DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT

OVERVIEW

MULTIPROGRAM ENERGY LABORATORIES-FACILITIES SUPPORT

Attaining the R&D goals articulated in the National Energy Strategy (NES) involves significant use of Energy Research (ER) laboratories. These include: Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL), Lawrence Berkeley Laboratory (LBL), Oak Ridge National Laboratory (ORNL), Pacific Northwest Laboratory (PNL), Fermi National Accelerator Laboratory, Stanford Linear Accelerator Laboratory, Princeton Plasma Physics Laboratory (PPPL), Ames Laboratory and other smaller ER laboratories. All facilities at these laboratories are government owned and represent a multi-billion dollar investment. Replacement costs in today's dollars of all active facilities at the ER laboratories is estimated to be over $10 billion dollars. The average age of the laboratories' facilities is 30 years and plans indicate that these laboratories will be heavily utilized throughout the 1990's and well into the 21st century, assuming R&D programs continue at their current levels during this period.

Capital expenditures are required to preserve and maintain these facilities such that they can carry out their respective missions in accordance with relevant regulations and DOE orders.

The Multiprogram Energy Laboratories - Facilities Support (MEL-FS) program is responsible for providing line-item construction funds for the rehabilitation and replacement of the General Purpose Facilities (GPF) at these laboratories. Line-item construction projects are those with a total estimated cost (TEC) of $1.2 million or above. General Purpose Facilities (GPF) are those that are general use, service or support. They include administrative space, cafeterias, general office/laboratory space, utility systems including sanitary sewer and water treatment, roads, etc.

The strategy of the MEL-FS program is to select and support projects necessary to: (1) maintain operations of the laboratories in a safe, cost effective, and productive manner; and (2) reduce the backlog of facilities deficiencies. The program is fully integrated with the Department's planning processes such as the institutional planning process which oversees the overall management and utilization of the multiprogram laboratories.

The benefits to be gained by supporting the program are: improved safety, security, and environmental compliance levels; reduced health risks; decreased operating costs and improved productivity; and, continuity of operations.

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LEAD TABLE

Multiprogram Energy Laboratories - Facilities Support

Activity	FY 1990 Actual	FY 1991 Estimate	FY 1992 Base	FY 1992 Request	Program Change Request vs. Base	
					Dollar	Percent
General Purpose Facilities Construction	$ 22,123	$ 23,590	$ 23,590	$ 23,891	$+ 301	+ 1%
Total	$ 22,123	$ 23,590	$ 23,590	$ 23,891	$+ 301	+ 1%
Construction	(22,123)	(23,590)	(23,590)	(23,891)	(301)	+ 1%

Authorization: Section 647, P.L. 95-91.

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SUMMARY OF CHANGES

Multiprogram Energy Laboratories - Facilities Support

FY 1991 Enacted Appropriation	$ 23,590
- Continue and/or complete 13 ongoing projects	- 12,497
- Initiate nine new projects	+ 12,798
FY 1992 Congressional Budget Request	$ 23,891

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KEY ACTIVITY SUMMARY

MULTI-PROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: General Purpose Facilities

This program was established in FY 1981 to fund the line-item construction projects for the rehabilitation, upgrade and replacement of deficient General Purpose Facilities at DOE national laboratories. The program was refocused on the five Energy Research national laboratories beginning in FY 1986. The program has been expanded with this request to cover all major Energy Research laboratories including Fermi National Accelerator Laboratory, Ames Laboratory, Stanford Linear Accelerator Laboratory, Princeton Plasma Physics Laboratory and Oak Ridge Associated Universities. The program funds line-item construction projects that correct deficiencies in general purpose facilities at these laboratories. Line-item construction projects are those with a Total Estimated Cost (TEC) of $1.2 million or above. Construction projects below this level are referred to as General Plant Projects (GPP) and are funded by assigned ER research program divisions (e.g., High Energy Physics for Brookhaven National Laboratory). General Purpose Facilities (GPF) are those that are general use, service or support. They include administrative space, cafeterias, general office/laboratory space, utility systems including sanitary sewer and waste treatment, roads, etc. The GPF requirements of the ER labs are addressed in the Multiprogram Energy Laboratories - Facilities Support program.

The ER laboratories range in age from 22 to 42 years with Fermi National Accelerator Laboratory being the youngest. The laboratories are heavily utilized receiving over $1 billion a year in operating funds to perform national research and development programs and employing over 17,000 scientists, engineers and other support staff.

The estimated cost to replace the active facilities at these laboratories is over $10 billion. Through continuous use and aging, as well as changing R&D mission assignments, the general purpose facilities at the laboratories deteriorate (both physically and in performance) to a point where they are no longer appropriate for their intended functions, economically justifiable to maintain, or adequate to meet security, safety, and health requirements. This program is the sole source of line-item construction funding to address these requirements.

The funding levels provided over the years to support the general purpose facilities has been insufficient to prevent the build-up of a large backlog of line-item construction requirements. The backlog is estimated to be over $700 million.

In funding projects, the program assigns highest priority to those projects that address urgent environmental (only those environmental responsibilities remaining with the Office of Energy Research and not transferred to Environmental Restoration and Waste Management), safety, health and security deficiencies and those that can hamper or interrupt operations. The latter is primarily concerned with utilities - electrical, heating and cooling, water supply, etc. Next highest priority are those projects that concern efficiency and productivity of operations, such as providing adequate administrative and support space including warehouses, shops and laboratories.

The facilities requirements planning process is based on the annual preparation by each laboratory of a Site Development Plan and an Institutional Plan. Each plan addresses their planned general purpose facilities requirements over the next five to ten year period based on their expected programmatic funding. The Site Development Plan provides more detailed information while the Institutional Plan has primarily summary information. These plans are concurred in or approved by the Director of Energy Research and form the basis for the preparation of the program's mutli-year plan.

A benefit of this program is the consolidation of the responsibility for general purpose facilities in one program for all ER laboratories. This provides a continuity and broad basis for establishing overall needs and priorities. This program will help ensure that the general purpose facilities are adequate for the continued effective accomplishment of the Department's R&D missions today and in the future. The program is an appropriate Federal role reflecting the responsible management of the Government's real property.

II. A. Summary Table: General Purpose Facilities

Program Activity	FY 1990 Enacted	FY 1991 Enacted	FY 1992 Request	% Change
Construction	$ 22,123	$ 23,590	$ 23,891	+ 1
Total, General Purpose Facilities	$ 22,123	$ 23,590	$ 23,891	+ 1

II. B. Major Laboratory and Facility Funding

Ames Laboratory	$ 0	$ 0	$ 1,500	>999
Argonne National Laboratory	$ 6,736	$ 4,807	$ 4,028	- 16
Brookhaven National Laboratory	$ 5,841	$ 4,623	$ 4,565	- 1
Idaho National Engineering Laboratory - EG&G	$ 393	$ 6	$ 0	-100
Lawrence Berkeley National Laboratory	$ 5,247	$ 7,644	$ 10,998	+ 44
Oak Ridge National Laboratory	$ 3,906	$ 6,510	$ 1,100	- 83
Pacific Northwest Laboratory	$ 0	$ 0	$ 1,700	>999

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1990	FY 1991	FY 1992
General Purpose Facilities			
Construction	Provided for the completion/continuation of 9 ongoing projects ($15,344) consistent with planned schedules and initiation of 11 projects, many of which were postponed from FY 1989. ($6,779)	Will provide for the completion/continuation of 18 ongoing projects ($19,912) consistent with planned schedules and initiation of 1 seismic safety project ($3,678).	Will provide for the completion/continuation of 13 ongoing projects ($11,093) consistent with planned schedules and initiation of 9 projects - 2 buildings rehabs, 1 building replacement, 1 fire safety and 5 utility projects ($12,798).
	$ 22,123	$ 23,590	$ 23,891
General Purpose Facilities	$ 22,123	$ 23,590	$ 23,891

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KEY ACTIVITY SUMMARY

CONSTRUCTION PROJECTS

Multiprogram Energy Laboratories - Facilities Support

IV. A. Construction Project Summary

Project No.	Project Title	Total Prior Year Obligations	FY 1991 Appropriated	FY 1992 Request	Unappropriated Balance	TEC
Multiprogram Energy Laboratories - General Purpose Facilities						
92-E-329	Electrical Substation Upgrade (ANL)	$ 0	$ 0	$ 500	$ 4,470	$ 4,970
92-E-328	Technical Administrative Services Facility (Ames)	0	0 a/	1,500	1,540	6,040
92-E-326	Transformer, Switchgear and Feeder Upgrade - Phase I (BNL)	0	0	3,300	0	3,300
92-E-324	Building 326, Life Safety Code Compliance (PNL)	0	0	1,700	6,700	8,400
92-E-323	Upgrade Steam Distribution System - West End (ORNL)	0	0	1,080	7,920	9,000
92-E-322	East Canyon Electrical Safety Project (LBL)	0	0	377	3,523	3,900
92-E-321	Fire Safety Improvements (ANL)	0	0	603	1,117	1,720
92-E-312	Roof Replacements - Phase I (LBL)	0	0	2,500	0	3,000
92-E-309	Sanitary System Modification - Phase I (BNL)	0	0	1,238	2,762	4,000
91-E-323	Building 90 Seismic Rehabilitation (LBL)	0	3,678	2,700	422	6,800
90-R-121	Rehabilitation of Domestic & Firewater Pumping & Storage System (ANL)	148	994	533	0	1,675
90-R-118	Fire Protection Upgrade (ORNL)	1,321	1,967	12	0	3,300
90-R-117	Slope/Seismic Stabilization (LBL)	493	2,401	806	0	3,700
90-R-113	Electrical Systems Upgrade (ORNL)	843	1,449	8	0	2,300
90-R-112	Measurements and Controls Support Facility (ORNL)	884	3,082	0	464	4,430
90-R-111	Original Labsite Substation (LBL)	247	0	2,703	0	2,950

a/ $2,982,600 provided by Congress in Basic Energy Sciences program to initiate construction of this facility.

Project No.	Project Title	Total Prior Year Obligations	FY 1991 Appropriated	FY 1992 Request	Unappropriated Balance	TEC
90-R-110	Instrumentation Support Laboratory Rehabilitation (LBL)	$ 197	$ 0	$ 1,903	$ 0	$2,100
90-R-109	Building Addition (BNL)	1,676	24	0	0	1,700
90-R-108	Central Shops Alteration and Addition (BNL)	306	1,366	8	0	1,680
90-R-107	Boiler Replacement (BNL)	319	3,182	19	0	3,520
90-R-100	Transportation Facility Replacement (ANL)	345	1,377	2,378	0	4,100
89-R-112	PCB Transformers (ANL)	1,478	7	0	0	1,485
89-R-108	Roads and Parking Safety Improvements (ORNL)	2,508	12	0	0	2,520
89-R-102	Fire Protection Improvements Phase II (BNL)	2,967	33	0	0	3,000
88-R-807	Electrical System Rehabilitation - Phase I (ANL)	4,162	893	5	0	5,060
88-R-806	Environmental Health and Safety Project (LBL)	7,676	1,565	9	0	9,250
88-R-805	Environmental Improvements (BNL)	3,729	18	0	0	3,747
87-R-756	Water Line Replacement (ANL)	5,192	8	0	0	5,200
87-R-753	Rehabilitate Laboratory Space (ANL)	10,498	1,528	9	0	12,035
84-ER-103	Road Repairs (INEL, LBL, RL, ANL)	17,745	6	0	0	17,751
Total Multiprogram Energy Laboratories - Facilities Support		XXX	$23,590	$23,891	$28,935	XXX

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KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-329 Electrical Substation Upgrade
Argonne National Laboratory
Argonne, Illinois

Project TEC: $ 4,970
Start Date: FY 1992
Completion Date: FY 1994

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$ 500	$ 500	$ 100
1993	4,470	4,470	2,698
1994	0	0	2,172

3. Narrative:

(a) The project provides for the upgrade of the main electrical substation at Facility 549.

(b) The existing electrical system at Facility 549 has the capacity to service existing programmatic experiments and utilities. The system's reliability is questionable. The present load conditions are such that any transformer failure would result in the remaining transformers assuming a proportionate load and going into fan cooling capacity for a prolonged period of time until transformer repairs (6 to 9 months) or transformer replacement (12 months or longer) could be made. During this period of time it might be necessary to cut back on scientific program loads.

(c) $500,000 is requested in FY 1992 funding to allow initiation of architectural/engineering efforts.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 500	$ 4,470
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

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KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-328 Technical and Administrative Services Facility
Ames Laboratory
Ames, Iowa

Project TEC: $ 6,040
Start Date: FY 1991a/
Completion Date: FY 1994

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1991	$ 0a/	$ 0a/	$ 0
1992	1,500	1,500	400
1993	1,557	1,557	1,800
1994	0	0	857

3. Narrative:

(a) This project is a four-story building which will house the programmatic support activities and the central administrative offices of the Ames Laboratory.

(b) The Occupational Medicine program at Ames is currently located in space that is absolutely inadequate for its mission. The Administrative support personnel, who provide the functions of accounting, budgeting, procurement, property management, personnel, graphics and printing, and data systems are located in a building designed for research facilities and such usage of facilities does not represent efficient use of research space. Presently, administrative computer facilities are located in a renovated vehicle garage built in 1950, which is remotely located from the organizational elements these facilities support. The scientific computer facilities are located in other laboratory areas and rented space. The movement of these facilities to the new structure will allow Ames Laboratory to satisfy both ADP environmental and ADP security requirements while becoming readily accessible to those primary users of the system which include top management personnel, administrative staff and operations and facilities organizational elements. Ames Laboratory management is currently located in offices rented from Iowa State University which are remotely located from majority other organizational elements of the Ames Laboratory, such as the offices of budget, personnel and accounting.

(c) $1,500,000 is requested in FY 1992 funding. Architectural/engineering efforts began in FY 1991, physical construction to begin 3rd quarter of FY 1992.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 1,500	$ 1,557
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

a/ $2,982,600 provided by Congress in Basic Energy Sciences program to initiate construction of this facility. These funds are part of the current cost estimate.

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KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-326 Transformer, Switchgear and Feeder Upgrade - Phase I
Brookhaven National Laboratory
Upton, New York

Project TEC: $ 3,300
Start Date: FY 1992
Completion Date: FY 1994

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$3,300	$3,300	$ 800
1993	0	0	2,000
1994	0	0	500

3. Narrative:

(a) This project provides for the replacement of a 40-year-old transformer and associated regulator with a new transformer and integral regulating tap changer compartment.

(b) Building 603 Substation Transformers #1 and #2 were installed in 1949 and an additional transformer, #3, was installed in 1955. The original transformer #1 was replaced in 1983. Over the years, the electrical loads on this system, servicing both programmatic and support facilities, have increased significantly. The firm capacity (the ability to meet full power demands when one transformer is out of service) has been exceeded by .5 MVA under current conditions and will increase with project expansion. The need to update the transformer and switchgear at the Building 603 Substation is further justified by the fact that Transformer #2 has exceeded its useful life of 30 years. Many replacement parts are no longer available and would require special fabrication. The station service transformer located in Building 603 is 40 years old and beyond its useful life. The transformer is critical in that it supplies power to the Central Steam Facility, Reclamation Facility and the Hot Laundry and controls power for the main site switch gear located in Building 603. In addition, the physical location of the transformer does not meet the separation criteria as recommended by Factory Mutual Corp. and imposes a fire risk to two of the site's main transformers.

(c) $3,300,000 is requested in FY 1992 to allow initiation of architectural/engineering efforts.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 3,300	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

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KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-324 Safety Compliance Modifications, 326 Building
Pacific Northwest Laboratory
Richland, Washington

Project TEC: $ 8,400
Start Date: FY 1992
Completion Date: FY 1994

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$1,700	$1,700	$ 400
1993	6,500	6,500	3,054
1994	200	200	3,746
1995	0	0	1,200

3. Narrative:

(a) The project will bring the 326 Building, which is an aged but strategically important laboratory, into compliance with National Fire Protection Association (NFPA) Requirements, National Electric Code Requirements, and State of Washington Requirements. Since its construction in 1952, the building has been in continuous use. Although the building is structurally sound, it does not meet today's building codes and standards of acceptability for health and safety.

(b) The project will clearly define the egress pathways from the facility, provide fire resistant stairwells and exit corridors, extensively upgrade the building electrical system to comply with the National Electric code including replacement of most of the electrical distribution system, installation of a new motor control center, installation of backflow prevention on the fire main to meet State of Washington Requirements, installation of handicap facilities, installation of full wet-pipe sprinklers to comply with NFPA Requirements, and other modifications to meet code requirements.

(c) $1,700,000 is requested in FY 1992 to allow initiation of architectural/engineering efforts.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 1,700	$ 6,700
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	120	0	0	0	0

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KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-323 Upgrade Steam Distribution System - West End
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Project TEC: $ 9,000
Start Date: FY 1992
Completion Date: FY 1995

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$1,080	$1,080	$ 300
1993	6,020	6,020	3,000
1994	1,900	1,900	3,900
1995	0	0	1,800

3. Narrative:

(a) This project is needed to replace deteriorated portions of the central steam distribution system at the Oak Ridge National Laboratory (ORNL), predominately in the western end of the plant. New isolation valves will be installed to improve efficiency, reliability, and maintainability.

(b) This project will replace sections of the central steam and air supply systems, predominately in the west end of ORNL, that have been in service for as long as 30 years and are approaching the end of their useful life. The system contains twelve bellows-type expansion joints identical to those that have failed catastrophically in other areas at the laboratory. System failure in any of several areas could result in the interruption of experiments which have been ongoing for several years and could impact research and related activity involving multimillion dollar budgets.

(c) $1,080,000 is requested in FY 1992 to allow initiation of architectural/engineering efforts.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 1,080	$ 7,920
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

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Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-322 East Canyon Electrical Safety Project
Lawrence Berkeley Laboratory
Berkeley, California

Project TEC: $ 3,900
Start Date: FY 1992
Completion Date: FY 1995

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$ 377	$ 377	$ 100
1993	1,498	1,498	800
1994	2,025	2,025	2,000
1995	0	0	1,000

3. Narrative:

(a) The project is the third of several rehabilitation elements that are part of a master plan to improve the reliability of the electrical distribution system of the entire laboratory. The project will utilize the new circuit breakers provided in FY 1987 by the improvements to the main substation. A new 12kV switching station and new 12kV distribution circuits to laboratory facilities in the East site area will be installed, as will a new 500 kVA substation with standby generation at the National Center for Electron Microscopy.

(b) The existing 12kV power system has major deficiencies. There is no redundancy, so that a cable fault will cause extended power outage. There is no ground fault protection, which would result in a loss of power to the entire East Site. Since there is no redundancy, preventive maintenance operations can only be accomplished during scheduled shutdowns of the entire East Site. The power cable is reaching the end of its useful life (25 years maximum) and should be replaced. A new substation at the National Center for Electron Microscopy is required to provide an independent power supply system to this major research facility. Power outages adversely affect the operation of the electron microscopes, requiring long time periods for adjustment and recalibration of these major scientific instruments.

(c) $377,000 is requested in FY 1992 to allow initiation of architectural/engineering efforts.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 377	$ 3,523
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

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IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-321 Fire Safety Improvements
Argonne National Laboratory
Argonne, Illinois

Project TEC: $ 1,720
Start Date: FY 1992
Completion Date: FY 1994

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$ 603	$ 603	$ 546
1993	1,117	1,117	554
1994	0	0	620

3. Narrative:

(a) This project will encompass fire protection system extensions, new installations, and replacements in 29 ANL-E buildings. The project can be grouped into three sub-projects which will include: extensions or new installations of wet-pipe sprinkler systems, replacement of existing fire alarm panel and detection devices, and extending the fire separation walls around a large computer room.

(b) In the sprinkler system subproject, the buildings to receive new sprinkler systems were not expected to be occupied and no sprinklers were installed when Argonne last received fire safety funding (in the late 1970's and early 1980's). However, these buildings are now occupied. In the other buildings, sprinkler systems are to be extended to unprotected areas. For the fire detection and alarm system subproject, the systems in 20 buildings are 25 to 35 years old and have numerous shortcomings, including many of the systems that do not meet current National Fire Protection standards. Recent occupancy changes and existing wall deficiencies necessitate the upgrading of the separation walls around the computer room for the computer room wall modifications subproject.

