Facilities for Scientific Discovery

Summary

Many buildings and other infrastructure at the Office of Science national laboratories have deteriorated to the point that they are now jeopardizing the ability of the laboratories to accomplish their research missions and are sapping much-needed funds that could be better spent on science in support of the Nation's goals. The Office of Science proposes to invest additional funds over the next decade to modernize this infrastructure.

The U.S. Department of Energy's (DOE's) Office of Science is steward to 10 of our Nation's most valuable research facilities—the national laboratories. Secretary of Energy Spencer Abraham refers to these world-class laboratories, and their three sister laboratories operated by the National Nuclear Security Administration (NNSA), as the "crown jewels" of our national research infrastructure.

The Office of Science national laboratories perform cutting-edge, state-of-the-art research in physics, materials sciences, chemistry, plasma science, plant sciences, biology, computation, environmental cleanup, and climate change. These areas support DOE's missions in energy, national security, and environmental remediation.

Many of the Office of Science laboratories are direct and indirect descendent institutions, created to support the Manhattan Project in the 1940s. Therefore, it is hardly surprising that while many buildings are modern and efficient, much of the complex is aging: the average building is more than 32 years old. In fact, over 40 percent of the square footage of the Office of Science laboratories (more than 8.5 million square feet) is 40 years old or older, and 20 percent is more than 50 years old.

Outdated and deteriorating buildings are an encumbrance to the system: they cost money to maintain and provide little or no value. Many buildings were designed for research that is no longer performed, or they were adapted for research activities for which they are ill suited (e.g., wooden barracks for chemistry experiments). Even worse, other buildings are serious safety hazards. These old facilities take up valuable space that could be devoted to new facilities that would attract the next generation of scientists and students.

Modernization Initiative—Line Item Construction

The Office of Science's investment in infrastructure construction has been level at approximately $20 million per year for the last 20 years. The program has not kept pace with inflation, the aging of facilities, or the changing technology.

Thus, today's facility and infrastructure conditions are now jeopardizing the ability of the laboratories to accomplish their research missions and are sapping funds that could be better spent on science in support of the Nation's goals.

In April 2001, an Office of Science report entitled, "Infrastructure Frontier, a Quick Look Survey of the Office of Science Laboratory Infrastructure" identified $932 million of infrastructure modernization costs. This figure included $460 million to upgrade buildings, $308 million to replace outdated buildings, $92 million for utility projects, and $72 million for environmental safety and health (ES&H) activities.

A 10-year modernization activity is proposed that would increase construction funding to a level that would effectively address the laboratory modernization needs of the Office of Science national laboratories. The following projects are at the top of the list:

- Safety and operational reliability improvements at Stanford Linear Accelerator Center to address seismic concerns and utility support systems critical to the continued operations of the linear accelerator.

- A user research center at Brookhaven National Laboratory that will provide modern research space for 246 researchers at the Relativistic Heavy Ion Collider leading to expanded opportunities into the high energy nuclear physics research areas.

- Modernization of the main chemistry laboratory at Oak Ridge National Laboratory to provide modern research space for major scientific initiatives, including 18 newly refurbished state-of-the-art wet and dry laboratories for nanochemistry, bioinformatics and computational biology, microinstrumentation, functional genomics, and nuclear medicine.

- A research support building at Lawrence Berkeley National Laboratory that will provide consolidated modern office space and thus free user space in research facilities devoted to the National Energy Research Supercomputing Center, the Super Nova Acceleration Probe, nanoscience research, and traditional life sciences.

Cleanup and Disposal of Excess Facilities

Facilities that cannot be economically repaired or renovated to meet current needs are considered "excess facilities." Some have become contaminated as a result of past research activities; for example, accelerators, reactors, hot cells, animal facilities, or chemistry labs that dealt with radioactive or other hazardous and toxic substances.

As of April 2002, there remained approximately 100 contaminated and noncontaminated excess facilities at Office of Science laboratories constituting a total area of approximately 1.7 million square feet and costing $5.6 million annually to safeguard and maintain. The cost to decontaminate, decommission, and demolish these facilities is estimated at approximately $200 million, of which contaminated facilities account for approximately $175 million of the total.

The Office of Science also proposes to increase funding to accelerate cleanup of the excess contaminated facilities.

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