required to replace the primary support cooling systems.

An ANL official stated that the subprojects in the Chilled Water Capacity Upgrades project were included to be part of the Argonne Utilities Upgrade project, but only \$10 million was received which was mostly for design funds. According to ANL's *FY20 Annual Laboratory Plan*, the Argonne Utilities Upgrade project replaces, repairs, and upgrades several critical utility systems—chilled water, domestic water, steam/condensate, and sewer—to reduce operational risks, eliminate deferred maintenance, and reduce the risk of unplanned service outages. According to the ANL official, GPPs were proposed for the campus chilled water, but ANL was directed not to use GPPs as these projects would need to roll into a line-item project. However, given the timeframe, these subprojects needed to be accelerated as they would address immediate issues. According to the scope described in the evaluation checklist, the project addresses site growth and focuses on the installation of additional cooling towers in Area 400. The evaluation checklist does not mention the single point of failure regarding the underground piping to and from the cooling towers at Building 450 as described in the PIP. A Department official informed us that if a project becomes a critical “must fix,” then a laboratory can address it with IGPPs. However, we determined that ANL could have been clearer with the documentation of scope for each subproject because the documentation addressed two unconnected chilled water systems in two separate areas of the laboratory.

The FY 2023 *Congressional Budget Justification* restates that in the FY 2012 Consolidated Appropriations Act (P.L. 112-74), Congress directed the Department to include a future-years energy program in subsequent requests that reflects the proposed appropriations for 5 years. Providing a future-years energy program allows Science to prioritize outyear funding needs to

ensure optimal operations of all scientific-user facilities and the ability to continue investing in infrastructure and utility upgrades at all National Laboratories. According to a Department official, Science develops a 5-year plan. However, due to the constant changes in the needs of laboratories, some projects may either increase or decrease in priority. The Department official also suggested having site offices submit a list of needed IGPPs to Science Headquarters, so the projects can be reviewed to ensure multi-programmatic purposes are met, which will also help provide oversight.

## **IMPACT TO DEPARTMENT AND ITS PROGRAMS**

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By funding \$6.4 million program-specific minor construction projects through indirect funds, other Department programs paid for a share of projects that provided no multi-programmatic benefit. Additionally, indirect funding for the program-specific projects could have been put to better use for completing other general purpose infrastructure improvements at ANL, which can benefit the entire site. Further, with ANL's unclear documentation of the scope of minor construction projects, the Department cannot guarantee that its budget requests represent the necessary funding amount needed, which can lead to potential misstatements of funds in operations and line-item projects.

## **RECOMMENDATIONS**

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To help ensure indirect funded minor construction projects within Science are in accordance with applicable laws, regulations, Science's and ANL's policies and procedures, and Department guidance, we recommend that the Deputy Director for Operations, Science, ensure:

1. Indirect funded minor construction projects are reviewed thoroughly by the cognizant site office, using financial subject matter expertise from the Consolidated Service Center as necessary, to make fully informed decisions and verify compliance with Science's funding guidance;
2. The relevant Science policies and processes are updated to reflect that proposed minor construction projects include supplemental materials needed for the Department's review;
3. Argonne Site Office Designated Officials:
  - a. Document reasons for changes in proposed funding sources for minor construction projects; and
  - b. Review Science processes to assure validation of scope within an indirect funded minor construction project and appropriate alignment with a common purpose and benefiting base.

To increase transparency and visibility in reviewing and approving indirect funded minor construction projects, we recommend that the Acting Manager, Argonne Site Office, in coordination with the Division Director, ANL's Project Management Organization:

4. Review Science’s updated policies and procedures to assure adequate project information is submitted to Department officials to enable sufficient review and verification of indirect funded minor construction projects prior to approval.

To improve the management of minor construction projects, we suggest that the Director of the Office of Financial Policy and Audit Resolution, Office of the Chief Financial Officer, develop and issue guidance to standardize contractor notifications and submissions of proposed projects that include, at a minimum, documentation with a clear project definition to ensure it meets the Department’s requirements.