(c) $603,000 is requested in FY 1992 to allow initiation of architectural/engineering efforts.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 603	$ 1,117
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

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Multiprogram Energy Laboratories - Facilities Support
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IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-312 Roof Replacements - Phase I
Lawrence Berkeley Laboratory
Berkeley, California

Project TEC: $ 3,000
Start Date: FY 1992
Completion Date: FY 1995

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$2,500 a/	$2,500 a/	$ 800
1993	0	0	1,300
1994	0	0	900

3. Narrative:

(a) The project will replace over 143,000 sq. ft. of high maintenance roofs in critical need of repair/replacement. The roofing system is a 3-ply modified bitumen membrane with mineral surface, which provides water resistance, elasticity for thermal expansion/contraction and vibration from mechanical sources, strength and durability for foot traffic and ease of maintenance and repair. New roof insulation will be installed, which will decrease energy use and save an estimated $66K/year in energy costs. Equipment on platforms will be braced to conform with the latest seismic codes.

(b) The roofs which will be replaced are characterized by old age, deterioration, high maintenance and have long outlived their recommended service life of 20 years. The average age is 34 years old. These roofs are characterized by widespread leakage and are no longer cost effective to maintain. Replacement of these roofs will reduce associated maintenance costs by about 20 percent.

(c) $2,500,000 is requested in FY 1992. Construction will be initiated.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 2,500 a/	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

a/ Reflects savings of $500 of B/A due to proposed Davis Bacon Amendment.

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KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 92-E-309 Sanitary Systems Modification - Phase I
Brookhaven National Laboratory
Upton, New York

Project TEC: $ 4,000
Start Date: FY 1992
Completion Date: FY 1994

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1992	$1,238	$1,238	$ 300
1993	1,062	1,062	800
1994	1,700	1,700	2,200
1995	0	0	700

3. Narrative:

(a) This project provides the first phase of implementing the rehabilitation projects which affect the ability of the existing system to properly collect and treat the sanitary wastes generated by the Brookhaven facility.

(b) As a result of recent growth and the need to upgrade the various sanitary facilities to current day standards, improvements need to be made to the waste water treatment plant and the sewage collection system.

(c) $1,238,000 is requested in FY 1992. Construction will be initiated.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 1,238	$ 2,762
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 91-E-323 Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory
Berkeley, California

Project TEC: $ 6,800
Start Date: FY 1991
Completion Date: FY 1994

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1991	$3,678	$3,678	$1,600
1992	2,700	2,700	1,759
1993	422	422	2,069
1994	0	0	1,372

3. Narrative:

(a) Building 90 is a four-story structural steel office building which was designed to the 1955 Uniform Building Code which did not reflect the maximum design earthquake now anticipated on the nearby Hayward Fault. The structure is much too flexible and would experience extreme stresses and inelastic lateral deflections in the event of a major earthquake, rendering the building uninhabitable and nonrepairable. In the aftermath of such an earthquake, 380 persons would have to be relocated to leased offsite space for a minimum period of three years, provided capital funding for replacement of the building were immediately available since the existing Building 90 would have to be demolished and replaced.

(b) The proposed project will brace the building to withstand the maximum design earthquake on the Hayward Fault and elimate stresses induced by long term differential settlement. The use of the strengthened building will not change. No new floor space will be added.

(c) $2,700,000 is requested in FY 1992. Construction will be underway.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 0	$ 3,678	$ 2,700	$ 422
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-121 Rehabilitation of Domestic & Firewater, Pumping and Storage System
Argonne National Laboratory
Argonne, Illinois

Project TEC: $ 1,675
Start Date: FY 1990
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$ 148	$ 148	$ 7
1991	994	994	633
1992	533	533	1,035

3. Narrative:

(a) This project provides for the rehabilitation of eleven water storage tanks and eight pressure filter tanks located throughout the ANL site. This project also provides for rehabilitation of three well water pumps through overhaul of the motors, pump assemblies and line shafts and well casings and the replacement of the existing fire water pump.

(b) Present conditions are causing increased maintenance cost and system downtime and have a potential of impairing the laboratory's ability to respond properly to a fire emergency during these downtimes. The well water pumps have operated for 20-25 years. Two of these pumps provide over 50% of the water supply for the laboratory's drinking, fire protection, heating and research process operations. The fire water pump has operated for more than 30 years. Most of the parts are worn out and the housing indicates heavy corrosion.

(c) $533,000 is requested in FY 1992. Construction will be completed.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 148	$ 994	$ 533	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-118 Fire protection upgrade
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Project TEC: $ 3,300
Start Date: FY 1990
Completion Date: FY 1993

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$1,321	$1,321	$ 50
1991	1,967	1,967	1,550
1992	12	12	1,500
1993	0	0	200

3. Narrative:

(a) This project upgrades fire protection and life safety installations in key facilities at the Oak Ridge National Laboratory.

(b) The lack of automatic fire suppression sprinkler systems in occupied office areas and service areas in the main building wings of the ORNL Central Research and Administration Building presents a serious risk of a multi-million dollar fire loss and major interruption of program activities.

(c) $12,000 is requested in FY 1992. Construction will be almost complete.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 1,321	$ 1,967	$ 12	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-117 Slope and Seismic Stabilization Above the Bevatron, Building 51, and Mechanical Shops, Building 77
Lawrence Berkeley National Laboratory
Berkeley, California

Project TEC: $ 3,700
Start Date: FY 1990
Completion Date: FY 1993

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$ 493	$ 493	$ 43
1991	2,401	2,401	1,687
1992	806	806	1,525
1993	0	0	445

3. Narrative:

(a) This project consists of planning, design and construction of two lateral support systems to stabilize two known landslide areas.

(b) This project will complete a long-term program at LBL which has succeeded in stabilizing other known landslide areas that could cause significant property damage in the event of a strong earthquake or static movement due to excessive soil moisture.

(c) $806,000 is requested in FY 1992. Construction will be underway.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 493	$ 2,401	$ 806	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-113 Electrical systems upgrade, Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee

Project TEC: $ 2,300
Start Date: FY 1990
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$ 843	$ 843	$ 215
1991	$1,449	$1,449	$1,085
1992	$ 8	$ 8	$1,000

3. Narrative:

(a) This project will replace aged, obsolete, and unreliable equipment and hardware in the ORNL electrical system.

(b) The purpose of this project is the restoration of deteriorated distribution lines and the replacement of old and obsolete equipment needed to ensure a reliable source of electrical power as well as to meet the demands of the continuing research programs at ORNL.

(c) $8,000 is requested for FY 1992 funding to complete project.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 843	$ 1,449	$ 8	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-111 Original Labsite Substation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

Project TEC: $ 2,950
Start Date: FY 1990
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$ 247	$ 247	$ 57
1991	0	0	190
1992	2,703	2,703	0
1993	0	0	2,000
1994	0	0	703

3. Narrative:

(a) This project is the second of several elements to improve the reliability of the electrical distribution system of the entire laboratory. It will install a new substation and provide for new distribution circuits to laboratory facilities.

(b) Current and future programmatic activities require reliable and economic power. The existing electrical distribution system is 40 years old. Deterioration of distribution cables and switching equipment has resulted in power outages and interruption of programmatic activities.

(c) $2,703,000 is requested for FY 1992 funding. Construction will be completed.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 247	$ 0	$ 2,703	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-110 Instrumentation Support Laboratory Rehabilitation - Building 70A
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

Project TEC: $ 2,100
Start Date: FY 1990
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$ 197	$ 197	$ 29
1991	0	0	168
1992	1,903	1,903	0
1993	0	0	1,000
1994	0	0	903

3. Narrative:

(a) This project will rehabilitate 4,700 square feet of office and laboratory space on the third floor of Building 70A, a multiprogram laboratory, to provide improved and upgraded cleanroom facilities.

(b) This project will rehabilitate the essential core facilities that provide instrumentation support to all R&D programs at LBL. The obsolescence of existing instrumentation support facilities severely limits adequate and timely support to R&D activities.

(c) $1,903,000 is requested for FY 1992 funding. Construction will be completed.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 197	$ 0	$ 1,903	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-108 Central shops alteration and addition, Brookhaven National Laboratory (BNL), Upton, New York

Project TEC: $ 1,680
Start Date: FY 1990
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$306	$306	$ 2
1991	$1,366	$1,366	$1,376
1992	$ 8	$ 8	$302

3. Narrative:

(a) This project provides for the construction of a new building having a gross area of about 11,400 sq. ft. and an approximate volume of 185,000 cubic feet. It will provide for the construction of a new addition to the existing Heavy Machine Shop.

(b) The Central Shops Division currently has its welding operations contained in various World War II wooden buildings, most of which were not designed for their current use. This project will consolidate these operations into appropriately designed noncombustible facilities which will result in much safer and efficient operations. The existing building will be demolished.

(c) $8,000 is requested for FY 1992 funding for completion of project.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 306	$ 1,366	$ 8	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-107 Boiler replacement, Brookhaven National Laboratory (BNL), Upton, New York

Project TEC: $ 3,520
Start Date: FY 1990
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$319	$319	$ 0
1991	$3,182	$3,182	$970
1992	$19	$19	$2,550

3. Narrative:

(a) This project provides for the installation of a new boiler, of about 125,000 lbs. per hour, at the Central Steam Facility.

(b) The boiler replacement is required to assure adequate firm capacity to meet the laboratory's 1991 steam demands.

(c) $19,000 is requested for FY 1992 funding to complete project.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 319	$ 3,182	$ 19	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 90-R-100 Transportation Facility Replacement
Argonne National Laboratory
Argonne, Illinois

Project TEC: $ 4,100
Start Date: FY 1990
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1990	$ 345	$ 345	$ 12
1991	1,377	1,377	820
1992	2,378	2,378	1,650
1993	0	0	1,618

3. Narrative:

(a) This project will provide a new building to house the activities of the Transportation and Grounds Service groups at ANL, Illinois site. The facility will centralize the Vehicle Maintenance and Repair, Driving and Rigging, and Grounds Maintenance activities into one facility.

(b) The project will relocate and consolidate the site's Transportation and Maintenance operations to correct existing facility deficiencies and provide an efficient centralized operational base. All existing facilities which are Quonset buildings constructed to serve as temporary quarters during construction of Argonne in 1948 will be demolished.

(c) $2,378,000 is requested for FY 1992 funding. Construction will be completed.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 0	$ 345	$ 1,377	$ 2,378	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 88-R-807 Electrical System Rehabilitation, Phase I
Argonne National Laboratory (ANL)
Argonne, Illinois

Project TEC: $ 5,060
Start Date: FY 1988
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1988	$ 350	$ 350	$ 47
1989	1,150	1,150	345
1990	2,662	2,662	87
1991	893	893	3,703
1992	5	5	878

3. Narrative:

(a) This project provides for the replacement of components of the main electrical distribution system including transformers, voltage regulators, circuit breakers, metering and relaying equipment, poles, cross arms, insulators, down-guys and related hardware. The project also provides oil containment structures for oil transformers in accordance with current federal/state EPA regulations.

(b) Electrical reliability is essential to continuity of laboratory operations. This project will help ensure uninterruped operations by replacing transformers and other critical electrical equipment which are beyond their predicted life expectancy. Replacing them before failure will avoid costly and disruptive emergency repairs. Oil containment structures will bring existing operations into compliance with environmental regulations.

(c) $5,000 is requested for FY 1992 funding to complete this project.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 1,500	$ 2,662	$ 893	$ 5	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 88-R-806 Environmental Health & Safety Project
Lawrence Berkeley Laboratory
Berkeley, California

Project TEC: $ 9,250[a/]
Start Date: FY 1988
Completion Date: FY 1991

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1988	$ 850	$ 850	$ 59
1989	2,516	2,516	1,090
1990	4,310	4,310	172
1991	1,565	1,565	3,844
1992	9	9	3,527
1993	0	0	558

3. Narrative:

(a) This project will consist of several subprojects in the following areas: 1) upgrading and/or installing environmental monitoring equipment (air sampling/monitoring and underground fuel tank monitoring); 2) replacing existing deteriorated safety and health equipment (ventilation improvements and replacing drum storage racks); and 3) installing additional health and safety equipment, facilities and systems (area lighting and chemical storage facility).

(b) Ensuring healthy, safe and environmentally sound operations is a major goal at LBL. This project is needed to comply with state and national environmental requirements and safety and health standards.

(c) $9,000 is requested for FY 1992 funding to complete this project.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 3,366	$ 4,310	$ 1,565	$ 9	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

a/ Remaining balance of $1,075,000 transferred to new Office of Environmental Management.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

Multiprogram Energy Laboratories - Facilities Support
General Purpose Facilities

IV. B. Plant Funded Construction Project

1. Project title and location: 87-R-753 Rehabilitate Laboratory Space
Argonne National Laboratory (ANL)
Argonne, Illinois

Project TEC: $12,035
Start Date: FY 1987
Completion Date: FY 1992

2. Financial schedule:

Fiscal Year	Appropriated	Obligations	Costs
1987	$ 1,235	$ 1,235	$ 521
1988	3,889[a/]	3,889[a/]	1,354
1989	2,800	2,800	1,992
1990	2,574	2,574	3,061
1991	1,528	1,528	3,517
1992	9	9	1,590

3. Narrative:

(a) This project will renovate six laboratory/office wings (166,000 gross square feet) of Building 200, a multipurpose laboratory and office building in the central part of the ANL site. The project will: 1) replace or upgrade the electrical distribution and lighting systems, the heating, ventilation and air conditioning systems and the plumbing and piping systems; and 2) repair and upgrade the building envelope (especially windows) and building interiors (ceiling, walls and doors).

(b) Building 200 has been in continuous use since its construction in 1951. There has been no renovating or reconditioning of this space since its construction so building systems have deteriorated and are not fully reliable or effective. The facility does not meet current construction codes and safety standards.

(c) $9,000 is requested for FY 1992 funding to complete this project.

4. Total Project Funding (BA):

	Prior Years	FY 1990	FY 1991	FY 1992 Request	To Complete
Construction.....	$ 7,924	$ 2,574	$ 1,528	$ 9	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	0	0	0	0	0

a/ $289,000 reprogrammed from prior year closed out projects.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Electrical Substation Upgrade
Argonne National Laboratory (ANL)
Argonne, IL

2. Project No. 92-E-329

3. Date A-E initiated: 2nd Qtr. FY 1992

3a. Date physical construction starts: 3rd. Qtr. FY 1993

4. Date construction end: 3rd Qtr. FY 1994

5. Previous cost estimate: None
Date: None

6. Current cost estimate: $4,970
Less amount for PE&D: 0
Net cost estimate: $4,970
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1992	$ 4,970	$ 500	$ 500	$ 100
1993	0	4,470	4,470	2,698
1994	0	0	0	2,172

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Electrical Substation Upgrade Argonne National Laboratory (ANL) Argonne, IL	2. Project No. 92-E-329

8. Brief Physical Description of Project

The project provides for the upgrade of the main electrical substation at Facility 549. The work consists of the following elements:

a) Increase the substation fenced area at 549B (west) by 13,400 sq. ft.

b) Install two 25 MVA transformers (T7 & T8).

c) Install associated primary and secondary protective devices (circuit breakers).

d) Install a steel tower under existing 138 KV line to accommodate new transformer high voltage service connections.

e) Install concrete oil containment basin under new and existing transformers.

f) Extend existing lighting and ground grid systems.

9. Purpose, Justification of Need for, and Scope of Project

The existing electrical system at Facility 549 has the capacity to service existing programmatic experiments and utilities. The system's reliability is questionable. The present load conditions are such that any transformer failure would result in the remaining transformers assuming a proportionate load and going into fan cooling capacity for a prolonged period of time until transformer repairs (6 to 9 months) or transformer replacement (12 months or longer) could be made. During this period of time it might be necessary to cut back on scientific program loads.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Electrical Substation Upgrade
Argonne National Laboratory
Argonne, IL

2. Project No. 92-E-329

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Additional transformers at Facility 549 would give the laboratory the needed reserve capacity and allow segregation and isolation of those research programs that are sensitive to line fluctuations created by other users. Oil containment basins for all transformers (existing and new) will be provided in accordance with Federal Environmental Protection Agency regulations on oil pollution prevention.

10. Details of Cost Estimates a/

	Item Costs	Total Cost
a. Engineering, design and inspection at approximately 12% of construction costs, item b		$ 449
b. Construction Cost		3,869
(1) General Conditions	187	
(2) Project Management	126	
(3) Site Work	352	
(4) Transformers	1,345	
(5) H.V. Switchgear	880	
(6) Electrical Work	979	
Subtotal		$ 4,318
c. Contingency at approximately 15% of above costs		652
Total estimated Cost		$ 4,970

a/ Based upon a completed conceptual design and current cost data. Cost escalation for 1990 - 4.3%; for 1991 - 4.7%; for 1992 - 5.5%; for 1993 - 5.7%; for 1994 - 5.8%.

CONSTRUCTION PROJECT DATA SHEET

I. Title and location of project: Electrical Substation Upgrade
Argonne National Laboratory (ANL)
Argonne, IL

2. Project No. 92-E-329

II. Method of Performance

The engineering work will be performed under a lump sum contract with a consultant with specific expertise in high-voltage electrical distribution systems. The construction work will be a fixed price contract awarded on the basis of competitive bidding. Major equipment components will be purchased by the Laboratory to expedite delivery of long lead time items. The current anticipated lead time for the transformers, regulators, and switchgear is 10 to 12 months. Advanced procurement of these items will be instituted early in the project.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Technical and Administrative Services Facility
Ames Laboratory
Ames, Iowa

2. Project No.: 92-E-328

3. Date A-E work initiated: 1st Qtr. FY 1991

3a. Date physical construction starts: 3rd Qtr. FY 1992

4. Date construction ends: 1st Qtr. FY 1994

5. Previous cost estimate: None
Date: None

6. Current cost estimate: $ 6,040a/
Less Amount for PE&D: 0
Net Cost Estimate: $ 6,040
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1991	$ 0a/	$ 0a/	$ 0a/	$ 0
1992	3,057	1,500	1,500	400
1993	0	1,557	1,557	1,800
1994	0	0	0	857

8. Brief Physical Description of Project

This project is a four-story building which will house the programmatic support activities and the central administrative offices of the Ames Laboratory. The building is to be constructed between Spedding Hall, a research laboratory building, and the Chemistry building of Iowa State University. This building will be attached to Spedding Hall and is located on land currently leased to the Federal Government by the State of Iowa under a long term agreement.

The site chosen for this facility is presently a grassed area and loading dock with driveway. No roadway construction is required by this project. Site preparation will require the removal of the loading dock and approach ramp. The present elevation will require cut and fill to provide a final building site.

a/ $2,982,600 provided by Congress in Basic Energy Sciences program to initiate construction of this facility. These funds are part of the current cost estimate.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Technical and Administrative Services Facility
Ames Laboratory
Ames, Iowa

2. Project No.: 92-E-328

8. Brief Physical Description of Project (Continued)

The building will be a four-story structure, with space designated separately in a partial basement or penthouse for mechanical equipment. The floor area will be approximately 9,350 square feet per story for a total enclosed gross area of 37,400 square feet. Story height will match the existing floor elevations of Spedding Hall. The structure will be steel and masonry, with a brick facia exterior to match the existing building. Utilities will be provided from the basement of Spedding Hall from the transformer in that substation and extension of plumbing already existing in that basement. Standard utilities to be provided include water, sewer, electric power, chilled water, steam and condensate returns for heating, and communication lines. Standard equipment to be provided include fixed items such as fire detection equipment and window treatments. Furniture is included for all areas where required by the configuration or the special use areas such as conference rooms and computer terminal areas. Individual office furniture will be relocated from existing spaces.

Special equipment required for this project includes a building and Ames Laboratory directory in the lobby space, with display cases for highlighting activities of Ames Laboratory. Relocation of the administrative services computer group into this space will require a computer room with adequate air conditioning and security for the associated business systems computer equipment.

9. Purpose, Justification of Need for, and Scope of Project

The purpose of this project is to provide space for programmatic support services required within Ames Laboratory. These programmatic support services include environmental, safety, and health services; administrative support services and automatic data processing facilities; graphics and printing services; and laboratory management.

Environmental and safety services are increasing at a rapid pace as required by DOE orders and regulations. Full compliance with the Occupational Safety and Health Act (OSHA) is required by DOE, and new sections recently added to OSHA impact the laboratory by requiring additional staff, space and facilities to meet these requirements. Additional training for all staff is also required which demands more space and facilities to meet those needs.