## **MANAGEMENT RESPONSE**

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Management fully concurred with our recommendations and identified responsive corrective actions to address the reported issues. Specifically, for Recommendations 1–3, management will issue guidance to reiterate the need for necessary and robust involvement of the cognizant site office in the review and approval of indirect funded minor construction projects at Science-stewarded National Laboratories. The guidance will reiterate that the review and approval process should follow the principles inherent in Department guidance, appropriation law, and realty regulations. It will also emphasize that all documentation necessary to support a thorough review process should be requested by the site office and made available by the contractor. For Recommendation 4, management will ensure that forthcoming guidance is implemented effective immediately. In addition, the Argonne Site Office will request that the management and operating contractor re-evaluate and provide updated assurance that existing projects funded with indirect funding are for the general management and administration of a business, or allocated to the benefitting programs per Cost Accounting Standards 410, *Allocation of Business Unit General and Administrative Expenses to Final Cost Objectives*; 418, *Allocation of Direct and Indirect Costs*; and the contractor’s approved Cost Accounting Standards Disclosure Statement.

Regarding our suggestion for developing and issuing guidance to standardize contractor notifications and submissions of proposed projects—to include, at a minimum, documentation with a clear project definition to ensure it meets the Department’s requirements—the Office of the Chief Financial Officer will coordinate with other relevant Department offices, including programmatic offices other than Science, to identify needed contractor reporting, as well as discuss the appropriate mechanism to include requirements for such reporting in Department contracts, before determining whether updates to its policies are appropriate.

Management’s comments are included in Appendix 3.

## **AUDITOR COMMENTS**

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Management’s comments and proposed actions were responsive to our recommendations, and we agree with the planned actions to be taken.

## **Appendix 1: Objective, Scope, and Methodology**

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### **OBJECTIVE**

We initiated this audit to determine whether Argonne National Laboratory (ANL) managed its indirect funded minor construction projects in accordance with applicable laws, regulations, the Office of Science's and ANL's policies and procedures, and Department of Energy guidance.

### **SCOPE**

The audit was performed from May 2022 through July 2023 at ANL located in Lemont, Illinois. The scope of our audit covered the indirect funded minor construction projects from fiscal year (FY) 2019 through FY 2021. The audit was conducted under Office of Inspector General project number A22LL006.

### **METHODOLOGY**

To accomplish our audit objective, we:

- Reviewed applicable laws, regulations, the Office of Science's and ANL's policies and procedures, and Department guidance related to indirect funded minor construction projects.
- Reviewed prior reports related to the management of Institutional General Plant Projects (IGPPs).
- Assessed the implementation of internal controls as it relates to the management of indirect funded minor construction projects.
- Analyzed all indirect funded minor construction projects, including their Project Implementation Plans, to determine whether the projects support current and future mission needs. From FY 2019 through FY 2021, ANL proposed 12 indirect funded minor construction projects in its program summaries of IGPPs for the Department's review and approval. The total estimated costs for these proposed IGPPs were \$18.2 million in FY 2019, \$31.8 million in FY 2020, and \$44.8 million in FY 2021 during the scope period. For FY 2019, three projects were ongoing from the prior FY. For FY 2020 and FY 2021, there were nine projects that were proposed to be started. Out of the 12 proposed projects, the Department approved 10 IGPPs with approximate total project costs of \$46 million as described in Table 1 (below) from FY 2019 through FY 2021.

## Appendix 1: Objective, Scope, and Methodology

**Table 1: Total Approved Institutional General Plant Projects/Indirect Funded Minor Construction Projects**

| Project Name   | Total Estimated Costs at Initial Project Approval |
|--|---|
| Picoprobe Lab at Argonne                             | \$800,000   |
| Bldg. 222 Lab Renovations                            | \$6,000,000                                       |
| Bldg. 223 Lab Renovations                            | \$2,230,000                                       |
| B300 Charging Plaza Electrical Supply Upgrade        | \$800,000   |
| East West Lab Cabling Plant Project                  | \$1,825,000                                       |
| Midwest Transformative Energy Manufacturing Facility | \$10,896,000                                      |
| Chilled Water Capacity Upgrades                      | \$4,200,000                                       |
| Site Security Upgrades                               | \$7,200,000                                       |
| Helium Recovery System Expansion                     | \$3,800,000                                       |
| Electrical Modernization Program                     | \$8,500,000                                       |

- We judgmentally selected and examined 5 out of the 10 indirect funded minor construction projects for further review shown in Table 2 based on the appearance of benefiting a specific or single program. In addition, we toured four projects during a site visit to further gain an understanding of the nature of the projects. We selected a nonstatistical sample; therefore, the results and overall conclusions are limited to the items tested and cannot be projected to the entire population or universe subject to audit.

**Table 2: Selected Institutional General Plant Projects/Indirect Funded Minor Construction Projects**

| Project Name                                  | Total Estimated Costs |
|---|-----------------------|
| Picoprobe Lab at Argonne                      | \$800,000             |
| Bldg. 222 Lab Renovations                     | \$6,000,000           |
| Bldg. 223 Lab Renovations                     | \$2,230,000           |
| B300 Charging Plaza Electrical Supply Upgrade | \$800,000             |
| Chilled Water Capacity Upgrades               | \$4,200,000           |

- Interviewed ANL employees concerning project costs and reviewed monthly status reports of the indirect funded minor construction projects.
- Reviewed the selected indirect funded minor construction projects' documentation, acceptance and completion, and compliance with applicable laws, regulations, the Office of Science's and ANL's policies and procedures, and Department guidance.
- Interviewed Department officials and ANL employees to understand the expectations and practices in the context of managing indirect funded minor construction projects.



## **Appendix 1: Objective, Scope, and Methodology**

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We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. We assessed internal controls and compliance with laws and regulations necessary to satisfy the audit objective. In particular, we assessed the control activities component and the underlying principles regarding ANL's implementing control activities. We also assessed the information and communication component and the underlying principles of using quality information. Finally, we assessed the monitoring component and the underlying principles of performing monitoring activities. However, because our review was limited to these internal control components and underlying principles, it may not have disclosed all internal control deficiencies that may have existed at the time of this audit. We did not solely rely on computer-processed data to satisfy our audit objective. However, we determined through various test procedures that the data used was sufficiently reliable for the purposes of our audit objective.

Management officials waived an exit conference on October 30, 2023.

### The Office of Inspector General

- Audit Report on [\*Management of Institutional General Plant Projects at Lawrence Livermore National Laboratory\*](#) (DOE-OIG-21-31, July 2021). The audit determined that Lawrence Livermore National Laboratory (LLNL) followed applicable Department of Energy Institutional General Plant Projects (IGPPs) guidance and therefore appropriately used indirect funds for two of the three projects reviewed. The two projects that complied with Department IGPPs guidance included a manufacturing laboratory and a utilities project that provided needed utilities to LLNL. We found that both projects benefited multiple programs at LLNL and were therefore institutional in nature. However, we found that the third project, a \$7.2 million renovation to Building 490, did not comply with Department IGPPs guidance for use of indirect funds, which required that the project be of a general institutional nature whose benefit cannot be directly attributed to a specific or single program and is required for general purpose site-wide needs.
- Audit Report on [\*Argonne National Laboratory Infrastructure Projects\*](#) (OAS-M-15-02, February 2015). The audit found that Argonne National Laboratory (ANL), for the most part, implemented appropriate controls over infrastructure projects. We found, for example, ANL prioritized infrastructure projects; capitalized cost, if required; and ensured subcontracts complied with requirements of the Davis-Bacon Act and Buy American Act. However, we found that ANL may have inappropriately used, or planned to use, indirect funding to complete 4 of 10 minor construction projects funded as IGPPs contrary to Department Order 430.1, Change 2, *Real Property Asset Management*. According to Department policy, projects funded indirectly as IGPPs should benefit the site as a whole and be of a general institutional nature. IGPPs do not include projects whose benefit can be directly attributed to a specific or single program.
- Audit Report on [\*Management Challenges at the Department of Energy – Fiscal Year 2020\*](#) (DOE-OIG-20-09, November 2019). The Department is responsible for a vast portfolio of infrastructure that consists of world-leading scientific and production tools and the general purpose infrastructure needed to use those tools. The Department has the fourth largest inventory of real property in the Federal Government by square footage, including 11,345 buildings totaling 112.7 million square feet with approximately \$1.9 billion in annual operating and maintenance costs. Modern and reliable infrastructure is critical to support the Department in successfully and efficiently executing its missions now and in the future. While the Department made significant investments in world-class experimental facilities, much of the supporting infrastructure that enables the mission and forms the backbone of the Department enterprise needs greater attention. Facilities and infrastructure can have a substantial impact on laboratory research and operations in a variety of ways. For instance, poor conditions in laboratory facilities and infrastructure can lead to inadequate functionality in mission performance; negative effects on the environment, safety, and health of the site; higher maintenance costs; and problems with recruiting and retaining high-quality scientists and engineers.