Environmental activities required to conform to the Environmental Policy Act (EPA) are significantly increased. Waste minimization and tracking efforts are required within Ames Laboratory and this in turn requires additional space and facilities. Efforts to minimize waste, track chemicals and other waste, recycle materials, and to provide training in these activities are currently being implemented.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Technical and Administrative Services Facility
Ames Laboratory
Ames, Iowa

2. Project No.: 92-E-328

9. Purpose, Justification of Need for, and Scope of Project (Continued)

The DOE posture is shifting from reactive to proactive safety, environmental and health activities. This includes industrial and chemical hygiene activities which need expansion at Ames Laboratory. The Occupational Medicine program at Ames is currently located in space that is absolutely inadequate for its mission. A recent appraisal of the occupational medicine program at the Ames Laboratory by the Department of Energy highlights this deficiency. Recommendation three of the appraisal report states "...that additional space [should] be promptly found for the medical department." The discussion describes the current area as "grossly deficient" and further states, "Space is so short that no privacy for patients can be assured and the physician's efficiency for seeing patients is seriously compromised." The existing facility also lacks sufficient amenities for its function. Specifically, it lacks dedicated toilet rooms, laboratory space, examination rooms, and consultation space. Furthermore, access is not convenient for patients, the handicapped or ambulance service. The new construction will provide the space and facilities required for the group to effectively carry out its mission.

The administrative support services include the functions of accounting, budgeting, procurement, property management, personnel, graphics and printing, and data systems. The personnel providing these services are located in a building designed for research facilities and, such usage of facilities does not represent efficient use of research space. The interior construction of these present facilities is composed of high ceilings, ceramic tile type walls, and long and narrow floor plans which do not contribute to a business environment and divide administrative functions which should be co-located. Additionally, each research bay has individual utilities and environmental control standards not required for administrative activities. Maximum utilization can be achieved from these facilities only when they are occupied and used by research organizations, the purpose for which they were constructed.

Presently, administrative computer facilities are located in a renovated vehicle garage, built in 1950, which is remotely located from the organizational elements these facilities support. The scientific computer facilities are located in other laboratory areas and rented space. The movement of these facilities to the new structure will allow Ames Laboratory to satisfy both ADP environmental and ADP security requirements while becoming readily accessible to those primary users of the system which includes top management personnel, administrative staff and operations and facilities organizational elements. The 40-year-old renovated vehicle garage is located over an area that had an underground fuel oil tank leak in 1970-71.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Technical and Administrative Services Facility
Ames Laboratory
Ames, Iowa

2. Project No.: 92-E-328

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Remediation of that problem by removal of the fuel-oil contaminated soil will require demolition of the old building. The State of Iowa has agreed to delay this remediation work only for several years to allow acquisition of replacement space for the computer facilities.

Ames Laboratory management is currently located in offices rented from Iowa State University which are remotely located (two buildings and a parking lot away) from the majority of other organizational elements of the Ames Laboratory, such as the offices of budget, personnel and accounting. Thus, the offices of the director, deputy directors and associate directors are inconveniently accessed by those who require frequent interaction. A single, moderately sized conference room is available to the directors on a shared basis with a variety of university functions, thus making scheduling of meetings difficult at best as the Laboratory has no priority in the scheduling of this room. Indeed, the Ames Laboratory has no control over assignment of space in the rented space and has experienced a steady decrease in functions at Ames Laboratory to provide a central and identifiable location for efficient administration and management.

Existing facilities have been reviewed in order to determine if economical modifications could be accomplished in order to satisfy the stated space requirements. As stated earlier, the existing facilities were designed to maximize research, and both utilities and environmental controls are oriented towards these efforts. Thus, the only conclusion is that these existing facilities should be returned to their original purpose and would not be modified easily or economically for continued use by administrative personnel. The need for research laboratory space is continuing in Ames Laboratory and the relocation of the administrative offices which provide the programmatic support services will provide such laboratory space at less cost than new construction. Reduction of rented space also has a positive impact on the operating budget.

By meeting the proposed completion date, Ames Laboratory will achieve two major benefits. Research facilities will be returned to their original intended purpose which means additional research facilities will be available at the lowest possible cost and the management and administrative functions of the laboratory will be centralized in a structure designed for business operations. This will provide cohesiveness and organizational unity for subunits while achieving a one-stop administrative area for the support of scientific programs. The completion of the facility will also allow prompt remediation of the fuel-oil contamination at the computer garage site and will provide adequate space for the increasing level of activities in environmental, health and safety programs.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Technical and Administrative Services Facility
Ames Laboratory
Ames, Iowa

2. Project No.: 92-E-328

10. Details of Cost Estimate a/

	Item Costs	Total Cost
a. Engineering, design and inspection @ approximately 14% of construction costs, item b		$ 627
b. Construction		4,645
(1) Improvements to Land	$ 25	
(2) Building	4,620	
(a) Structural & Architectural	3,115	
(b) Mechanical/Electrical (Incl. Outside Util.)	1,425	
(c) Telecommunication	80	
c. Equipment and Furnishings		68
(1) Fixed Equipment	48	
(2) Special Equipment (Conf. Room)	20	
Subtotal		$5,340
d. Contingency at approximately 13% of above costs		700
Total Estimated cost		$6,040

a/ Cost estimate is based on a conceptual design completed in 1990. Escalation Rate Used: General Construction Index = 1.15 for midpoint of construction in 1993.

11. Method of Performance

Design and inspection will be performed under a negotiated architect-engineer contract. Construction and procurement will be accomplished by fixed price contracts awarded on the basis of competitive bidding.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MUTLIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of project: Transformer, switchgear and feeder upgrade - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-326

3. Date A-E initiated: 2nd Quarter FY 1992

3a. Date physical construction starts: 2nd Quarter FY 1993

4. Date construction ends: 4th Quarter FY 1994

5. Previous cost estimate: None
Date:

6. Current cost estimate: $3,300
Less amount for PE&D: 0
Net cost estimate: $3,300
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1992	$3,300	$3,300	$3,300	$ 800
1993	0	0	0	2,000
1994	0	0	0	500

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transformer, switchgear and feeder upgrade - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-326

8. Brief Physical Description of Project

This project provides for the replacement of 40 year old 10/13.3 MVA transformer #2 and associated regulator with a new 20/26.7 MVA transformer and integral regulating tap changer compartment. This new transformer will be designated as #2 and connected to new 15 kV switchgear designated as Switchgear Bus #2.

The new switchgear will consist of a lineup of 7 circuit breakers as follows:

a) 1200 ampere main circuit breaker from transformer #2
b) 1200 ampere tie breaker to serve as backup to transformer #3 supplying the Alternating Gradient Synchrotron (AGS) facilities
c) 1200 ampere tie breaker to serve as backup to new transformer #1
d) Four feeder breakers to supply National Synchrotron Light Source (NSLS), Central Chilled Water Facility (CCWF) and two spares

New auxiliary equipment such as current transformers will be installed to support the installation of the new transformer and switchgear. Feeder 600-1, which serves the CCWF will be relocated to the new switchgear #2.

New power and communication ductbank will be installed on Brookhaven Avenue. A new feeder will be installed to replace an existing 40 year old feeder located in a damaged ductbank, as the primary power feeder to the Building 725 complex.

A new 1.0/1/3 MVA station service transformer will be installed, in the Building 603 transformer yard, in a location which meets fire protection separation criteria. Secondary oil containment structures will be provided for existing transformer #1, new transformer #2, and new station service transformer in accordance with the requirements of Laboratory's Spill Prevention, Control and Countermeasures (SPCC) Plan.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transformer, switchgear and feeder upgrade - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-326

9. Purpose, Justification of Need for, and Scope of Project

Building 603 Substation, Transformers #1 and #2 were installed in 1949 with each rated at 10/13 MVA. An additonal transformer, #3 rated 30/40 MVA was installed in 1955. The original transformer #1 was replaced in 1983 with a new transformer rated 20/26.7 MVA. Over the years, the electrical loads on this system, servicing both programmatic and support facilities, have increased significantly. The firm capacity (the ability to meet full power demands when one transformer is out of service) of 40 MVA has been exceeded by .5 MVA under current conditions and will increase with projected expansion.

Studies of the electrical power system utility, by DOE consulting engineers Exeter Associates in the "Utility Site Assessment" in 1987, and Carlson and Sweatt Engineers in the Master Electric Plan in 1986, have emphasized the vulnerability of the electrical distribution system (loss of a transformer would cause a minimum downtime of 6 months), and support the need for additional transformer capacity with associated switchgear.

The need to update the transformer and switchgear at the Building 603 Substation is further justified by the fact that Transformer #2 has exceeded its useful life (30 years). This antiquated equipment can no longer be relied upon to service the Laboratory's electrical loads. Many replacement parts are no longer available and would require special fabrication. Transformer #3 which supplies power to the AGS facilities has been in service for approximately 34 years. This equipment has functioned under adverse conditions servicing pulsating loads but has not been heavily loaded. Expected service life is approximately 40 years, indicating a need to plan for near term backup and future long term replacement.

The station service transformer located at Building 603 is 41 years old and beyond its usefel life. The transformer is critical in that it supplies power to the Central Steam Facility, Reclamation Facility, and the Hot Laundry and control power for the main site 13.8 kV switchgear located in Building 603. In addition, the physical location of the transformer does not meet the separation criteria as recommended by Factory Mutual Corp. and imposes a fire risk to two of the site main 69 kV - 13.8 kV transformers. Replacement and relocation of the existing 1 MVA transformer will allow compliance with the required separation criteria and will minimize the potential fire risk in that area of the substation.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transformer, switchgear and feeder upgrade - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-326

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Transformers #1, #2 and the station service transformer do not have secondary oil containment structures which are required by Factory Mutual for all new installations. Secondary containment in accordance with the requirements of the Laboratory's SPCC Plan will be provided.

A new power ductbank is required to replace an existing, deteriorated, 42-year old ductbank along Cornell Avenue. The existing ductbank contains 24 conduits, 21 of which are in use. Differential settlement over the years has damaged 3 of the conduits beyond repair, making only one spare duct unusable, and raising concern over the long-term reliability of the existing feeders. The new ductbank will be built along Brookhaven Avenue to avoid the congestion of underground utilities along Cornell Avenue. A communications ductbank will be built in conjunction with the power ductbank to satisfy the current shortage of capacity in this area and take advantage of single trench construction. A new feeder to service the area of the NSLS is required since the existing feeder is beyond its useful life and its continued reliability is threatened by the condition of the existing ductbank.

These conditions must be corrected with a new transformer, switchgear, ductbank, and feeders to insure continuity of power for BNL's major research machines and programs.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transformer, switchgear and feeder upgrade - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-326

10. Details of Cost Estimate a/

	Item Costs	Total Cost
a. Engineering, design, and inspection and quality assurance at approximately 15% of construction costs, item b		$ 387
b. Construction costs		2,584
(1) 20 MVA & 1 MVA Transformer Installation	$ 475	
(2) 15 kV Switchgear Installation	139	
(3) Ductbank & Feeders Construction	942	
(4) Bldg. 603 & 610 Modifications	84	
(5) 20 MVA & 1 MVA Transformer Removals	103	
(6) BNL Furnished Equipment (To items 1, 2 & 3)	841	
Subtotal		$2,971
c. Contingency at approximately 11% of the above cost		329
Total estimated cost		$3,300 a/

a/ The above estimates are based on the Conceptual Design Report dated December 1989.

b/ Escalation rates used were taken from DOE Departmental Price Change Index - FY 91 Guidance, August 1989 Update and were 4.2% (FY90), 4.6% (FY91) 5.5% (FY92) 5.7% (FY93) and 5.8% (FY94).

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transformer, switchgear and feeder upgrade - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-326

11. Method of Performance

Engineering, design and inspection will be performed by the operating contractor. Construction and procurement will be accomplished by fixed price contracts awarded on the basis of competitive bidding.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Safety Compliance Modifications, 326 Building
Pacific Northwest Laboratory (PNL)
Richland, Washington

2. Project No. 92-E-324

3. Date A-E initiated: 2nd Qtr. FY 1992

3a. Date physical construction starts: 2nd Qtr. FY 1993

4. Date construction ends: 1st Qtr. FY 1994

5. Previous cost estimate: $ 0
Less amount for PE&D: --
Net cost estimate: $ 0
Date:

6. Current cost estimate: $8,400
Less amount for PE&D: 0
Net cost estimate: $8,400
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1992	$ 8,400	$ 1,700	$ 1,700	$ 400
1993	0	6,500	6,500	3,054
1994	0	200	200	3,746
1995	0	0	0	1,200

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Safety Compliance Modifications, 326 Building
Pacific Northwest Laboratory (PNL)
Richland, Washington

2. Project No. 92-E-324

8. Brief Physical Description of Project

This project will bring the 326 Building, which is an aged but strategically important laboratory, into compliance with DOE Order 6430.1A, National Fire Protection Association (NFPA) Requirements, National Electric Code Requirements, and State of Washington Requirements.

This Project will include the following modifications to 326 Building:

Clearly define the egress pathways from the facility to meet the intent of NFPA 101, provide fire resistant stairwells and exit corridors to meet the intent of NFPA 101, extensive upgrading of the building electrical system to comply with the National Electric code including replacement of most of the electrical distribution system, installation of a new motor control center, installation of backflow prevention on the fire main to meet State of Washington Requirements, installation of handicap facilities, installation of full wet pipe sprinklers to comply with NFPA Requirements, and other modifications to meet code requirements.

9. Purpose, Justification of Need for, and Scope of Project

The purpose of this project is to ensure continuity of operations in a vital laboratory facility supporting energy research operations. The 326 Building figures prominently in PNL's research in structural and microstructural materials research, microstructural services, chemical methods and separations, component analysis, super critical fluids, super conducting materials and various other basic research programs.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Safety Compliance Modifications, 326 Building Pacific Northwest Laboratory (PNL) Richland, Washington	2. Project No. 92-E-324

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Department of Energy Order 6430.1A requires facilities to comply with the requirements of NFPA 101, Life Safety Code. Modifications to the facility will upgrade egress pathways, stairwells, and exit corridors to meet the intent of NFPA 101. Department of Energy Order 6430.1A also requires facilities to comply with the provisions of NFPA 70, NEC. Some aspects of the existing power distribution system do not meet the requirements for clear access as described in the NEC. In addition, replacement parts are not readily available for panelboards. There are some panels that are at full capacity with some circuits being overloaded. Additional distribution panel will be installed to alleviate the condition.

Under agreement with the State of Washington, potable waster systems at Hanford will be installed or modified to meet the requirements of the Washington State Department of Social and Health Services. At the 326 Building this effort will include installing backflow prevention devices on the building fire main to meet the intent of these requirements.

Department of Energy Order 6430.1A requires that any DOE facility whose intended use may result in the employment of physically handicapped persons be designed in accordance with the Uniform Federal Accessibility Standards in 41 CFR 101-19-6. Modifications will be completed to comply with this provision.

This project will renovate portions of the 326 Building to modify the existing egress from the building and upgrade the facility to meet the current requirements of DOE Order 6430.1A. Modifications will be done to the building's architectural, structural, piping, heating, ventilating, and air conditioning (HVAC), fire protection, and communication systems. Since its construction in 1952, the building has been in continuous use. Although the building is structurally sound, it does not meet today's building codes and standards of acceptability for health and safety.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Safety Compliance Modifications, 326 Building
Pacific Northwest Laboratory (PNL)
Richland, Washington

2. Project No. 92-E-324

10. Details of Cost Estimates a/

	Item Costs	Total Cost
a. Engineering, design and inspection at approximately 35% of construction costs, item b		$ 1,700
b. Construction costs		4,900
(1) Building (building modification only)	4,000	
(2) Demolition	900	
Subtotal b/		$ 6,600
c. Contingency at approximately 27% of the above cost		1,800
Total estimated costs		$ 8,400

Engineering costs are higher than normal due to the complexity of this project which is entirely facility modification work. The project contingency was applied at an average of 27%, which is at the upper end of contingency guidelines, due to uncertainties and restraints involved in demolition in areas having asbestos, HVAC ductwork modifications, and electrical tie-ins.

a/ Based on completed conceptual design.
b/ Includes escalation at the rates of 2.2 (FY 1990), 3.7 (FY 1991), 4.7 (FY 1992), and 4.9 (FY 1993) to midpoint of construction with rates based on the January 1990 Hanford Material and Labor Escalation Study.

11. Method of Performance

Design and inspection of the building modification work will be performed by the onsite architecture engineer. Construction and procurement will be accomplished by the onsite CPAF construction contractor.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Safety Compliance Modifications, 326 Building
Pacific Northwest Laboratory (PNL)
Richland, Washington

2. Project No. 92-E-324

12. Funding Schedule of Project Funding and Other Related Funding Requirements

a. Total Project Costs	Prior Years	FY 1992	FY 1993	FY 1994	FY 1995	Total
1. Total facility costs						
(a) Construction Line Item.....	$ 0	$ 400	$3,054	$3,746	$1,200	$8,400
(b) PE&D.....	0	0	0	0	0	
(c) Inventories.....	0	0	0	0	0	0
Total.....	$ 0	$ 400	$3,054	$3,746	$1,200	$8,400
2. Other Project Costs.....						
(a) R&D Necessary to complete construction.....	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
(b) Conceptual design costs.....	120	0	0	0	0	120
(c) Other project related costs...	0	0	0	0	0	0
Total Project Costs.....	$ 120	$ 0	$ 0	$ 0	$ 0	$ 120
Total Project Costs (Item 1&2)	$ 120	$ 400	$3,054	$3,746	$3,746	$8,520

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Safety Compliance Modifications, 326 Building
Pacific Northwest Laboratory (PNL)
Richland, Washington

2. Project No. 92-E-324

12. Funding Schedule of Project Funding and Other Related Funding Requirements (Continued)

b. Other related annual costs (estimated life of facility: 30 Years)

1. Facility operating costs	$715a/
2. Programmatic operating expense directly related to facility	0
3. Capital equipment not related to construction, but related to programmatic effort in the facility	0
4. Maintenance, Repair, GPP, or other construction related to programmatic effort in the facility	0
Total related annual costs	$715

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

a. Total project funding
   1. Total Facility
      (a). Construction Line Item -- $8,400,000
      (b). PE&D -- None
      (c). Inventories -- Inventories necessary to put the facility into use are estimated to cost -- $0
   2. Other Project Funding
      (a). R&D Necessary to Complete Construction -- Preconceptual design/engineering studies cost -- $0
      (b). Conceptual Design was completed in FY 1990 at a total cost of $120,000
      (c). Other Project Related Funding -- Project support and start-up are estimated to cost -- $TBD

a/ FY 1990 dollars.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Safety Compliance Modifications, 326 Building
Pacific Northwest Laboratory (PNL)
Richland, Washington

2. Project No. 92-E-324

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements (Continued)

b. Total related funding requirements
1. Facility operating costs -- The major elements comprising the annual operating costs are operating and maintenance costs for upkeep of the building HVAC systems and equipment, janitorial costs, steam and electrical utility costs. These costs are estimated to be approximately $715,000 annually.
2. Programmatic Operating Expenses directly related to the facility -- None
3. Capital Equipment not Related to Construction, but Related to Programmatic Effort in the Facility -- None
4. Maintenance, Repair, GPP, or Other Construction Related to Programmatic Effort in the Facility -- None

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEET
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT CAPITAL AND EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Upgrade steam distribution system - west end
Oak Ridge National Laboratory (ORNL)
Oak Ridge, Tennessee

2. Project No.: 92-E-323

3. Date A-E work initiated: 1st Qtr. FY 1992

3a. Date physical construction starts: 1st Qtr. FY 1993

4. Date construction ends: 4th Qtr. FY 1995

5. Previous Cost Estimate: $5,500
Date: November 1987

6. Current Cost Estimate: $9,000*
Less Amount for PE & D: 0
Net Cost Estimate: $9,000
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1992	$9,000	$1,080	$1,080	$ 300
1993	0	6,020	6,020	3,000
1994	0	1,900	1,900	3,900
1995	0	0	0	1,800

8. Brief Physical Description of Project

This project is needed to replace deteriorated portions of the central steam distribution system at ORNL, predominately in the western end of the plant. New isolation valves will be installed to improve efficiency, reliability, and maintainability. Deteriorated air supply lines will also be replaced where adjacent to steam lines being replaced. The project will provide a condensate-return system, modifications to connect condensate systems in selected buildings, and other ancillary equipment.

First year funding will be utilized for design and related activities.

* The increase from the previous cost estimate is explained at the end of Item 9.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Upgrade steam distibution system - west end
Oak Ridge National Laboratory (ORNL)
Oak Ridge, Tennessee

2. Project No.: 92-E-323

9. Purpose, Justification of Need for, and Scope of Project

The purpose of this project is to replace sections of the central steam and air supply systems, predominately in the west end of ORNL, that have been in service for as long as 30 years and are approaching the end of their life. The system contains twelve bellows-type expansion joints identical to those that have failed catastrophically in other areas at the laboratory. Underground lines that are replaced will be abandoned in situ except in valve pits. Replaced above-ground lines and lines in valve pits being reused will be removed and disposed of in a suitable landfill.

Deteriorated jacketing has resulted in a saturation of the insulation from steam leaks and ground water. This insulation failure is documented in Facilities Evaluation Study Steam Distribution System, ORNL/CF-83/90. This deteriorated condition, coupled with lack of condensate return, has resulted in large losses of energy. Both the existing steam lines and adjacent air supply lines have begun failing due to corrosion. While failures to date have been predominately pinholes, the potential for significant steam supply failures will increase progressively as the system continues to age. System failure in any of several areas could result in the interruption of experiments which have been ongoing for several years and could impact research and related activity involving multimillion dollar budgets. Furthermore, a steam supply failure could interrupt critical functions, such as cell ventilation or off-gas services required in handling radioactive materials in reactors, isotope facilities, and hot cells, requiring immediate shutdown of operations until the steam supply is restored. Forced expenditures will be required to restore the steam supply in the event of such failures. This will replace the system piecemeal at a higher cost and without the energy cost savings provided with this proposal.

Two alternatives and the proposed system upgrade project are compared in a feasibility study dated February 1, 1984, prepared by an architect-engineer (A-E). The other alternatives are: a low-temperature hot water system, and a high-temperature hot water system.

The first alternative, a low-temperature hot water system, although offering operating savings through lowered energy consumption and maintenance costs, cannot economically support the 70% higher capital costs of installation including the necessary conversion of building heating systems from steam to hot water.

The second alternative, high-temperature hot water system, was quickly determined to be less cost-effective than the low-temperature hot water system as a result of even higher capital costs due to more expensive piping mandated by the use of higher pressures. Furthermore, this option does not offer all of the advantages of the low-temperature system.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Upgrade steam distribution system - west end Oak Ridge National Laboratory (ORNL) Oak Ridge, Tennessee	2. Project No.: 92-E-323

9. Purpose, Justification of Need for, and Scope of Project (Continued)

If the proposed project is not funded the existing west end portion of the central steam distribution system will be operated with the loss of $520,000 (FY 1992 dollars) per year in operating funds expended for the extra fuel required to overcome system heat losses due to deterioration of old lines. And, the potential for system failures and their accompanying impacts on research and the operation of critical facilities will continue to increase with age.

As shown in items 5 and 6 on the first page, the total estimated cost for this project has increased $3,500,000 from the previous estimate. This includes $1,580,000 for adjustments in labor and material cost factors including escalation to cover the two year delay in the start date from FY 1990 to FY 1992; $1,200,000 for increased provisions to assure compliance with various regulatory requirements; and, $720,000 to implement use of a construction manager beginning in FY 1991.

10. Details of Cost Estimate: a/

	Total Cost
a. Engineering, design, and inspection at approximately 15% of construction costs, item b	$ 1,010
b. Construction costs b/	6,780
Subtotal	7,790
c. Contingency at approximately 16% of above costs	1,210
Total Estimated Cost	$ 9,000

a/ The cost estimate is based on a conceptual design report completed in January 1987 at a cost of $100,000 and last updated in May 1990.

b/ Construction costs include $24,000 for readiness reviews.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Upgrade stream distribution system - west end
Oak Ridge National Laboratory (ORNL)
Oak Ridge, Tennessee

2. Project No.: 92-E-323

11. Method of Performance

Design shall be performed under a negotiated architect-engineer contract and inspection shall be performed by the operating contractor. To the extent feasible, construction and procurement shall be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bidding.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

	Prior Years	FY 1992	FY 1993	FY 1994	FY 1995	Total
a. Total Project Costs						
1. Total facility costs						
(a) Construction line item .	$ 0	$ 300	$ 3,000	$ 3,900	$ 1,800	$ 9,000
(b) PE&D	0	0	0	0	0	0
(c) Expense funded equipment	0	0	0	0	0	0
(d) Inventories	0	0	0	0	0	0
Total Facility Costs . .	$ 0	$ 300	$ 3,000	$ 3,900	$ 1,800	$ 9,000
2. Other project funding						
(a) R&D necessary to complete construction	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
(b) Conceptual design costs	100	0	0	0	0	100
Total Other Project Funding	$100	$ 0	$ 0	$ 0	$ 0	$ 100
Total Project Funding [Item (1) and Item (2)]	$100	$ 300	$ 3,000	$ 3,900	$ 1,800	$ 9,100

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Upgrade steam distribution system - west end
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2. Project No.: 92-E-323

12. Funding Schedule of Project Funding and Other Related Funding Requirements (Continued)

b. Total related annual costs (Estimated Life: 50 Years) a

1. Facility operating costs	$520,000
2. Programmatic operating expenses directly related to the facility	0
3. Capital equipment not related to construction but related to the programmatic effort in the facility	0
4. GPP or other construction related to the programmatic effort in the facility	0
5. Other costs	0
Total related annual costs	$520,000

a This savings is expressed in FY 1992 dollars.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

a. Total project funding
1. Total facility costs
(a) Construction line item
No narrative required
(b) PE&D
No narrative required
(c) Expense funded equipment
No narrative required
(d) Inventories
No narrative required

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Upgrade steam distribution system - west end Oak Ridge National Laboratory Oak Ridge, Tennessee	2. Project No.: 92-E-323

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements (Continued)

2. Other project funding

(a) R&D necessary to complete construction

No narrative required

(b) Conceptual design

The conceptual design report was completed in January 1987, at a cost of approximately $100,000.

b. Total related funding requirements

The estimated useful life of the Upgraded Steam System is 50 years.

(1) Facility operating costs a/

The estimated annual savings in operating the steam system at ORNL is based upon the reduced use of coal (approximately 8,000 tons less per year for a savings of $360,000 per year), natural gas (approximately 40,000,000 cubic feet per year for a savings of $140,000 per year), and water and water treatment (approximately 30,000,000 gallons per year for a savings of $20,000 per year). The total annual savings as a result of reduced heat loss and condensate return is $520,000 per year.

(2) Programmatic operating expenses directly related to the facility

No narrative required

(3) Capital equipment not related to construction but related to the programmatic effort in the facility

No narrative required

(4) GPP or other construction related to the programmatic effort in the facility

No narrative required

a/ This savings is expressed in FY 1992 dollars.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: East Canyon Electrical Safety Project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 92-E-322

3. Date A-E work initiated: 2nd Qtr. FY 1992

3a. Date physical construction starts: 2nd Qtr. FY 1994

4. Date construction ends: 4th Qtr. FY 1995

5. Previous cost estimate: None

6. Current cost estimate: $ 3,900
Less amount for PE & D: 0
Net Cost Estimate: $ 3,900
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorizations	Appropriations	Obligations	Costs
1992	$ 3,900	$ 377	$ 377	$ 100
1993	0	1,498	1,498	800
1994	0	2,025	2,025	2,000
1995	0	0	0	1,000

8. Brief Physical Description of Project

This project is the third of several rehabilitation elements that are part of a master plan to improve the reliability of the electrical distribution system of the entire laboratory. The project will utilize the new circuit breakers provided in FY 1987 by the improvements to the main substation (Electrical Project #1). The scope includes the installation of a new 12kV switching station near the Centennial Drive overpass and new 12kV distribution circuits to laboratory facilities in the East Site area. Also included will be the installation of a new 500 kVA substation with standby generation at Building 72 (National Center for Electron Microscopy). In essence, these improvements will replace the old existing mode of electrical service for the East Site area.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: East Canyon Electrical Safety Project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 92-E-322

8. Brief Physical Description of Project

The new switching station will be in a double-ended configuration and utilize 750 MVA, 13.8kV metalclad switchgear. The new switchgear will be housed in an outdoor metal enclosure and include a protected isle. The switchgear will be located on a concrete slab of about 1,000 sq. ft. From the switching station, redundant 12kV power circuits will radially branch out and distribute electrical energy to building and laboratory substations. These circuits will utilize 250 MCM power cables, which will be installed in new and existing underground ducts. The redundant supply feeders from the Grizzly Peak main substation to the switching station will be sized 500 MCM and installed in new and existing underground ducts.

These new government-owned facilities will be located on land owned by the University of California and will serve or be operated in conduction with other government-owned facilities at the Lawrence Berkeley Laboratory.

9. Purpose, Justification of Need for, and Scope of Project

The existing 12kV power distribution to the East Site facilities consists of one 12kV cable sized at 500 MCM, which is 21 years old. This cable provides power for Buildings 62, 66, 72, 73, 74, 76, 77, and 83, and the new SSCL Building. The total load on this cable is about 6,000 kVA.

The major deficiencies of the existing 12kV power system are:

- o No redundancy: A cable fault will cause extended power outage.
- o No individual ground fault protection: A ground fault will open the main circuit breaker at Grizzly Substation, resulting in a loss of power to the entire East Site.
- o Difficult to maintain: Since there is no redundancy, preventive maintenance operations can only be accomplished during scheduled shutdowns of the entire East Site.
- o Age of power cable, reaching end of useful life (25 years maximum) and should be replaced.

A new substation at Building 72 (National Center for Electron Microscopy) is required to provide an urgently needed independent power supply system to this major research facility. Currently, this facility is supplied through a low-voltage (480V) power feeder from Building 62 and does not have standby power backup. Power outages adversely affect the operation of the electron microscopes, requiring long time periods for adjustment and recalibration of these major scientific instruments.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	East Canyon Electrical Safety Project Lawrence Berkeley Laboratory (LBL) Berkeley, California	2. Project No.: 92-E-322

10. Details of Cost Estimate a/	Item Costs	Total Cost
a. Engineering, design and inspection @ approximately 15% of construction costs, item b		$ 425
b. Construction costs		2,895
(1) Utilities	$ 1,887	
(2) Special Facilities Engineered Equipment	923	
(3) Project Management	85	
Subtotal		3,320
c. Contingency at approximately 17% above costs		580
Total estimated cost		$3,900

a/ Construction costs have been escalated at 1.4% for FY 1987, 4.0% for FY 1988, 4.4% for FY 1989, 4.3% for FY 1990, 4.7% for FY 1991, 5.5% for FY 1992, 5.7% for FY 1993, 5.8% for FY 1994, and 1.5 % for FY 1995, compounded to midpoint of construction, December 1994, for a total of 43.6%.

Procurement costs have been escalated at 1.4% for FY 1987, 4.0% for FY 1988, 4.4% for FY 1989, 4.3% for FY 1990, 4.7% for FY 1991, 5.5% for FY 1992, 5.7% for FY 1993, and 2.4% for FY 1994, compounded to midpoint of procurement, February 1994, for a total of 37.3%.
Conceptual design is complete.
PED requirements: None.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: East Canyon Electrical Safety Project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 92-E-322

11. Method of Performance

Engineering design will be performed under a negotiated Architect/Engineer subcontract. Inspection and some engineering will be done by LBL personnel. Construction and procurement will be accomplished by fixed price subcontracts awarded on the basis of competitive bids.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Fire Safety Improvements
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No. 92-E-321

3. Date A-E initiated: 2nd Qtr. FY 1992

3a. Date physical construction starts: 2nd Qtr. FY 1993

4. Date construction end: 4th Qtr. FY 1994

5. Previous cost estimate:
Date:

6. Current cost estimate: $1,720
Less amount for PE&D: 0
Net cost estimate: $1,720
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1992	$ 1,720	$ 603	$ 603	$ 546
1993	0	1,117	1,117	554
1994	0	0	0	620

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Fire Safety Improvements
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No. 92-E-321

8. Brief Physical Description of Project

The Fire Safety Improvements Project will encompass fire protection system extensions, new installations, and replacements in twenty-nine ANL-E buildings. The project can be grouped into three sub-projects which include extensions or new installations of wet-pipe sprinkler systems, replacement of existing fire alarm panel and detection devices, and extending the fire separation walls around a large computer room.

Of the twenty-nine buildings, six will undergo both sprinkler system and fire alarm/detection system installations, two will undergo only sprinkler system installations, eleven will undergo only fire alarm/detection system installations, one will have fire alarm/detection system installation and wall extension construction, two will undergo sprinkler system extension and fire alarm/detection system installation, and seven will undergo only sprinkler system extensions.

A. Sprinkler System Subproject:

The following nine buildings will have sprinkler systems extended to unprotected areas:

Building 203 - Extend existing system to protect ATLAS beam line.
Building 205 - Extend existing system to provide complete protection for J-Wing high bay.
Building 212 - Extend existing system into Wing DL laboratories to provide complete Wing D protection.
Building 213 - Extend existing system into refrigeration and food preparation areas of cafeteria.
Building 330 - Extend existing system into A-Wing to provide complete protection.
Building 333 - Extend existing system into dormitory, kitchen, conference room, and locker area to provide complete protection for the site fire station.
Building 340 - Extend existing system into offices and corridor to provide complete building protection.
Building 362 - Install a sprinkler system for the high bay area to provide complete building protection.
Building 365 - Extend existing system to operating floor level to provide protection for beam line and storage area.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Fire Safety Improvements
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No. 92-E-321

8. Brief Physical Description of Project (Continued)

The following eight buildings will have new sprinkler system installed:

Building 364 - Install complete system throughout the mechanical room and four levels of storage.
Building 366 - Install complete system throughout the high bay building.
Building 369 - Install complete system throughout the high bay building.
Building 370 - Install complete system throughout the high bay building.
Building 371 - Install complete system throughout the high bay building and central chilled water plant.
Building 372 - Install complete system throughout the office building.
Building 375 - Install complete system throughout the high bay Intense Pulsed Neutron System building.
Building 376 - Install complete system throughout the high bay building.

B. Fire Detection and Alarm System Subproject:

The twenty buildings scheduled for fire detection and alarm replacements include Buildings 205, 221, 223, 306, 308, 309, 310, 317, 335, 360, 361, 362, 366, 369, 370, 371, 375, 376, 391, and 399.

C. Computer Room Wall Modifications Subproject:

The existing walls of the Main Computer Room in Building 221 need to be upgraded, above the suspended ceiling, to obtain a 1-hour fire resistance rating.

The structural steel above the suspended ceiling is fireproofed with a sprayed asbestos fiber material which will require work to be done in conformance with current OSHA and Argonne National Laboratory procedures for working in an asbestos area.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Fire Safety Improvements
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No. 92-E-321

9. Purpose, Justification of Need for, and Scope of Project

The purpose of the Fire Safety Improvements Project is to continue the progress of the selected buildings toward the "Improved Risk" concept as defined in DOE Order 5480.7 Fire Protection. That Order establishes objectives for an "improved risk" level of fire protection which are applicable throughout its facilities.

1. No threats to the public health or welfare will result from fire.
2. There are no undue hazards to employees from fire.
3. Vital Department of Energy programs will not suffer unacceptable delays as a result of fire.
4. Property damage will be held to manageable levels.

Compliance with improved risk criteria objectives have been met when:

1. There are no threats to the public health and welfare and no undue hazards to life from fire.
2. There are no unacceptable impairments to vital DOE programs for a period longer than acceptable to the program division.
3. Automatic fire protection systems are provided when the maximum possible fire loss is in the range of $1-25 million and a redundant protection system is provided when the loss range is $25-50 million, so that property damage is limited to $1 million or less in either case.
4. That facility or program requiring a "higher" standard of protection can expect a loss to be limited to $250,000 due to the presence of an automatic fire protection system.

The three subprojects described below will remedy identified risks to the Laboratory's program, personnel, and physical plant.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Fire Safety Improvements
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No. 92-E-321

9. Purpose, Justification of Need for, and Scope of Project (Continued)

a. Sprinkler System Subprojects

In conformance with DOE Order 5480.7, the Factory Mutual (FM) Research Corporation was retained by Headquarters to survey the improved risk status of DOE facilities (DOE Contract No. DE-AC01-84PE-17056). Numerous recommendations were issued. In February, 1988, the Industrial Safety and Fire Protection (ISFP) Appraisal conducted by the Chicago Operations Office, issued Recommendation No. ISFP-88-3 to Argonne to develop and implement a program for completion of the outstanding FM recommendations. This project will provide for the completion of four of those recommendations pertaining to the installation of an automatic sprinkler system.

Of the seventeen buildings in this subproject, nine buildings will have sprinkler systems extended to unprotected areas and eight buildings will have new systems installed throughout. All systems will be of the wet-pipe type designed to protect Ordinary Hazard occupancies in accordance with NFPA 13 Standard for the Installation of Sprinkler Systems as directed by DOE Order 6430.1A General Design Criteria.

When Argonne last received fire safety improvement funding for sprinkler system installations (late 1970's and early 1980's), the 360 area buildings were in the process of decommissioning from the Zero Gradient Synchrotron (ZGS) program. Since no new program had been identified for these facilities, sprinkler systems were not planned. Over the last eight years, programs have begun occupying parts of these buildings.

b. Fire Detection and Alarm System Subproject:

The existing systems in the earlier identified twenty buildings are 25 to 35 years old. These systems have numerous shortcomings:

1. They are near or at capacity thereby prohibiting expansion for occupancy changes or building additions.

2. The components are no longer manufactured or sold.

3. Smoke detectors cannot be installed where preferred over the use of heat detectors since some systems will not accommodate smoke detectors. This can result in slow detection in areas with high value electronics and computer systems.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Fire Safety Improvements
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No. 92-E-321

9. Purpose, Justification of Need for, and Scope of Project (Continued)

4. Many of the systems do not meet current National Fire Protection Standards.

5. Many of the systems utilize 220 Volt DC circuitry. New systems are designed for better personnel safety using 24 volts DC circuitry and modular components.

6. Reliability has decreased which results in an increased number of false alarms and failures to report the alarms.

c. Computer Room Wall Modifications Subproject:

A 1-hour fire resistance noting on the perimeter walls surrounding the main computer room in Building 221 is required by DOE/EP-0108, Standard for Fire Protection of DOE Electronic Computer/Data Processing Systems. Recent occupancy changes and existing wall deficiencies necessitate the upgrading.

10. Details of Cost Estimates a/

	Item Costs	Total Cost
a. Engineering, design and inspection at approximately 13% of construction costs, item b		$ 175
b. Construction costs		1,320
(1) Automatic Sprinkler Protection	$ 654	
(2) Fire Detection and Alarm Systems	604	
(3) Wall Construction	22	
(4) Project Management	40	
Subtotal		$ 1,495
c. Contingency at approximately 15% of the above cost		225
Total estimated costs		$ 1,720

a/ Based upon a completed conceptual design and current cost data. Cost escalation rate for FY 1990 - 4.3%; for FY 1991 - 4.70%; for FY 1992 - 5.50%; for FY 1993 - 5.70%; for FY 1994 - 5.8%.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Fire Safety Improvements Argonne National Laboratory (ANL) Argonne, Illinois	2. Project No. 92-E-321

11. Method of Performance

Engineering, design and inspection will be performed by Laboratory engineering personnel, aided by outside A/E firm. Construction will be accomplished by fixed-price contract awarded on the basis of competitive bidding.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Roof Replacements, Phase I
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 92-E-312

3. Date A-E work initiated: 1st Qtr. FY 1992

3a. Date physical construction starts: 3rd Qtr. FY 1993

4. Date construction ends: 1st Qtr. FY 1995

5. Previous cost estimate: None
Date: None

6. Current cost estimate: $ 3,000
Less amount for PE&D: 0
Net cost estimate: $ 3,000
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1992	$ 2,500 a/	$ 2,500 a/	$ 2,500 a/	$ 800
1993	0	0	0	1,300
1994	0	0	0	900

a/ Reflects savings of $500 due to proposed Davis Bacon Amendment.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Roof Replacements, Phase I
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 92-E-312

8. Brief Physical Description of Project

The laboratory occupies 80 permanent buildings on the main site, two-thirds of which are 20 years or older. With few exceptions, the same proportion of these buildings have roofs which, therefore, exceed their recommended service life of 20 years. Exposure to the elements over time progressively erodes the roof system's ability to maintain its waterproof properties, resulting in failure (leakage). Roof leakage compromises the integrity of the roof system and structure, and progressive worsening leads to damage of the building and its contents, disrupting affected research programs. Repairs are generally implemented as part of an overall facilities maintenance program, however, when repairs are no longer cost effective, resurfacing or complete roof replacement is recommended.

At the laboratory, the problem of roof failure due to prolonged exposure is compounded by roof platforms which support mechanical equipment. Ideally, platform design should be fully integrated with roof design, that is, roof maintenance, resurfacing, or replacement should be able to occur independently of the platform and equipment which it supports. Instead, ad hoc platform installations and equipment protrusions have made roof maintenance awkward and difficult. The majority of existing platforms impede resurfacing or replacing roofs because they must be totally disassembled and rebuilt to accommodate the process, adding substantially to costs.