## Appendix 2: Related Reports

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- Audit Report on *Construction Carrying Account at the Savannah River Site* (ER-B-91-14, March 1991). The audit found that the Department's *Accounting Practices and Procedures Handbook*, Chapter IX, states that the Construction Carrying Account should be used to accumulate and allocate both direct and indirect costs that directly relate to the construction activity. However, Westinghouse Savannah River Company used the Construction Carrying Account to improperly accumulate and allocate costs of both operations and construction activities on two occasions. This condition occurred because Westinghouse Savannah River Company did not follow the *Accounting Practices and Procedures Handbook* regarding the accumulation and allocation of costs to avoid reporting potential shortfalls of funds in operations and on a line-item project. As a result, operating and line-item project costs have been, and will continue to be, misstated.

### Government Accountability Office

- Report on [\*Department of Energy Contract Management\*](#) (GAO/HR-93-9, December 1992). The Government Accountability Office (GAO), formerly known as the General Accounting Office, reported that one of the fundamental weaknesses in the Department's contracting is lack of management information. GAO's ongoing work has found problems in the Department's financial reporting systems. These systems cannot reliably produce the information needed in areas such as functional and overhead costs. The Department's failure to systematically monitor contractors' financial reporting practices has created an atmosphere conducive to financial irregularities. The Department also lacks adequate systems to budget for certain types of financial commitments to contractors, which are called "uncosted obligations." These are obligations the Department has made to contractors for goods and services that have not yet been provided, and for which no costs have been incurred. Without adequate information on uncosted obligations and systematic reviews of its financial commitments, the Department cannot guarantee that its budget requests represent the minimum amount needed for annual operations.

## Appendix 3: Management Comments

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### Department of Energy

Washington, DC 20686

October 25, 2023

MEMORANDUM FOR      TERI L. DONALDSON  
   INSPECTOR GENERAL

FROM:                      CHRISTOPHER S. JOHNS *Christopher S. Johns*  
   DEPUTY CHIEF FINANCIAL OFFICER  
   OFFICE OF THE CHIEF FINANCIAL OFFICER

SUBJECT:                      Management of Indirect Funded Minor Construction Projects at  
   Argonne National Laboratory (A22LL006)

Thank you for the opportunity to review and comment on the subject draft report. The Office of Chief Financial Officer appreciates the auditors' audit work. The attachment to this memorandum details actions planned by the CFO to address the OIGs suggestion noted in the draft report.

If you have any questions regarding this response, please contact Thomas Griffin, Director, Office of Financial Policy, and Audit Resolution at [thomas.griffin@hq.doe.gov](mailto:thomas.griffin@hq.doe.gov) or 202-586-1585.

Enclosure

Enclosure

**Management Response**  
**OIG Draft Report:**  
**Management of Indirect Funded Minor Construction Projects at**  
**Argonne National Laboratory (A22LL006)**

**Suggestion:** To improve the management of minor construction projects, we suggest that the Director of the Office of Financial Policy and Audit Resolution, Office of the Chief Financial Officer, develop and issue guidance to standardize contractor notifications and submissions of proposed projects that include, at a minimum, documentation with a clear project definition to ensure it meets the Department's requirements.

**Response:**

The Office of the CFO agrees that the Department should receive timely and complete information regarding planned and ongoing minor construction activities from its contractors. However, the scope of the CFO minor construction policy is limited to budgetary notifications and cost accounting practices. Contractor notifications regarding minor construction would also inform other DOE management and oversight activities, including project management, real property planning, and contractor performance assessments. Before determining whether updates to CFO policies are appropriate, CFO will coordinate with other relevant DOE offices—including programmatic offices other than the Office of Science—to identify needed contractor reporting and discuss the appropriate mechanism to include requirements for such reporting in DOE contracts.

## Appendix 3: Management Comments

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Department of Energy  
Office of Science  
Washington, DC 20585

October 19, 2023

MEMORANDUM FOR JENNIFER L. QUINONES  
DEPUTY INSPECTOR GENERAL  
OFFICE OF INSPECTOR GENERAL

FROM: JUSTON K. FONTAINE *Juston K. Fontaine*  
DEPUTY DIRECTOR FOR OPERATIONS  
OFFICE OF SCIENCE

SUBJECT: Office of Science Response to Office of Inspector General Draft Audit Report, *Management of Indirect Funded Minor Construction Projects at Argonne National Laboratory*

Thank you for the opportunity to review and respond to the Office of Inspector General (OIG) Draft Report entitled "*Management of Indirect Funded Minor Construction Projects at Argonne National Laboratory*." The Office of Science (SC) appreciates the auditors' work in highlighting opportunities for improvement related to indirect funded minor construction projects. While prior comment resolution efforts did not adequately address some areas of disagreement, SC concurs with and will be taking action to address the recommendations in the report.