The proposed $3M project will replace over 143,000 sq. ft. of high maintenance roofs in most critical need of repair/replacement. The roofing system which has been selected, is a 3-ply modified bitumen membrane with mineral surface. This combination of materials and plies provides water resistance, elasticity for thermal expansion/contraction and vibration from mechanical sources, strength and durability for foot traffic and ease of maintenance and repair. New roof insulation will be installed. Where rooftop equipment platforms are disassembled to accommodate new roof construction, they will be redesigned and rebuilt to facilitate ease of roof maintenance, repair or replacement and ease of equipment maintenance and repair. Equipment on platforms will be braced to conform with the latest seismic codes.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Roof Replacements, Phase I
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 92-E-312

9. Purpose, Justification of Need for, and Scope of Project

The roofs which will be replaced are characterized by old age, deterioration, high maintenance and as having long outlived their recommended service life of 20 years. The average age is 34 years old. About half are 40 years and older, although about two-thirds of the square footage slated for replacement falls within the 25-30 year range. These roofs are characterized by widespread failure (leakage) and are no longer cost effective to maintain. In FY 1989, over a quarter of a million dollars was spent to maintain the laboratory's 800,000 sq. ft. of roofs. It is projected that this cost will only accelerate with time due to increasing age and escalation. Replacement of the roofs earmarked for this project will reduce associated maintenance costs by about 20% and virtually eliminate costs associated with building damage and program disruptions. Requisite related work will fully integrate the redesign and rebuilding of rooftop equipment platforms with roof design. The intergration will facilitate ease of maintenance and repair of the roof and its associated equipment.

Besides eliminating problems directly associated with roof failure, another benefit will be realized as well. New insulation installed between the existing roof structure and the new roof membrane will be of an R Value and thickness to optimize building energy efficiency, thereby decreasing energy use. On average, the new insulation will save about $66K/year in energy costs.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Roof Replacements, Phase I
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 92-E-312

10. Details of Cost Estimate a/

	Item Costs	Total Cost
a. Engineering, design and inspection at approximately 17% of construction costs, item b		$ 380
b. Construction		2,220
(1) Building (30,000 sq. ft. at approx. $71/sq. ft.)	$ 2,130	
(2) Utilities	90	
Subtotal		2,600
c. Contingency @ 15% of above costs		400
Total estimated project cost		$3,000

a/ Based on completed conceptual design. Includes escalation at the rates of 4.3% for FY 1990, 4.7% for FY 1991, 5.5% for FY 1992, 5.7% for FY 1993 and 5.8% for FY 1994.

11. Method of Performance

Engineering design will be performed under a negotiated Architect/Engineer subcontract. Inspection and some engineering will be done by LBL personnel. Construction will be accomplished by fixed price subcontracts awared on the basis of competitive bids.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
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ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Sanitary system modification - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-309

3. Date A-E initiated: 2nd Qtr. FY 1992

3a. Date physical construction starts: 1st Qtr. FY 1992

4. Date construction end: 3rd Qtr. FY 1994

5. Previous cost estimate:
Date:

6. Current cost estimate: $4,000
Less amount for PE&D: 0
Net cost estimate: $4,000
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1992	$ 4,000	$ 1,238	$ 1,238	$ 300
1993	0	1,062	1,062	800
1994	0	1,700	1,700	2,200
1995	0	0	0	700

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Sanitary system modification - Phase I Brookhaven National Laboratory (BNL) Upton, New York	2. Project No. 92-E-309

8. Brief Physical Description of Project

This project begins the rehabilitation of the sanitary system as outlined in our Master Plan, Sanitary Utility 1989 - 2000. This project provides the first phase of implementing the rehabilitation projects which affect the ability of the existing system to properly collect and treat the sanitary wastes generated by the Brookhaven facility.

Included in the first phase of work are the following improvements:

a. Automate the primary clarifier bypass sluice gate, first dosing chamber feed slide gate, and second dosing chamber bypass slide gate, which are currently manually operated.

b. Add a second primary clarifier to the Sewerage Treatment Plant.

c. Install a new leachate collection system for the sludge and scum lagoon.

d. Replacement of defective sewer pipe to stop exfiltration of waste water.

e. Replacement or repair of defective manholes that are either operational or safety related.

f. Replacement of approximately 900 feet out of 6,000 feet of undersized sewer pipe as part of Phase I.

9. Purpose, Justification of Need for, and Scope of Project

Based on recent continued growth at the laboratory, expansion through 1994 is projected to include the addition of 10 new buildings. These buildings will be occupied by as many as 1,100 people. Many of these people would be relocated from the 16 buildings presently slated for demolition during this time period. The overall influx of new personnel will range between 400-700, bringing the maximum population at the site to between 5,100 and 5,400. This includes short-term visitors to the laboratory.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Sanitary system modification - Phase I Brookhaven National Laboratory (BNL) Upton, New York	2. Project No. 92-E-309

9. Purpose, Justification of Need for, and Scope of Project (Continued)

As a result of this growth and to upgrade the various sanitary facilities to current day standards, the following work needs to be performed:

Waste Water Treatment Plant Improvements

a. Remedy Emergency Bypass Conditions: In order to more accurately control flow during emergency conditions, the primary clarifier bypass sluice gate, first dosing chamber feed slide gate, and second dosing chamber bypass slide gate, which are currently manually operated will be automated. This will entail the installation of motor operators on each gate and the associated instrumentation to start, stop and control the bypass. The initiation of a bypass will then be remotely controlled from the service building (#575).

b. Primary Clarifier (#588): It is the best management practice to meet requirements of the "Ten-State Standards" which have been adopted by the NYSDEC as its recommended design criteria for sewerage treatment plants which require that all plants with a design flow of more than 100,000 gpd have more than one clarifier capable of independent operation. A second primary clarifier will be installed in the Phase I modification. This will permit compliance with the design criteria and permit maintenance to be performed on the clarifier without discharging untreated sewage.

c. Primary Digester Building - Sludge and Scum Lagoons (#587): In order to upgrade the condition of this facility, a new leachate collection system for the sludge and scum lagoon will be installed.

Sewage Collection System Improvements

As a result of this visual inspection made of the sewage collection system, the following improvements need to be made to the system in order to bring its operation up to an acceptable operating level and comply with effluent discharge criteria.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Sanitary system modification - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-309

9. Purpose, Justification of Need for, and Scope of Project (Continued)

The required tasks are:
a. Correction of crooked or broken pipes, root intrusions and open joints.
b. Replacement of defective manholes which are also a safety hazard.
c. Exposed sewer main pipe needs to be covered with fill to protect it from possible damage.
d. Correction of the influent flow to stop exfilitration of sewage.

10. Details of Cost Estimates a/

	Item Costs	Total Cost
a. Engineering, design and inspection at approximately 14% of construction costs, item b		$ 440
b. General Construction		3,140
(1) WWTF Improvements	$ 1,125	
(2) Defective Sewer Pipe Replacement	1,825	
(3) Manhole Repair	50	
(4) Undersized Pipe Replacement	140	
Subtotal		$ 3,580
c. Contingency at approximately 12% of the above cost		420
Total estimated costs		$ 4,000

a/ This estimate is based on a conceptual design. Escalation rates used were taken from DOE Departmental Price Change Index - FY 91 Guidance, August 1989 Update: 4.6% (FY 1991), 5.5% (FY 1992), 5.7% (FY 1993) and 5.8% (FY 1994).

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Sanitary system modification - Phase I
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 92-E-309

11. Method of Performance

Design and inspection will be on the basis of a negotiated architect-engineer contract. Construction and procurement will be accomplished by a competitively obtained lump sum contract.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

a. Total Project Costs	FY 1992	FY 1993	FY 1994	FY 1995	Total
1. Total facility costs					
(a) Construction Line Item.....	$ 300	$ 800	$2,200	$ 700	$4,000
(b) PE&D.....	0	0	0	0	0
(c) Expense Funded Equipment.....	0	0	0	0	0
(d) Inventories.....	0	0	0	0	0
Total.....	$ 300	$ 800	$2,200	$ 700	$4,000
2. Other Project Costs.....	0	0	0	0	0
Total Project Costs.....	$ 300	$ 800	$2,200	$ 700	$4,000

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No. 91-E-323

3. Date A-E work initiated: 2nd Qtr. FY 1991

3a. Date physical construction starts: 4th Qtr. FY 1991

4. Date construction ends: 2nd Qtr. FY 1994

5. Previous cost estimate: None

6. Current cost estimate: $6,800
Less Amount for PE & D: 0
Net Cost Estimate: $6,800
Date: January 1991

7. Financial Schedule: Fiscal Year	Authorizations	Appropriations	Obligations	Costs
1991	$6,800	$3,678	$3,678	$1,600
1992	0	2,700	2,700	1,759
1993	0	422	422	2,069
1994	0	0	0	1,372

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No. 91-E-323

8. Brief Physical Description of Project

Building 90 is a four-story structural steel office building with a partial base which contains 88,301 gross square feet and has an occupancy capacity of 380 people. It was designed to the 1955 Uniform Building Code which did not reflect the maximum design earthquake now anticipated on the nearby Hayward Fault. The structure is much too flexible and would experience extreme stresses and inelastic lateral deflections in the event of a major earthquake rendering the building uninhabitable and nonrepairable. Building 90 has also experienced continuous foundation settlement since it was constructed in 1959 due to overloading of the foundation bearing strata. Differential settlement has distorted the structural steel building frame causing additional static stresses in related columns and beams.

The proposed project will brace the building to withstand the maximum design earthquake on the Hayward Fault and eliminate stresses induced by long term differential settlement. Seismic strengthening will be accomplished utilizing exterior braced steel frames connected to the existing main structural steel frame on the north, south and west sides of the building. Seismic bracing, which will mitigate the most dangerous hazards, will be accomplished first. Differential settlement and related stresses will be reduced by jacking existing columns after bracing construction is complete. Non-structural components, which could be life safety hazards in the event of a strong earthquake, will be eliminated by bracing the suspended ceiling grid and air handling ductwork above the suspended ceiling. This work will be accomplished in parallel with bracing construction.

Sides at either end of the structure will be stabilized with "tie back" lateral support systems. These systems will consist of vertical steel beams encased in concrete caissons drilled through the slide into bedrock with steel tieback anchor sloping down from the beam tops and grouted into rock behind the

1. Title and location of project: Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No. 91-E-323

8. Brief Physical Description of Project (Continued)

slide plane. A horizontal reinforced concrete grade beam will be installed interconnecting and encasing the tops of the vertical beams. Subsurface drainage systems consisting of horizontal hydraugers will be installed to minimize hydrostatic pressure at the plane of the shear key caissons.

The use of the strengthened building will not change. No new floor space will be added.

These improvements to existing government-owned facilities will be located on land owned by the University of California and will serve or be operated in conjunction with other government-owned facilities at the Lawrence Berkeley Laboratory.

9. Purpose, Justification of Need for, and Scope of Project

In the event of a major earthquake on the nearby Hayward Fault, Building 90 would suffer irreparable damage rendering it uninhabitable for further use. A panel of independent consulting structural and geotechnical engineers has reviewed Building 90 and related dynamic structural analyses. The panel has confirmed the conclusions summarized above and recommended corrective measures described below. Although it is anticipated that the building would not experience catastrophic collapse, earthquake shaking would result in significant hazards of personal injury to the occupants as well as severe damage to equipment and personal property. In the aftermath of such an earthquake, 380 persons would have to be relocated to leased offsite space for a minimum period of three years, provided capital funding for replacement of the building were immediately available. Existing Building 90 would have to be demolished and replaced.

1. Title and location of project: Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No. 91-E-323

9. Purpose, Justification of Need for, and Scope of Project (Continued)

The out of pocket costs for remedy would be approximately $30 million not including lost time due to disruption (minimum loss of six months for DOE programs and support services requiring relocation) or the inefficiencies due to the remote location of program and support services off site for an additional two and one-half years.

During the magnitude 7.1 Loma Prieta Earthquake of October 17, 1989, Building 90 experienced strong shaking in spite of its 104km distance from the epicenter. Although structural deflections remained within the elastic range, minor non-structural damage occurred and occupants were severely affected. It is obvious that a strong earthquake on the Hayward Fault would have the effects predicted by the independent review panel.

There are large ancient landslides at either end of Building 90. The slide northwest of Building 90 has experienced downward creep movement for many years causing settlement for road paving about 60 feet from the northwest corner of the building. Although the building's foundation caissons extend below the slip plane of the landslide, the effect of precipitous downward movement of the slide during heavy ground shaking could reduce subsurface lateral support of the caissons. A portion of the ancient slide body southeast of Building 90 underlies the spread footing under the partial basement. This poorly consolidated material which contributes to differential settlement, would also be susceptible to lateral movement during heavy shaking. To ensure that these slides will not adversely affect Building 90 under either static or seismic conditions, this project will stabilize these slides through installation of tie-back walls at either end of the building.

Strengthening of the building and stabilization of the slides will protect building, occupants and DOE programs from the potentially disasterous effects of strong earthquakes on the nearby Hayward Fault and in the San Francisco Bay Area in general.

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No. 91-E-323

10. Details of Cost Estimate			Item Cost	Total Cost
a. Engineering, design, and inspection @ approximately 27% of construction costs, item b				$1,220
b. Construction costs				4,480
(1) Improvements to land			$1,410	
	Site Work	$ 155		
	Tie-Back Walls	1,255		
(2) Building improvements			2,910	
	Structural Bracing	1,725		
	Column Jacking	960		
	Non-Structural Bracing	225		
(3) Project management			160	
	Subtotal			$5,700
c. Contingency @ approximately 19% of above costs				1,100
	Total estimated cost			$6,800

Construction costs have been escalated at 1.9% for FY 1987, 4.0% for FY 1988, 4.4% for FY 1989, 4.3% for FY 1990, 4.7% for FY 1991, 5.5% for FY 1992, and 5.8% for FY 1993, compounded to midpoints of phased construction.

Conceptual design is complete.

PED requirements: none.

1. Title and location of project: Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No. 91-E-323

11. Method of Performance

Structural design and construction contract documents will be performed by subcontracted A/E design firms in close consultation with LBL, structural and geotechnical consultants. A third party structural review will be performed by a structural engineering firm specializing in earthquake engineering.

Construction will be accomplished by prequalified construction contractors under lump sum contracts awarded after competitive bidding.

Construction inspection will be performed by the LBL Plant Engineering Department with the assistance of a geotechnical consultant and an independent testing laboratory.

Some minor design and construction may be performed by LBL forces.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

	Prior Yrs.	FY 1991	FY 1992	FY 1993	FY 1994	Total
a. Total project costs						
1. Total facility costs						
(a). Construction line item	$ 0	$1,600	$1,759	$2,069	$1,372	$6,800
Total direct costs	$ 0	$1,600	$1,759	$2,069	$1,372	$6,800
b. Total related funding requirements (estimated)						
1. Operating expenses						
Directly related to facility	$ 100	$ 0	$ 0	$ 0	$ 0	$ 100

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Building 90 Seismic Rehabilitation
Lawrence Berkeley Laboratory
Berkeley, California

2. Project No. 91-E-323

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

a. Total project funding
   1. Total Facility Costs
      The major elements of the Building 90 Seismic Rehabilitation have been described in Item 8.

b. Total related funding requirements
   1. Operating Expenses Related to this Facility
      Conceptual Design was accomplished in FY 1989-90.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENEARL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative Material in Whole dollars.)

1. Title and location of project: Rehabilitation of Domestic & Firewater, Pumping & Storage System
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-121

3. Date A-E work initiated: 1st Qtr. FY 1990

3a. Date physical construction starts: 4th Qtr. FY 1990

4. Date construction ends: 2nd Qtr. FY 1992

5. Previous cost estimate: $ 1,675
Date: December 1988

6. Current cost estimate: $ 1,675
Less amount for PE&D: 0
Net cost estimate: $ 1,675
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorizations	Appropriations	Obligations	Costs
1990	$ 1,675	$ 148	$ 148	$ 7
1991	0	994	994	633
1992	0	533	533	1,035

8. Brief Physical Description of Project

This project provides for the rehabilitation of eleven (11) surface and elevated water storage tanks and eight (8) pressure filter tanks located throughout the ANL site. The work includes structural reinforcement, sandblasting, cathodic protection and painting of the tanks. The water storage tanks range in capacities from 75,000 to 650,000 gallons. Pressure filter tanks operate at an average capacity of 100 gpm.

This project also provides for rehabilitation of three (3) well water pumps through overhaul of the motors, pump assemblies and line shafts and well casings. This project also provides for replacement of the existing fire water pump.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Rehabilitation of Domestic & Firewater, Pumping & Storage System
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-121

9. Purpose, Justification of Need for, and Scope of Project

The water storage tanks provide water for the purposes of drinking, fire protection, cooling and heating, and process make-up in laboratory operations. The pressure filter tanks remove fine suspended matter from the water. These tanks have been in service for 25-35 years. Recent tank inspections have indicated exterior and interior corrosion, pitting, metal reduction and structural chipping (exceeding AWWA allowable limits) to the foundations, riser, tower and tanks. The drinking water quality is declining as interior tank metal surfaces corrode and become dissolved in the main water supply system. Furthermore, the tanks, ladders, and platforms are not in compliance with current OSHA Standards.

Present conditions are causing increased maintenance cost and system downtime and have a potential of impairing the laboratory's ability to respond properly to a fire emergency during these downtimes.

The well water pumps have operated for 20-35 years. Two of these pumps provide over 50% of the water supply for the laboratory's drinking, fire protection, heating and research process operations. Well inspections have indicated declining water levels in the aquifer supply and considerable decline in hydraulic pumping capacity from pump wear over time. These two conditions have caused an inadequate plant water supply resulting in increased operating and maintenance costs and the potential of threatening the laboratory's ability to operate efficiently. Furthermore, only one pump is equipped for stand-by emergency power in the event of a system power failure. Since this power source is undersized for rated pumping conditions, a new generator is required to ensure the laboratory of a dependable water source during a site-wide power outage.

The fire water pump has operated for more than 30 years. Most of the parts are worn out and the housing indicated heavy corrosion. This condition has resulted in an unreliable source of water for the sprinkler system and the house outlets for the coal bunkers.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Rehabilitation of Domestic & Firewater, Pumping & Storage System, Argonne National Laboratory (ANL), Argonne, Illinois

2. Project No.: 90-R-121

10. Details of Cost Estimate a/

	Total Cost
a. Engineering, design and inspection @ approximately 15% of construction costs, item b	$ 182
b. Construction	1,215
Subtotal	1,397
c. Contingency @ approximately 20% of above costs	278
Total estimated project cost	$1,675

a/Based upon a completed conceptual design and current cost data. Cost escalation rate for 1987 - 1.1%; for 1987 - 2.5%; for 1988 - 4.0% for 1989 - 4.8%; for 1990 - 5.3%; and for 1991 - 5.6%.

11. Method of Performance

Engineering, design and inspection will be performed by laboratory engineering personnel, aided by outside A/E firms. Construction will be accomplished by fixed-price contract awarded on the basis of competitive bidding.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
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CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH & DEVELOPMENT - PLANT & CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Fire protection upgrade
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2. Project Number: 90-R-118

3. Date A-E Work Initiated: 1st Qtr. FY 1990

3a. Date physical construction starts: 2nd Qtr. FY 1991

4. Date Construction: 2nd Qtr. FY 1993

5. Previous Cost Estimate: None

6. Current Cost Estimate: $3,300
Less Amount for PE&D: 0
Net Cost Estimate: $3,300
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorizations	Appropriations	Obligations	Costs
1990	$ 3,300	$ 1,321	$ 1,321	$ 50
1991	0	1,967	1,967	1,550
1992	0	12	12	1,500
1993	0	0	0	200

8. Brief Physical Description of Project

This project upgrades fire protection and life safety installations in key facilities at the Oak Ridge National Laboratory (ORNL). Approximately one-half million sq. ft. of presently unprotected and inadequately protected building space in the Central Research and Administration Building and in the ORNL Atomic Physics Complex will be provided with appropriate new and upgraded fire protection and life safety capabilities.

1. Title and Location of Project: Fire protection upgrade
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2. Project Number: 90-R-118

8. Brief Physical Description (continued)

This project will reduce the fire loss risk in the Central Research and Administration Building by providing the following: (1) installation of wet pipe fire suppression sprinklers in presently unprotected office areas and associated corridor space; (2) conversion of existing preaction sprinkler systems and associated sensing and detection devices; and (4) installation of positive ventilation in the Chemical Stores Area. Cleanup of asbestos contamination in some areas will precede installation of sprinkler and fire alarm components in these areas.

A new underground water line utilizing pipe up to 16-inches in diameter, and strategically located fire hydrants, will be constructed to extend through the ORNL Atomic Physics Complex to ensure a supply of fire protection water for the buildings comprising the complex.

First year funding for the project will provide for engineering of the project and preliminary construction activities.