If you have any questions regarding this memorandum, please contact Roger Snyder at [Roger.Snyder@Science.doe.gov](mailto:Roger.Snyder@Science.doe.gov).

Attachment

## Appendix 3: Management Comments

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**Management Response**  
**Office of Inspector General (OIG) Draft Report**  
**Management of Indirect Funded Minor Construction Projects at Argonne National Laboratory**

To help ensure indirect funded minor construction projects within Science are in accordance with applicable laws, regulations, Science's and ANL's policies and procedures, and Department guidance, the OIG recommends that the Deputy Director for Operations, Science, ensure:

1. Indirect funded minor construction projects are reviewed thoroughly by the cognizant site office, utilizing financial subject matter expertise from the Consolidated Service Center as necessary, to make fully informed decisions and verify compliance with Science's funding guidance.
2. The relevant Science policies and processes are updated to reflect that proposed minor construction projects include supplemental materials needed for the Department's review.
3. Argonne Site Office Designated Officials:
  - a. Document reasons for changes in proposed funding sources for minor construction projects; and
  - b. Review Science processes to assure validation of scope within an indirect funded minor construction project and appropriate alignment with a common purpose and benefiting base.

**Management Response:** Concur. The Office of Science (SC) Deputy Director for Operations will issue guidance to Site Office Managers reiterating the need for necessary and robust involvement of the cognizant site office in the review of indirect funded minor construction projects at SC-stewarded National Laboratories. The guidance will reiterate that the review and approval process should follow the principles inherent to Departmental guidance, appropriation law, and realty regulations. It also will emphasize that all documentation necessary to support a thorough review process should be requested by the site office and made available by the contractor.

To assist contractors in correctly categorizing indirect funded minor construction projects and assist necessary personnel with review and approval, a checklist will be provided that SC Management and Operating (M&O) contractors will complete and include with future requests for indirect funded minor construction projects.

The M&O contractor, in coordination with the site office, will document the reasons for changes in proposed funding sources for minor construction projects.

**Estimated Completion Date:** July 31, 2024

To increase transparency and visibility in reviewing and approving indirect funded minor construction projects, we recommend that the Acting Manager, Argonne Site Office, in coordination with the Division Director, ANL's Project Management Organization:

4. Review Science's updated policies and procedures to assure adequate project information is submitted to Department officials to enable sufficient review and verification of indirect funded minor construction projects prior to approval.

## Appendix 3: Management Comments

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**Management Response:** Concur. In coordination with the Division Director, ANL's Project Management Organization, the Acting Manager, Argonne Site Office, will ensure that forthcoming guidance is implemented for new projects, effective immediately. The Site Office will request that the M&O contractor reevaluate and provide updated assurance that existing projects funded with indirect funding are for the general management and administration of a business or allocated to the benefiting programs per Cost Accounting Standards (CAS) 410 and 418 and the contractor's approved CAS Disclosure Statement.

**Estimated Completion Date:** August 30, 2024

**Cost Avoidance:**

The OIG identified \$6.4 million in potential cost avoidance related to two projects – a \$2.2 million minor construction project to renovate a laboratory space in Building 223 and a subproject for a \$4.2 million redundant cooling towers system. The OIG stated that the documentation was unclear and did not support multiple mission or institutional needs. By funding \$6.4 million in program-specific minor construction projects through indirect funds, the OIG asserts that other Department programs paid for a share of projects that did not benefit them. Additionally, the OIG asserts that indirect funding for the program-specific projects could have been better used to complete other general-purpose infrastructure improvements at ANL, which can benefit the entire site. There is no apparent dispute that the efforts provided value to ANL.

**Management Response to Cost Avoidance:** The Acting Manager, Argonne Site Office, will direct ANL to provide a life cycle plan for each project to demonstrate it meets the institutional requirement throughout its lifespan. The Site Office, with support from the Consolidated Service Center, will review the plan, and based on that review, the Contracting Officer will decide the need for cost adjustments.



## FEEDBACK

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Office of Inspector General (IG-12)  
Department of Energy  
Washington, DC 20585

If you want to discuss this report or your comments with a member of the Office of Inspector General staff, please contact our office at 202-586-1818. For media-related inquiries, please call 202-586-7406.