9. Purpose, Justification of Need, and Scope of Project:

The purpose of this project is to rectify major fire protection and life safety deficiencies identified during Factory Mutual Research Corporation (FM) surveys of ORNL facilities conducted in 1973, 1977 and 1985, and to improve the risk level of fire protection. The lack of automatic fire suppression sprinkler systems in occupied office areas and service areas in the main building and building wings of the ORNL Central Research and Administration Building presents a serious risk of a multi-million dollar fire loss and major interruption of program activities. DOE Order 5480.1 requires automatic fire suppression sprinkler systems to limit property loss, and the Factory Mutual Research Corporation (FM) surveys of ORNL facilities recommended this protection in their three survey reports of 1973, 1977, and 1985.

The preaction fire suppression sprinkler systems, presently protecting occupied and storage areas in the wings of the Central Research and Administration Building, have become inappropriate due to changes, over time, in area utilization. Conversion of these spaces to offices and storage of records and documents in the "attic" areas require a faster sprinkler response, at lower temperatures due to the type and nature of combustibles in the areas to be protected. The conversion to wet-pipe systems would eliminate maintenance-intensive electrical heat detection systems and would actuate fire suppression sprinkler heads at a more appropriate lower temperature.

1. Title and Location of Project: Fire protection upgrade
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2. Project Number: 90-R-118

9. Purpose, Justification of Need, and Scope of Project (continued)

The present fire alarm control systems consist of seventeen antiquated master boxes and control panels, distributed throughout the Central Research and Administration Building for annunciating the general location of a fire emergency. Replacement of these seventeen systems with four new systems, strategically located, will reduce the risk to fire personnel in identifying the emergency site and ensure more prompt response to alarms.

The Chemical Stores Area, located centrally in the Main Wing of the Central Research and Administration Building, is the main distribution point for research laboratory chemicals including volatile and flammable organic liquids. Positive ventilation is required to minimize the possibility of flammable vapor accumulations at the floor level from minor leaks or spills of flammable liquids. This action is recommended in the FM survey reports and provides improved risk in accordance with DOE Order 5480.1, Chapter VII.

The ORNL Atomic Physics Complex consists of buildings housing the Holifield Heavy Ion Research Facility (HHIFR), physics laboratories, offices and support systems. It is presently supplied with fire protection water by a single, marginally reliable underground pipeline installed in 1943. The inadequacy of this supply to protect a key ORNL resource was recognized in the FM survey by their recommendation for a pipeline loop for fire protection water. Support for this measure is also provided by DOE Order 5480.1 requiring minimization of property loss risk.

Alternatives

There is no viable alternative for this project to provide the fire protection and life safety measures for over one-half million S.F. of unprotected and marginally protected building space. The replacement cost of this area is estimated to be about $50 million (based on $100 per SF), exclusive of equipment and materials, programmatic activity disruptions and the cost of personnel relocation.

Estimated Incremental Operating Costs for Fire Protection Upgrade

The estimated incremental operating cost for the fire protection and life safety installations provided by this project indicate annual savings of approximately $15,000. These savings are the difference in costs between the expected maintenance and inspection costs for the present systems and those for the new and retrofitted systems.

1. Title and Location of Project: Fire protection upgrade
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2. Project Number: 90-R-118

10. Details of Cost Estimate:*

		Item Cost	Total Cost
a.	Engineering, design and inspection @ approximately 14% of construction costs, item b		$ 350
b.	Construction costs		2,550
	(1) Building Modifications	$2,020	
	a. New sprinklers and converted sprinklers	$1,350	
	b. Ventilation modifications	40	
	c. New fire alarm systems	630	
	(2) Outside Utilities	530	
	Subtotal		$2,900
c.	Contingency at approximately 15% of construction costs		400
	Total Project Cost		$3,300

11. Method of Performance

Design and inspection for the fire protection and life safety installation provided by this project shall be performed under a negotiated architect-engineer contract. To the extent feasible, procurement and construction for this project shall be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bids.

12. Funding Schedule of Project Funding and Other Related Funding Requirements:

Not required.

*Based on a completed conceptual design.

1. Title and Location of Project: Fire protection upgrade
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2. Project Number: 90-R-118

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:

Not required.

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MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Slope and Seismic Stabilization Above the Bevatron, Building 51, and Mechanical Shops, Building 77 Lawrence Berkeley Laboratory (LBL) Berkeley, California

2. Project No.: 90-R-117

3. Date A-E work initiated: 2nd Qtr. FY 1990

3a. Date physical construction starts: 3rd Qtr. FY 1991

4. Date construction ends: 2nd Qtr. FY 1993

5. Previous cost estimate: None
Date: None

6. Current cost estimate: $ 3,700
Less Amount for PE & D: 0
Net Cost Estimate: $ 3,700
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorizations	Appropriations	Obligations	Costs
1990	$ 3,700	$ 493	$ 493	$ 43
1991	0	2,401	2,401	1,687
1992	0	806	806	1,525
1993	0	0	0	445

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Slope and Seismic Stabilization Above the Bevatron, Building 51, and Mechanical Shops, Building 77 Lawrence Berkeley Laboratory (LBL) Berkeley, California

2. Project No.: 90-R-117

8. Brief Physical Description of Project

A long-term program at the Lawrence Berkeley Laboratory has succeeded in stabilizing all but two known landslide areas that could cause significant damage in the event of a major earthquake or slide triggering action. The two areas that have low safety factors against sliding are located east of the Bevatron (Building 51) and north of the Mechanical Shops (Building 77) respectively. This project will stabilize these slopes by reinforcing the central portion of each of the two landslides against lateral movement due to static and seismic forces.

This project consists of planning, design and construction of two lateral support systems, one for each of the two landslide areas. These lateral support systems will consist of vertical structure steel columns encased in cast-in-place concrete soldier piles (caissons) with an interconnecting reinforced concrete grade beam and grouted high strength steel tieback anchors. The tieback anchors will slope downward into the hill from the top of the structural steel columns into competent rock beyond the slide plane. Once in place tiebacks will be tensioned and grouted. Also included in the project will be a drainage system to reduce hydrostatic pressures which might be imposed by the impedance of water flow caused by the new lateral support system. This will be acccomplished by the replacement of disturbed horizontal drains and improvements to the system that presently exists.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Slope and Seismic Stabilization Above the Bevatron, Building 51, and Mechanical Shops, Building 77 Lawrence Berkeley Laboratory (LBL) Berkeley, California

2. Project No: 90-R-117

9. Purpose, Justification of Need for, and Scope of Project

The large slide body east of the Bevatron has a static factor of safety of 1.2 which is too low for this laboratory's seismic zone. The lower portion of this slide body is located just above the Bevatron. The static safety factor varies with the season dependent upon moisture content. When the slide debris becomes saturated, this factor sometimes drops to less than 1.0, as evidenced by inclinometer measurement of minor creep movements across the slide.

In 1976, soils engineering consultants, Harding-Lawson Associates (HLA), performed a dynamic analysis of the slide body above the Bevatron in an attempt to estimate probable downslope movement in the event of a Richter magnitude 7.0 earthquake on the nearby Hayward Fault. Although no known active faults cross the slide area, the region is seismically active and could be subject to intense ground shaking. The HLA report of April 21, 1976 indicated that the slide body could probably slip downward between 3-1/2 and 11 feet. In this event, Building 46 and the adjacent bridge would ride the slide downhill in an erratic differential movement. The probable result would be the collapse of Building 46 and the movement of the bridge west and downhill towards the Bevatron posing severe threat to life safety. The incoherent mass of soil, rock, and debris loosened by the slide would move down the slope into the Bevatron Substation and Motor Generator room, threatening personnel safety and disrupting operations at the Bevatron.

The slope north of the Mechanical Shops consists of a fill slope above the upper retaining wall behind the shops. In 1969, a compact fill slope with subdrainage was installed at the northeast corner of the building above the loading dock. Measurements from slop inclinometers installed through the upper slope fill indicate that the slope is creeping southwest at a slow rate (i.e., static factor of safety less than 1.0).

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Slope and Seismic Stabilization Above the Bevatron, Building 51, and Mechanical Shops, Building 77 Lawrence Berkeley Laboratory (LBL) Berkeley, California

2. Project No.: 90-R-117

9. Purpose, Justification of Need for, and Scope of Project (Continued)

In 1979, HLA reported the probable effects from earthquake shaking behind Building 77. In the event of a Richter magnitude 7.0 earthquake on the Hayward Fault new sliding will be propagated. Slope failure will occur at the base of the fill, and incoherent material will flow over the two retaining walls and fill the area between the lower retaining wall and the north wall of Building 77. This would damage the northern section of Building 77 and disrupt operations within the Mechanical Shops Building.

In addition, the use of Grizzly Gate (one of three main gates) would be lost for a period of from one to two years, posing a severe hindrance to Laboratory access. The overall loss of time and capital that would result from the failure of one or both of the unstable slopes would be substantial in comparison to the cost of the stabilization measures that are proposed. The stabilization of the two slopes will protect the Bevatron, Building 46, and the Mechanical Shops against serious damage in the event of a strong earthquake or slide triggering action and mitigate the life safety hazard at Building 46. The operations in both Buildings 46 and 77 impact virtually every program at the laboratory. Building 46 houses electronics and electrical engineering support staff and Building 77 contains the central shops for most fabrication and repair services for the entire laboratory.

The potential cost to repair damage due to a magnitude 7.5 earthquake on the nearby Hayward Fault has been estimated for each of the two slide areas; $10,000,000 for slide above the Bevatron and $7,000,000 for the slide above the Mechanical Shops Building. Approximately 170 people occupy Building 46 where the potential for collapse is most significant. Altogether, Building 46, 51, 51A and 77 house about 330 employees with about 240,000 gross square feet of space, most of which is heavy laboratory and shop space containing very expensive scientific and support equipment.

This project will complete a long-term program at LBL which has succeeded in stabilizing other known landslide areas that could cause significant property damage in the event of a strong earthquake or static movement due to excessive soil moisture.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Slope and Seismic Stabilization Above the Bevatron, Building 51, and Mechanical Shops, Building 77 Lawrence Berkeley Laboratory (LBL) Berkeley, California

2. Project No.: 90-R-117

10. Details of Cost Estimate a/

	Item Costs	Total Cost
a. Engineering, design and inspection @ approximately 20% of construction costs, item b		$ 500
b. Construction costs		2,530
(1) Improvements to Land	$2,530	
Subtotal		$ 3,030
c. Contingency @ approximately about 22% of above costs		670
Total estimated cost		$ 3,700

a/ Conceptual Design.
Construction costs have been escalated at 1.9%, for FY 1987, 3.4% for FY 1988, 4.3% for FY 1989, 4.8% for FY 1990, 5.0% for FY 1991, and 2.8% for FY 1992, compounded to midpoint of construction, March 1992, for a total of 24.8%.
PED requirements: none

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Slope and Seismic Stabilization Above the Bevatron, Building 51, and Mechanical Shops, Building 77 Lawrence Berkeley Laboratory (LBL) Berkeley, California	2. Project No.:	90-R-117

11. Method of Performance

Engineering, design and inspection will be performed by LBL's Plant Engineering Department. Construction and procurement will be accomplished by fixed-price subcontracts awarded on the basis of competitive bids.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

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MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Electrical systems upgrade
Oak Ridge National Laboratory (ORNL)
Oak Ridge, Tennessee

2. Project No. 90-R-113

3. Date A-E work initiated: 1st Qtr. FY 1990

3a. Date physical construction starts: 3rd Qtr. FY 1990

4. Date construction ends: 4th Qtr. FY 1991

5. Previous cost estimate: $2,300
Date: December 1988

6. Current cost estimate: $ 2,300
Less amount for PE&D: 0
Net cost estimate: $ 2,300
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1990	2,300	843	843	215
1991	0	1,449	1,449	1,085
1992	0	8	8	1,000

8. Brief Physical Description of Project

The project will replace aged, obsolete, and unreliable equipment and hardware in the Oak Ridge National Laboratory (ORNL) electrical system. Two existing 13.8kV overhead distribution lines will be rebuilt and one 2.4kV overhead distribution line will be recircuited from an existing 13.8/2.4 kV substation. Antiquated 480 volt switchgear and service will be installed to replace an old transformer at the main entrance and guard portal. Two obsolete and unreliable series street lighting systems will be replaced with more efficient high pressure sodium lighting. Existing overhead signal cables will be relocated underground along ORNL's Central Avenue. First year funding will be utilized for design and related activities.

1. Title and location of project: Electrical systems upgrade
Oak Ridge National Laboratory (ORNL)
Oak Ridge, Tennessee

2. Project No. 90-R-113

9. Purpose, Justification of Need for, and Scope of Project

The purpose of the proposed project is the restoration of deteriorated distribution lines and to replace old and obsolete equipment needed to ensure a reliable source of electrical power as well as to meet the demands of the continuing research programs at ORNL. The FY 1981 Upgrade ORNL Primary Substation project upgraded ORNL's primary substation. The FY 1985 Primary Electrical Distribution System Restoration project restored sections of ORNL's electrical distribution system. This project completes the systematic rehabilitation of ORNL's electrical distribution system from the primary substation to the local substations.

Most of ORNL's electrical systems were built between the 1940s and the 1960s, making the existing systems roughly 20 to 40 years old. The systems designated for replacement and restoration in this project have already served beyond their life expectancy, and increased maintenance outages are anticipated in order to keep them in operating condition. The improved reliability of the electrical distribution system is essential to reduce the disruption of electrical services to the Laboratory users.

The street-light circuits to be restored are obsolete incandescent series lighting systems. The circuits encircle the Central Research Complex and serve the main parking lot. This area has the highest population concentration and is occupied around the clock. Currently, the deteriorated system is functional only about 50% of the time, leaving large portions of the Laboratory's streets in darkness and creating marginal safety and security situations. The new lighting system will contain efficient current-technology lights, which will reduce operating and maintenance costs by more than 75% while significantly improving the light level.

The overhead signal circuits currently along Central Avenue will be relocated to existing underground conduits. This relocation will place these critical circuits where they will be virtually invulnerable to disruption due to weather, vehicle accident, or other actions, and will permit pole lines that are currently located within a major pedestrian walkway to be eliminated.

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Electrical systems upgrade
Oak Ridge National Laboratory (ORNL)
Oak Ridge, Tennessee

2. Project No. 90-R-113

10. Details of Cost Estimate */

	Total Cost
a. Engineering, design and inspection at approximately 14% of construction costs, item b	$ 240
b. Construction costs (outside utilities)	1,795
Subtotal	2,035
c. Contingency @ 13% of above costs	265
Total	$ 2,300

*The cost estimate is based on a conceptual design completed in January 1986 at a cost of $87,000 and escalated to the period of performance.

11. Method of Performance

Design and inspection shall be performed under a negotiated architect-engineer contract. To the extent feasible, construction and procurement shall be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bidding.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Original Labsite Substation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 90-R-111

3. Date A-E work initiated: 3rd Qtr. FY 1990

3a. Date physical construction starts: 4th Qtr. FY 1991

4. Date construction ends: 4th Qtr. FY 1992

5. Previous cost estimate: $ 2,950
Date: December 1988

6. Current cost estimate: $ 2,950
Less amount for PE&D: 0
Net cost estimate: $ 2,950
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1990	$ 2,950	$ 247	$ 247	$ 57
1991	0	0	0	190
1992	0	2,703	2,703	0
1993	0	0	0	2,000
1994	0	0	0	703

8. Brief Physical Description of Project

This project is the second of several elements to improve the reliability of the electrical distribution system of the entire laboratory.

This project will install a new 12kV substation south of Building 6 and provide for new 12kV distribution circuits to laboratory facilities in the Original Laboratory Site area. The existing substation at Building 6 is presently served by one 12kV supply line. Distribution of power to approximately 25 buildings is accomplished through one main circuit breaker and eight (8) fused disconnect switches. The existing substation also includes a voltage regulator which compensates for incompatible voltage taps on downstream transformers. The new substation will initially augment the existing substation and after a transition period, provide all power to the original laboratory site area.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Original Labsite Substation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 90-R-111

8. Brief Physical Description of Project (Continued)

The new substation will be a double ended configuration and utilize 500 mVA, 13.8kV metalclad switchgear. The switchgear will be housed in an outdoor metal enclosure and include a protected isle. The switchgear will be located on a concrete slab of about 1,000 sq. ft. From the substation, 12kV power circuits will radially branch out and distribute electrical energy to building and laboratory substations. These circuits will utilize 250 MCM and 500 MCM power cables which will be installed in new and existing underground ducts.

The new government-owned facilities will be located on land owned by the University of California and will serve Government-owned facilities at the Lawrence Berkeley Laboratory.

9. Purpose, Justification of Need for, and Scope of Project

The existing electrical distribution system in the Original Laboratory Site is 40 years old. One-third of all laboratory facilities are served by this system. Deterioration of 12kV distribution cables and switching equipment has resulted in power outages and interruption of programmatic activities. Most of the equipment has reached the end of its useful life and is therefore subject to increased maintenance needs. The lack of appropriate ground fault protection on individual circuits prevents confinement of power failures to the affected area, thus resulting in widely distributed outages. Current and future programmatic activities require reliable and economic power. In particular, the medical treatment facility will be severely impaired by increasing power failures. Furthermore, new laboratory facilities such as the Advanced Materials Laboratory (AML), require new power feeders which can only be accommodated at the new substation.

In summary, the existing substation and distribution system no longer meet the laboratory's operating requirements for the following reasons:

1. Existing substation equipment and 12kV cable system are aged and subject to power failure.

2. Existing system does not permit localization of power failures. Outages unnecessarily affect numerous facilities and programmatic activities.

3. Existing equipment cannot be expanded to segregate existing circuits and to accommodate new distribution circuits for new laboratory developments such as the AML.

1. Title and location of project: Original Labsite Substation
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 90-R-111

10. Details of Cost Estimate a/	Item Costs	Total Cost
a. Engineering, design and inspection @ approximately 19% of construction costs, item b.		$ 400
b. Construction		2,150
(1) Utilities	935	
(2) Special facilities	1,155	
(3) Project Management	60	
Subtotal		2,550
e. Contingency @ approximately 16%		400
Total estimated cost		$2,950

a/Construction costs have been escalated at 1986 - 1.3%; 1987 - 1.9%; for 1988 - 3.9% for 1989 - 4.2%; for 1990 - 5.0%, for 1991 - 0.9%, compounded to midpoint of construction, November 1991, for a total of 24.1% Conceptual design is complete.

11. Method of Performance

Engineering design will be performed under a negotiated Architect/Engineer subcontract. Inspection and some engineering will be done by LBL personnel. Construction and procurement will be accomplished by fixed price subcontracts awarded on the basis of competitive bids.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Instrumentation Support Laboratory Rehabilitation - Building 70A
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 90-R-110

3. Date A-E work initiated: 2nd Qtr. FY 1990

3a. Date physical construction starts: 3rd Qtr. FY 1991

4. Date construction ends: 3rd Qtr. FY 1992

5. Previous cost estimate: $ 2,000
Date: December 1988

6. Current cost estimate: $ 2,100
Less amount for PE&D: 0
Net cost estimate: $ 2,100
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorizations	Appropriations	Obligations	Costs
1990	$ 2,000	$ 197	$ 197	$ 29
1991	100	0	0	168
1992	0	1,903	1,903	0
1993	0	0	0	1,000
1994	0	0	0	903

8. Brief Physical Description of Project

This project will rehabilitate 4,700 sq. ft. of office and laboratory space on the third floor, Building 70A, Nuclear Sciences, Materials and Molecular Research, and Earth Sciences to provide improved and upgraded clean-room facilities.

These improvements to existing government-owned facilities are located on leased land owned by the Regents of the University of California.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Instrumentation Support Laboratory Rehabilitation - Building 70A Lawrence Berkeley Laboratory (LBL) Berkeley, California

2. Project No.: 90-R-110

9. Purpose, Justification of Need for, and Scope of Project

This project will rehabilitate the facilities that provide instrumentation support for nuclear science, high energy physics, and health and environmental research. The obsolescence of existing instrumentation support facilities severely limits this support. This obsolescence will certainly worsen due to the higher level of sophistication which will be required of high technology instrumentation in the future.

The main purpose of the facility is for the fabrication and development of semi-conductor detectors and associated cryostats and electronics. This includes assembly and testing of highly sophisticated vacuum/ cryogenic systems. The present facility lacks the basic cleanliness required for these operations.

This laboratory rehabilitation will permit significant improvement in the performance and yield of devices and systems used in a broad range of DOE programs.

10. Details of Cost Estimate a/

	Item Costs	Total Cost
a. Engineering, design and inspection @ approximately 18% of construction costs, item b		$ 270
b. Construction		1,475
(1) Buildings	1,180	
(2) Special Facilities	240	
(3) Project Management	55	
c. Standard equipment		10
d. Demolition and removals		70
Subtotal		1,825
e. Contingency @ approx. 15%		275
Total estimated cost		$2,100

a/ Construction costs have been escalated at 1987 - 1.9%; for 1988 - 4.0% for 1989 - 4.4%; for 1990 - 4.3%, for 1991 - 4.7%, compounded to midpoint of construction, October 1991, for a total of 19.7%. Conceptual design is complete.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Instrumentation Support Laboratory Rehabilitation - Building 70A Lawrence Berkeley Laboratory (LBL) Berkeley, California

2. Project No.: 90-R-110

11. Method of Performance

Design will be accomplished by UC-LBL Plant architect-engineers, with some support and assistance by private consultants. Construction and procurement will be accomplished by fixed price contract awarded on the basis of competitive bidding. Some minor preparation and construction may be performed by LBL forces.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Central shops alteration and addition
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 90-R-108

3. Date A-E work initiated: 1st Qtr. FY 1990

3a. Date physical construction starts: 1st Qtr. FY 1990

4. Date construction ends: 3rd Qtr. FY 1992

5. Previous cost estimate: $1,680
Date: December 1988

6. Current cost estimate: $ 1,680
Less amount for PE&D: 0
Net cost estimate: $ 1,680
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1990	$ 1,680	$ 306	$ 306	$ 2
1991	0	1,366	1,366	1,376
1992	0	8	8	302

8. Brief Physical Description of Project

This proposal provides for the construction of a new building having a gross area of about 11,400 s.f. and an approximate volume of 185,000 cubic feet. About 10,430 s.f. will be functional space or a net to gross area of 92%. The building will allow the relocation of all the Laboratory's welding shop. Those functions are presently housed in low bay inefficient 40 year-old World War II structures.

1. Title and location of project: Central shops alteration and addition
Brookhaven National Laboratory
Upton, New York

2. Project No. 90-R-108

8. Brief Physical Description of Project (continued)

This proposal provides for the construction of a new addition to the existing "Heavy Machine Shop" (Building No. 479). The addition will be the first phase of the consolidation of all research machining facilities. The addition will permit the demolition or excessing of the existing welding shop (Building No. 208).

Construction will be of the non-combustible type. In general, the building will be a steel frame with concrete floors. All walls and roofs will meet or surpass energy conservation standards and glazed areas kept to a minimum. All overhead doors will be insulated and power operated. The buildings design also will be inherently energy conserving via its mass to exposed exterior surface ratio and in accordance with Chapter 10, Part 101-20, 1/6-3 of the Federal Property Management Regulations. Finished areas will be resilient tile flooring and/or hardened concrete floors.

Electrical power of required voltage and current capacities will be incorporated in accordance with the various programs. Lighting levels and equipment will be designed to meet the latest energy conservation requirements and to assure low maintenance costs.

A tabulation and description of spaces and related areas for the proposed building follows:

Space	Area (s.f.)
Degreasing	660
Sandblasting	720
Quality control	1,200
X-ray	510
Planning	2,380
Turret lathes and grinding	2,108
Welding	2,852
Total functional areas	10,430
Non-functional areas	970
TOTAL	11,400

1. Title and location of project: Central shops alteration and addition
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 90-R-108

9. Purpose, Justification of Need for, and Scope of Project

This project is part of an overall facilities upgrading plan called for in the Laboratory's Site Development Plan. An addition will be made to the Heavy Machine Shop, Building 479, with an area of some 11,400 square feet contiguous to the existing high bay area. It will consist of all high bay area and will contain two bridge cranes, one with a ten ton capacity and one with a twenty ton capacity. The additional space will be used to contain machining and welding of large fabrications. Some of the equipment now located under a three ton crane in the Heavy Machine Shop original building will be moved to this area as will several welders along with their associated welding equipment. Sand blasting operations and equipment, inspection area, and x-ray facility which is now housed in building 208 will also be relocated to this new facility.

The Central Shops Division currently has its operations contained in various buildings as follows:

Building No.	Function	Gross Area	Constructed
206	Metals cutting	5,200	1942
207	Sheet metal	8,000	1942
208	Welding	9,300	1943
462	Light machine shop	20,300	1945
	Radioactive machine shop		
462A	Storage	500	1980
473	Electron beam welding		
	Machine maintenance	4,300	1942
479	Heavy machine shop	22,900	1946
1006	Long Bed Machining (Temp. Use)	2,500	1981
1008	Uranium stamping (Temp. Use)	2,500	1981
Various	Large weldment work	*	
Outdoors	Large weldment work	**	

* as space is free
** when space is available

1. Title and location of project: Central shops alteration and addition
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 90-R-108

9. Purpose, Justification of Need for, and Scope of Project (continued)

Building Nos. 206, 207, and 208 are former Army quartermaster warehouses constructed in the early 1940's. Building 462 and 479 are wall bearing masonry Army gymnasiums constructed about 1944. The latter have concrete floors with steel and wood frame roof systems and are intended to be saved and modified. Furthermore, Building No. 462 is planned to be converted for structural biology research and the latter (No. 479) will be expanded to become the core of the Central Shops Division.

Building No. 462A is prefabricated steel building installed on a concrete slab. Building No. 473 is a high bay masonry building constructed during World War II as the central boiler plant for most of the Army's Camp Upton. This building is eventually planned to be demolished. Building No. 1006 and 1008 were completed in 1982 as part of the proposed colliding accelerator complex and will become a vital part of the proposed Relativistic Heavy Ion Collider (RHIC) project.

This proposed project is considered a vital part of the Laboratory's revitalization and was identified on the basis of the following criteria:

a. It is consistent with revitalization goals, including environmental, safety, and health requirements.
b. It addresses current deficiencies.
c. It corrects a portion of certain deficiencies and is within Agency funding limitations.
d. It has sound economic justification and starts the process of consolidating various functions now scattered around the site.

Brookhaven National Laboratory's goal is to consolidate and modernize all programmatic shop facilities so that they are safe and efficient, and that these facilities will provide the largest research dollars worth of product for the amount expended to manufacture experimental equipment.

1. Title and location of project: Central shops alteration and addition
Brookhaven National Laboratory
Upton, New York

2. Project No. 90-R-108

9. Purpose, Justification of Need for, and Scope of Project (continued)

A survey of projected costs for the Central Shops Division operations was conducted for FY 1985. The following are the typical direct costs which will be averted when this construction project is put into operation. All costs are FY 1985 dollars.

$334.975 x 1/15 = $385.221 in FY 1988 dollars

Payback on investment = $\frac{1,600,000}{385,221} = 4.15$ years

In addition, it should be noted that, due to the cramped aisle space and insufficient crane capacity and working height, there is a certain amount of risk involved when large weldments are fabricated in the current facility. Everything is done to minimize this risk, but it is, and will continue to be, present when we are asked to perform this type of fabrication.

10. Details of Cost Estimate*

	Item Costs	Total Cost
a. Architect-Engineer, design and inspection at approximately 10% of construction costs, Item b		$ 139
b. Construction costs		1,389
(1) Improvements to land	$ 46	
(2) New addition (11,400 sq. ft. @ $84.21)	1,008	
(3) Demolition	10	
(4) Special equipment, 2 cranes (1 @ 10T, 1 @ 20T)	325	
Subtotal		1,528
c. Contingency @ approximately 10% of above costs		152
Total		$ 1,680

*The estimate is based on a conceptual design which is 100% complete. Escalation rates are in conformance to the guidelines prescribed by the Department of Energy, August 1986. They are based on the material and labor data contained in the Energy Supply Planning Model and escalation rates forecasted by Data Resources, Inc. (DRI). Escalation rates for FYs 1987, 1988, 1989 and first quarter 1990, are respectively 3.1%, 4.2%, and 4.9% and 1.3%.

1. Title and location of project: Central shops alteration and addition
Brookhaven National Laboratory
Upton, New York

2. Project No. 90-R-108

11. Method of Performance

Building design will be on the basis of negotiated architect-engineer contract. Construction and procurement will be accomplished by a fixed contract and purchase orders awarded on the basis of competitive bidding.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
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ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
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MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Boiler replacement
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 90-R-107

3. Date A-E work initiated: 1st Qtr. FY 1990

3a. Date physical construction starts: 3rd Qtr. FY 1990

4. Date construction ends: 1st Qtr. FY 1992

5. Previous cost estimate: $3,520
Date: December 1988

6. Current cost estimate: $ 3,520
Less amount for PE&D: 0
Net cost estimate: $ 3,520
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1990	$ 3,520	$ 319	$ 319	$ 0
1991	0	3,182	3,182	970
1992	0	19	19	2,550

8. Brief Physical Description of Project

This project provides for the installation of a new boiler, of about 125,000 lbs. per hour, at the Central Steam Facility. The new unit will be equipped with an economizer, soot blowers, forced-draft fan with electric and steam turbine drives, feed water regulator. The proposed boiler will have high efficiency burners capable of firing 100% light feedstock (alcohols, mineral spirits, solvents, etc.) blends of No. 6 fuel oil and light feedstocks through 100% heavy residual fuel oil. In addition, the boiler will be equipped with low excess air firing combustion controls - safety devices and alarms, corten stack, etc. The boiler will be connected to associated support systems, both new and modified, consisting of: combustion air, fuel oil, burner management system, deaeration, steam, electrical, compressed air, drainage, etc. A new feedwater and chemical treatment system will be required for the boiler.

1. Title and location of project: Boiler replacement
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 90-R-107

8. Brief Physical Description of Project (continued)

Also included are the required building modifications, to the Central Steam Facility, for accommodating the new boiler configuration and auxiliary equipment arrangement. These building alterations relate essentially to reinforcing the structural steel members, raising a section of the roof line and the removal and replacement of building sidewall to facilitate rigging in the new boiler.

9. Purpose, Justification of Need for, and Scope of Project

The purpose and justification for the installation of a replacement boiler in BNL's Central Steam Facility is as follows:

- BNL currently has zero reserve steam capacity to insure continuity of programmatic operations. By 1990, there will be a shortfall of over 20,000 pounds per hour of required capacity.

- The boiler replacement is required to assure adequate firm capacity to meet the Laboratory's 1991 steam demands.

- The BNL boilers are approaching the end of their economic life. The standard service life for a boiler is 25 years according to "Accounting Practices and Procedures Handbook" published by the DOE Office of the Controller. Boilers 1A and 4 have had multiple tube failures causing extended unscheduled outages. Boiler ages as of 1991 are:

  Boiler 1A - 28 years
  Boiler 4 - 30 years
  Boiler 5 - 26 years

- The proposed boiler is a replacement for aging (1963), unreliable, inefficient and undersized Boiler 1A.

- The proposed boiler will have more efficient heat transfer, burners and controls. It is expected to be about 10% more efficient than the existing Boiler 1A.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Boiler replacement
Brookhaven National Laboratory (BNL)
Upton, New York

2. Project No. 90-R-107

10. Details of Cost Estimate*

	Item Cost	Total Cost
a. Architect-Engineer, design and inspection at approximately 14% of installation costs, item b		$ 376
b. Installation costs		2,685
Boiler	$2,015	
Boiler accessories	64	
Boiler plant modifications	147	
Mechanical work	355	
Electrical work	104	
Subtotal		3,061
c. Contingency @ 15% of above costs		459
Total		$ 3,520

*The estimate is based on a conceptual design report which was completed in March 1985 and updated in December 1986 and March 1987. The estimates are based on costs for labor, equipment, and materials for various types of construction work at Brookhaven National Laboratory. Current costs have been escalated in accordance with the DOE's August 1986 DRI Index for Construction Projects. Escalation rates for FY 1987, FY 1988, FY 1989, and FY 1990 through the midpoint of construction are respectively 3.1%, 4.2%, 4.9%, and 5.2%.

11. Method of Performance

Design, engineering, major procurement, construction, inspection and program administration will be accomplished by the operating contractor (BNL) by contracting with local Architectural/Engineering firms. To the extent feasible, construction and procurement will be accomplished by fixed-price contracts and purchase orders awarded on the basis of competitive bidding.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Boiler replacement Brookhaven National Laboratory (BNL) Upton, New York	2. Project No. 90-R-107

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
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MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Transportation Facility Replacement
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-100

3. Date A-E work initiated: 1st Qtr. FY 1990

3a. Date physical construction starts: 3rd Qtr. FY 1990

4. Date construction ends: 1st Qtr. FY 1992

5. Previous cost estimate: $4,100
Date: December 1988

6. Current cost estimate: $ 4,100
Less amount for PE&D: 0
Net cost estimate: $ 4,100
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1990	$ 4,100	$ 345	$ 345	$ 12
1991	0	1,377	1,377	820
1992	0	2,378	2,378	1,650
1993	0	0	0	1,618

8. Brief Physical Description of Project

This project will provide a new building to house the activities of the Transportation and Grounds Service groups at the ANL Illinois site. The facility will centralize the Vehicle Maintenance and Repair, Driving and Rigging, and Grounds Maintenance activities into one facility. The building will provide offices for administrative personnel, vehicle service areas and equipment, parts and tools storage, fuel storage and dispensing facilities, and a vehicle washing facility. Lunch room, locker room and toilet facilities will also be provided for the employees of the service groups. Site work and related utilities, including steam, sewers, water, gas, electric power, telephone, access drives, parking areas and landscaping, will also be provided.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transportation Facility Replacement
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-100

8. Brief Physical Description of Project (Continued)

The approximately 30,000 gross sq. ft. building will be a single story varying height (12 to 27 ft) preengineered ridged frame metal building. The exterior will consist of metal curtain-wall-panels with a small amount of face-brick insulated cavity walls at the administration area. Roofing will be standing-seam aluminum-coated panels. Interior materials generally consist of concrete block and exposed metal walls with concrete on grade floors. The 5,500 sq. ft. employee service and administrative area will have a vinyl floor and acoustical tile ceiling. The design of this facility will include provisions for energy conservation. The nine temporary substandard facilities now occupied by the service group will be demolished after completion of the new building. The cost of demolishing the vacated structures is included in the total project cost.

9. Purpose, Justification of Need for, and Scope of Project

The purpose of the project is to relocate and consolidate the ANL Illinois Site's Transportation and Grounds Maintenance Department operations to correct existing facility deficiencies and provide an efficient centralized operational base. The Transportation and Grounds Maintenance Department consists of three distinct but management related service groups, those being (1) the Vehicle Maintenance service group, (2) the Drivers and Riggers service group, and (3) the Grounds Maintenance service group. The functions and operations of the groups are as follows:

a. Vehicle Maintenance Service Group - Argonne controls, services, and operates a fleet of 325 plus vehicles and pieces of mobile equipment. The service group inspects and maintains Argonne's motor vehicle fleet, mobile equipment, and materials handling equipment. The vehicles include security sedans, maintenance and delivery pickups and panel trucks, material delivery trucks, tractors, trailers, ambulances, buses, fire engines, mobile trailers, skid mounted equipment and others. For safety and reliability, the mobile equipment is given regularly scheduled inspections and maintenance and any operating problems are promptly corrected. Services include preventive maintenance, safety inspections, emergency repairs, engine tuneups, cooling systems, exhaust systems, adjustment to clutches, brakes, transmissions, front end, brake linings, wheel balancing, wheel bearings, shock absorbers, universal joints, electrical, tires, lubrication and small body and trim work.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transportation Facility Replacement
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-100

9. Purpose, Justification of Need for, and Scope of Project (Continued)

b. Driver/Rigger Service Group - The driver part of the group consists of personnel who drive taxis, trucks, and buses, and are also assigned to a variety of other duties. A dispatcher coordinates regularly assigned work, unscheduled requests, and vehicle fuel. The riggers provide moving, lifting, hoisting of heavy loads, and specialized services such as those needed for installation of scientific laboratory equipment. The rigging services also move equipment and materials in or between buildings where lifting and transporting devices are needed.

c. Grounds Maintenance Service Group - This service group provides maintenance for all the grounds, roads, storm sewers, signs and walkways through the Argonne, Illinois site, and the maintenance of grounds equipment such as fork lifts, cranes, backhoes, Cushman haulsters, asphalt rollers, road graders, and other grounds equipment.

At present, vehicle maintenance service, grounds service, and rigging activities are scattered throughout eight buildings and one trailer. The buildings currently being used for these service activities are Quonset buildings constructed to serve as temporary quarters during construction of Argonne in 1948. The Quonset buildings have been converted at various times to include a number of uses, most recently to serve as garages, shops, and offices for the transportation and maintenance service groups. This dispersal of work locations has led to and/or encouraged, inefficiencies in operations. There is, therefore, a demonstrated need to consolidate the Transportation and Grounds Maintenance service operations into one facility strategically located that can provide for a safer, more efficient, cost saving operation.

a. Current Deficiencies: The design life span of the Quonset buildings was seven years. Having exceeded their expected life span by a factor of five, they are in an advanced stage of deterioration and exhibit structural deterioration, corrosion, and roof leaks. Rehabilitation of these buildings is not cost effective. The current deficiencies include:

Utility Systems are inadequate and underdesigned to meet current needs. Also, a separate industrial waste system is needed to control all wastes generated within the facility that must be processed before discharge into a sanitary sewer system.

1. Title and location of project: Transportation Facility Replacement
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-100

9. Purpose, Justification of Need for, and Scope of Project (Continued)

The Energy Cost of operating these substandard buildings grossly exceeds today's standards for energy conservation. Preventive rehabilitation work will not significantly reduce this cost and the poor environmental conditions can only increase as the structures continue to function operationally beyond their useful life. Further, these buildings are heated independent of the laboratory's central heating plant and use a more costly fuel oil heat.

Mechanical Ventilation is inadequate in all work areas. This is particularly important in vehicle maintenance service bays where high concentrations of carbon monoxide gas from tail pipe emissions is a threat to life safety regardless of an emissions exhaust system.

Architectural: The poorly sealed building envelope makes the facilities extremely difficult to heat and/or cool. Window and door frames as incorporated in the Quonset building are separate structural elements and currently are in a state of advanced deterioration permitting high heat loss. Accordingly, a comfortable working environment cannot be provided. Additionally, the lunch rooms, lockers and restrooms are in poor condition and inadequate in size.

b. Operational Deficiencies: Restrictions imposed on operations by the geometric configuration of the existing buildings do not allow efficient or cost-effective space utilization. The Transportation and Grounds Maintenance services overutilize the space they now occupy. The spaces are also functionally unrelated and cannot be efficiently organized.

c. Site Location Deficiencies: Increased space demands in the past were often resolved on an "as found/where found" basis which resulted in the current scattered site locations. Some of the major deficiencies resulting from this "scattered" growth are:

Scattered working locations reduce beneficial personnel contact and dialogue with service managers and department supervisors. The result is underutilization of human resources and available equipment.

Duplication of facilities for personnel services (such as locker rooms, restrooms, and lunch rooms) increase the internal operating and maintenance costs. Additionally, these spaces do not provide adequate access for the handicapped.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transportation Facility Replacement
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-100

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Restricted size and configuration of the work areas severely constrain improvement in work methods and practices.

Severe crowding of vehicles in available maintenance service bay space restrict operational efficiency.

Logistical separation by distance of facilities from the user's equipment, services, and fuel dispensing station result in both time loss and operation inefficiencies.

Remote storage of frequently used materials creates a retrieval time loss and permits poor administrative control.

Remote storage of low value materials: Of the three mobile home-type trailers purchased by Argonne in 1967 as Federal Government surplus units, only one remains in use today. This aged and deteriorated trailer does not meet current Argonne health and safety requirements of personnel occupied space. Its high flame-spread characteristics renders it hazardous except for the storage of low value materials.

Inadequate access to work areas results in frequent work interruptions when stored equipment must be moved to gain access to other equipment or when various-sized mobile vehicles must be juggled into position for servicing.

Site access, driveways, and parking lots at the existing facilities have not been maintained pending long- range site development plans which preclude continued use of this area for support service functions. Current conditions are damaged beyond reasonable repair and are considered generally unsafe.

d. Environmental Deficiencies: Physical deterioration and deficient environmental conditions have created substandard facilities which demonstrably reduce productivity and staff morale.

e. Equipment Related Deficiencies:

Vehicle lifting and hoisting capabilities are inadequate and require time-consuming alternative procedures for under-body servicing of large vehicles and/or heavy equipment.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project: Transportation Facility Replacement
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 90-R-100

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Inadequate cleaning and degreasing facilities impair procedures for preventive maintenance and inspections.

Vehicle washing facilities are currently not available at Argonne. Frequent exterior washings of vehicles is known to be cost effective and would increase vehicle-body life. All of the previously described deficiencies can be diminished or eliminated by the construction of a new facility strategically located to accommodate this support service. The new facility will be cost effective in terms of labor productivity improvement and equipment operating life, better inventory control and less damage to materials and equipment stored in inadequate facilities. Additionally, several intangible improvements will also be realized which are not quantifiable, such as life-safety, employee morale, and overall organizational response to the laboratory's research and development needs.

10. Details of Cost Estimate a/

	Item Costs	Total Cost
a. Engineering, design and inspection at approximately 11% of construction costs, item b		$ 365
b. Construction		3,200
(1) Site Work	$ 579	
(2) Building (30,000 sq. ft. at approx. $74/sq. ft.)	2,228	
(3) Utilities	393	
Subtotal		3,565
c. Contingency at approximately 15% of above costs		535
Total estimated project costs		$4,100

a/ Based upon a completed conceptual design and current cost data. Cost escalation rate for 1987 - 2.5%; for 1988 - 4.0% for 1989 - 4.8%; for 1990 - 5.3%; and for 1991 - 5.6%.

CONSTRUCTION PROJECT DATA SHEET

1. Title and location of project:	Transportation Facility Replacement Argonne National Laboratory (ANL) Argonne, Illinois	2. Project No.: 90-R-100

11. Method of Performance

Preliminary design and engineering for the total project will be performed by laboratory personnel. The building shell will be accomplished under a fixed-price design-build contract. Final design and engineering of the building interior finishes, mechanical, and electrical systems will be performed under a negotiated architect-engineer contract. All construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bidding. Laboratory personnel, with assistance from a construction management firm, will perform project management activities and inspection.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

Not required.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION PROJECT DATA SHEETS
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Electrical system rehabilitation, phase I
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 88-R-807

3. Date A-E work initiated: 1st Qtr. FY 1988

3a. Date physical construction starts: 3rd Qtr. FY 1989

4. Date construction ends: 4th Qtr. FY 1991

5. Previous cost estimate: None
Date: December None

6. Current cost estimate: $ 5,060
Less amount for PE&D: 0
Net cost estimate: $ 5,060
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1988	$5,060	$ 350	$ 350	$ 47
1989	0	1,150	1,150	345
1990	0	2,662	2,662	87
1991	0	893	893	3,703
1992	0	5	5	878

8. Brief Physical Description of Project

The project provides for the rehabilitation of the main electrical distribution system's major components. The work consists of the following critical elements:

a. Replace the two 10MVA, 132kV/12.5kV, main transformers at Facility 543 and provide oil containment facilities in accordance with current Federal/State Environmental Protection Agency (EPA) regulations. This work consists of the following:

(1) Replace two over-aged 10 MVA, 132 kV/12.5kV oil-filled transformers with new units.
(2) Provide oil containment facilities to comply with the current Federal EPA regulations.

1. Title and location of project: Electrical system rehabilitation, phase I
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 88-R-807

8. Brief Physical Description of Project (continued)

(3) Replace two over-aged 15kV oil circuit-breakers with new vacuum circuit-breakers.
(4) Replace inadequate metering and protective relaying equipment with new equipment.
(5) Replace the air "tie" switch with a new vacuum circuit-breaker with needed automatic transfer capabilities.
(6) Provide, as a part of the new metering equipment, provisions for ultimate future expansion into the energy monitoring and control system.
(7) Repair and paint the overhead structure.

b. Replace deteriorating poles, cross-arms insulators, down-guys, and miscellaneous hardware on the two main two 15kV overhead lines between Facility 543 and Facility 544.

c. Replace the two 1MVA voltage regulators at Facility 544. This work consists of the following:

(1) Replace nine obsolete 15kV air switches on the overhead structure with new units.
(2) Replace the "government surplus" 1.0MVA, 12kV voltage regulators with new units sized to accommodate the forced-air ratings of the two 10MVA transformers at Facility 543 which feed these regulators.
(3) Replace the 15 aging oil-filled outdoor 15kV circuit-breakers with new vacuum circuit-breakers in a walk-in structure.
(4) Replace the protective relaying equipment with the state-of-the-art solid-state relaying equipment.
(5) Provide individual feeder metering facilities.
(6) Replace the inadequate meter house with space in the walk-in switchgear.
(7) Replace the aged battery and battery charging equipment with new state-of-the-art equipment.

d. Replace two 1MVA, 12.5kV transformers at Facility 545 and provide oil containment facilities in accordance with current Federal/State EPA regulations. This work consists of the following:

(1) Replace two 1MVA rebuilt "World War II government surplus" transformers with new oil-filled equipment.
(2) Provide oil containment facilities to meet Federal EPA requirements.

1. Title and location of project: Electrical system rehabilitation, phase I
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 88-R-807

8. Brief Physical Description of Project (continued)

(3) Provide switchgear to protect the two new transformers and the recently relocated unit substation (for the scrubber facilities).
(4) Provide required 480 volt protective vacuum circuit-breaker for the two new transformers.
(5) Provide protective relaying equipment to protect and to coordinate the equipment with the entire distribution system.

9. Purpose, Justification of Need for, and Scope of Project

a. The present transformers and regulators were "World War II government surplus" when they were installed thirty five years ago. They are now well over 40 years of age, which is beyond the predicted life expectancy of this type of equipment. The two old transformers in Facility 545 were "rebuilt" in 1978 after a failure in service. While this equipment is now operational, the risk of an unscheduled shutdown of the Laboratory facilities is high and is increasing. By 1988 the site's scientific programs will be in jeopardy if critical replacements are not made.

b. There are no acceptable oil containment facilities at these locations. A major fault or leak in these oil-filled units could cause extensive and expensive cleanup problems, as well as the possibility of polluting the adjacent waterway systems.

c. At the present there are very limited means of adequately measuring the electrical load or demand on these major pieces of equipment or main feeders. This information is critical to permit the Laboratory to intelligently monitor and analyze the site distribution system and to set overload devices on these feeders.

d. The local utility company, as well as other large users of this type of equipment (transformers, regulators, switchgear, etc.) in general, write off the value of this equipment over thirty years. Thereafter, the components become candidates for replacement. The above described laboratory equipment is in a comparable category.

1. Title and location of project: Electrical system rehabilitation, phase I
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 88-R-807

9. Purpose, Justification of Need for, and Scope of Project (continued)

e. Certain parts, particularly air switches, are unreliable in their operation and replacement parts are impossible to obtain, as the manufacturer has long ago gone out of business. When replacement parts have been needed, they have been fabricated, which is extremely costly, and their reliability is questionable.

f. The proposed rehabilitation of this critical equipment will assure continued reliability of the system to supply electrical power to the laboratory scientific programs.

g. Other expected benefits are:

(1) Eliminate the costly emergency repairs and ultimate replacement of components on a "crash" basis in the event of the failure of a major component of the system.

(2) Reduction of the energy losses in these transformers will result in energy savings.

10. Details of Cost Estimate*

	Item Cost
a. Engineering design and inspection @ 15% of construction costs, item b...	$ 590
b. Construction.....	3,930
c. Contingency @ 12% of above costs.....	540
Total estimated cost.....	$5,060

*Based upon a completed conceptual design and current cost data.

11. Method of Performance

The engineering work will be performed under a lump sum contract with a consultant with specific expertise in electrical distribution systems. The construction work will be a fixed price contract awarded on the basis of competitive bidding. Major equipment components will be purchased by the laboratory to expedite delivery of long lead time items. The current anticipated lead time for the transformers, regulators, and switchgear is 10 to 16 months. Advance procurement of these items will be instituted early in the project.

1. Title and location of project: Electrical system rehabilitation, phase I
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 88-R-807

11. Method of Performance (continued)

All PCB (polychlorinated biphenol) contaminated equipment will be handled and disposed of according to EPA requirements. The project estimate includes the cost of PCB handling and disposal.

Laboratory personnel will perform field inspection. In order to not compromise the integrity of the system, phased replacement of equipment will be planned and scheduled to cause no interruption of electric service to the site.

12. Funding Schedule of Project Funding and Other Related Funding Requirements

	Prior Years	FY 1988	FY 1989	FY 1990	FY 1991	Total
a. Total project costs						
1. Total facility costs						
(a) Construction line item	$ 47	$ 345	$ 87	$3,703	$ 878	$5,060
(b) PE&D	0	0	0	0	0	0
(c) Expense funded equipment	0	0	0	0	0	0
(d) Inventories	0	0	0	0	0	0
Total facility costs	$ 47	$ 345	$ 87	$3,703	$ 878	$5,060
2. Other project funding						
(a) R&D necessary to complete construction	0	0	0	0	0	0
(b) Other project related costs	24	0	0	0	0	24
Total other project funding	24	0	0	0	0	24
Total project costs (Items 1 & 2)	$ 71	$ 345	$ 87	$3,703	$ 878	$5,084

b. Other related funding requirements (estimated life of project: 30 years) $ 0
1. Facility operating costs 0
2. Activity operating expenses directly related to the facility 0

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Electrical system rehabilitation, phase I
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 88-R-807

12. Funding Schedule of Project Funding and Other Related Funding Requirements (continued)

3. Capital equipment not related to construction but related to the programmatic effort in the facility	0
4. GPP or other construction related to programmatic effort in the facility	0
5. Other costs	0
Total other related annual funding requirements	$ 0

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

a. Total project funding
   1. Total facility costs
      (a) Construction line item - No narrative required
      (b) PE&D - None
      (c) Expense funded equipment - None
      (d) Inventories - None
   2. Other project funding
      (a) No R&D effort is required
      (b) $24,000 for a conceptual design

b. Other related funding requirements
   The revised electrical distribution system will have a useful lifetime upwards of 30 years.
   1. Facility operating costs - Implementation of this project will replace existing physical components in the electrical distribution system with new state-of-the-art equipment. This will result in a reduction of maintenance and operating costs while restoring an acceptable level of operational efficiency and reliability to the system, thus the system's operating cost is reported as zero.
   2. Activity operating expenses directly related to the facility - Although this project will restore and replace general purpose facilities employed to supply electrical power to a wide variety of activities, there is no activity operating expense directly related to, or required for support of this project, thus the activity operating expense is reported as zero.
   3. Capital equipment not related to construction but related to the activity effort in the facility - None
   4. GPP or other construction related to activity effort - None
   5. Other costs - None

DEPARTMENT OF ENERGY
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CONSTRUCTION PROJECT DATA SHEET
ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT
MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Environmental health & safety project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 88-R-806

3. Date A-E work initiated: 2nd Qtr. FY 1988

3a. Date physical construction starts: 4th Qtr. FY 1988

4. Date construction ends: 4th Qtr. FY 1991

5. Previous cost estimate: $10,325
Date: September 1987

6. Current cost estimate: $ 9,250a/
Less amount for PE&D: 0
Net cost estimate: $ 9,250
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1988	$10,325	$ 850	$ 850	$ 59
1989	0	2,516b/	2,516b/	1,090
1990	0	4,310	4,310	172
1991	0	1,565	1,565	3,844
1992	0	9	9	3,527
1993	0	0	0	558

8. Brief Physical Description of Project

a. Air Sampling/Monitoring

Provide improved interior and exterior constant volume sampling devices for radiation monitoring. Upgrade equipment for on-site radiation and off-site environmental monitoring.

a/Remaining balance of $1,075,000 transferred to new Office of Environmental Management.
b/$23,000 reprogrammed from prior year closed out projects.

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Environmental health & safety project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 88-R-806

8. Brief Physical Description of Project (continued)

b. Building 26 Addition

A proposed Medical Services Building addition will be a second story, 2800 gross square foot addition to Building 26. This addition will be a matching steel frame structure on spread footings with metal decking and reinforced concrete floor, metal roof decking and built-up roofing, metal exterior siding, gypsum wallboard partitions, insulation, suspended ceilings, and resilient floor covering. Power, lighting, ventilation, heat, and all utilities will be included. Present medical functions will be expanded with two additional examination rooms, one office, one small medical conference room, and an equipment storage room.

c. Building 77 Waste Treatment Unit Replacement

A proposed treatment facility will treat effluent from the plating shop, remove heavy metals, and discharge treated wastes into the sanitary sewer. It will include a small building to house the new unit.

d. Monitor Underground Fuel Tanks

Drill three monitoring wells at each of eight existing tank locations and install monitoring devices.

e. Ventilation Improvements

Rehabilitate building ventilation systems by rebuilding and replacing defective and deteriorated air supply systems, controls, and fume hood exhaust systems.

f. Water Supply Cross-Connection

Rehabilitate potable water systems with backflow preventers, including industrial water, closed systems, and fire sprinkler risers.

1. Title and location of project: Environmental health & safety project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 88-R-806

8. Brief Physical Description of Project (continued)

g. Emergency Shower Water Supply Conversion

Connect emergency shower water supply systems to the domestic water system.

h. Area Lighting

Provide area lighting at 35 outdoor locations, including roadway luminaires and path and sidewalk lighting.

i. Replace Drum Storage Racks

Provide enclosures and replace racks and catch trays for 18 existing drum storage racks.

j. Building 77 Chemical Storage Facility

A proposed chemical storage facility will be located near Building 77. It will be a one-story, 600 gross square foot steel-framed structure with reinforced concrete spread footings and floor slab, metal roof deck and siding, insulation, and built-up roofing. This facility will have steel shelving, utilities, lighting, and ventilation. All interior exposed metals will have corrosion-resistant coatings.

k. Buildings 70-70A, Replace Acid Pipe Fittings

Replace deteriorated pyrex fittings. Existing laboratory furniture, piping, and electrical services must be re-routed for access to acid pipe fittings.

The government-owned additions and improvements described herein are located on leased land owned by the Regents of the University of California.

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Environmental health & safety project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 88-R-806

9. Purpose, Justification of Need, and Scope of Project

a. Air Sampling/Monitoring

Equipment and facilities are old, deteriorated, and in need of upgrading or replacement. Compliance with DOE regulations, protection of environment, and personnel health and safety must be maintained.

b. Building 26 Addition

Medical Services have severe functional space limitations. Certain patient examination procedures occur in the corridor. Supplies and equipment are stored in the corridor. There is no room available for either private staff conferences or staff/patient consultations.

c. Building 77 Waste Treatment Unit Replacement

The existing waste treatment facility is inadequate and unreliable. Spent solutions are presently trucked to an off-site commercial waste treatment facility at great expense and risk of transportation hazards. Plating shop operations are hampered by existing treatment facility breakdown, maintenance problems and obsolescence.

d. Monitor Underground Fuel Tanks

New State of California regulations require the monitoring of underground chemical storage tanks.

e. Ventilation Improvements

Controls are obsolete and/or inoperative, requiring replacement. Laboratory HVAC systems are out of balance; equipment is defective; ducts are deteriorated and require repair or replacement.

1. Title and location of project: Environmental health & safety project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 88-R-806

9. Purpose, Justification of Need, and Scope of Project (continued)

f. Water Supply Cross-Connection

Hillwide drinking water supplies should be safeguarded with cross-connection devices between potable and non-potable water systems. Existing devices are old and deteriorated. Old cross-connections need approved devices added to them.

g. Emergency Shower Water Supply Conversion

At many locations, showers are at present supplied from industrial water supply. They need to be converted to potable water supply for personnel safety.

h. Area Lighting

In certain poorly lit outdoor areas, additional exterior lighting will improve personnel safety and minimize risk of injury to pedestrians and motorists.

i. Replace Drum Storage Racks

Existing sitewide installations have deteriorated with time; some areas lack proper containment provisions. New environmental concerns require proper handling to avoid leaks and spills.

j. Building 77 Chemical Storage Facility

There is an immediate need for adequate safe storage space for current activities. Chemicals used in the Building 77 Plating Shop are now stored in a crowded room or outside the building, where they are exposed to weather.

k. Buildings 70-70A, Replace Acid Pipe Fittings

In laboratories where hydrofluoric acid has been used extensively, the glass pipe, traps, and metal couplings have eroded and deteriorated.

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Environmental health & safety project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 88-R-806

10. Details of Cost Estimate *

	Item Costs	Total Cost
a. Engineering, design and inspection @ about 18% of construction, Item b		$ 1,127
b. Construction costs		6,264
(1) Improvements to land	$ 32	
(2) Buildings	3,900	
(3) Other construction (other than buildings)	435	
(4) Special facilities	833	
(5) Utilities	1,064	
c. Standard equipment		1,193
d. Removal costs less salvage		20
Subtotal		8,064
e. Contingency at about 20% (of which $780 is for building construction)		1,721
Subtotal		$ 10,325
Less remaining funds to new Office of Environmental Management		- 1,075
Total estimated cost		$ 9,250

* Conceptual design is complete.

11. Method of Performance

Engineering, design and inspection will be performed under a negotiated Architect-Engineer Subcontract. Inspection, some engineering and some construction will be accomplished by LBL forces. Construction and Procurement will be accomplished by fixed price subcontracts awarded on the basis of competitive bids.

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Environmental health & safety project
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

2. Project No.: 88-R-806

12. Funding Schedule of Project Funding and Other Related Funding Requirements

	Prior Yrs.	FY 1988	FY 1989	FY 1990	FY 1991	Total
a. Total project costs						
1. Total facility costs						
(a) Construction line item..	$ 1,149	$ 172	$ 3,844	$ 3,527	$ 558	$ 9,250a/
Total direct costs.....	$ 1,149	$ 172	$ 3,844	$ 3,527	$ 558	$ 9,250
b. Total related funding requirements (estimated)						
1. Facility operating costs.....			$ 15			
2. Programmatic operating expenses (Programs already exist that will be using these facilities. No increase in program costs will be incurred.).....			0			
Total related annual costs.....			$ 15			

a/ Remaining balance of $1,075,000 transferred to new Office of Environmental Management.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Programs already exist that will be using these facilities.

DEPARTMENT OF ENERGY
FY 1992 CONGRESSIONAL BUDGET REQUEST
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MULTIPROGRAM ENERGY LABORATORIES - GENERAL PURPOSE FACILITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project: Rehabilitate laboratory space
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 87-R-753

3. Date A-E work initiated: 1st Qtr. FY 1987

3a. Date physical construction starts: 3rd Qtr. FY 1990

4. Date construction ends: 3rd Qtr. FY 1991

5. Previous cost estimate: None
Date: None

6. Current cost estimate: $12,035
Less amount for PE&D: 0
Net cost estimate: $12,035
Date: January 1991

7. Financial Schedule:

Fiscal Year	Authorization	Appropriations	Obligations	Costs
1987	$12,035	$1,235	$1,235	$ 521
1988	0	3,889a/	3,889a/	1,354
1989	0	2,800	2,800	1,992
1990	0	2,574	2,574	3,061
1991	0	1,528	1,528	3,517
1992	0	9	9	1,590

8. Brief Physical Description of Project

This project is the first phase of a two phase project that will rehabilitate a large multipurpose laboratory and office building at ANL (Building 200). The 359,600 gross sqyare feet brick structure was put into service in 1951 and has a replacement value of $86,100,000 and an expended useful life of 60%. Phase I will rehabilitate wings A-F, which totals 166,000 gross square feet of space. The remainder of the building will be renovated in Phase II.

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a/ $289,000 reprogrammed from prior year closed out projects.

1. Title and location of project: Rehabilitate laboratory space
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 87-R-753

8. Brief Physical Description of Project (continued)

The workscope will encompass essentially all aspects of building construction, except structure and roofing[1], including (as needed): building envelope (windows, tuckpointing); building interiors (painting, partition, floor tile, ceiling tile); electrical main distribution systems (transformers, switchgear, wiring); lighting (panels, fixtures, wiring), heating ventilation and air conditioning (HVAC) (pumps, fans, filters, coils, heat exchangers, air compressors, controls, ductwork, piping[2]); plumbing (toilet fixtures, water heaters, pumps, water and drain piping); laboratory and process piping (water heaters, distilled water system, air compressors and driers, nitrogen and oxygen storage tanks and evaporators, gas, water and drain piping); elevators (hydraulics controls cabs); removal and disposal of potentially contaminated or hazardous materials such as exhaust ductwork, laboratory drain piping and asbestos insulation.

9. Purpose, Justification of Need for, and Scope of Project

By the time this project is funded, the building will have been in constant use as a major laboratory and office building for more than 35 years. The needs of scientific programs have changed dramatically in this time period. The facility does not meet current construction codes and safety standards. In addition, systems that provide electric power, process fluids, heating, cooling, humidity control, clean air delivery and laboratory exhaust for control of hazardous materials are becoming less reliable each year because of aging. Adequate maintenance is difficult and very costly because replacement parts for many of the components are no longer available and shop effort is required for temporary repairs.

1 Included under on-going Project No. 85-R-701 "Replace Laboratory Roofs".
2 Chillers and cooling towers are included under Project No. 85-R-709 "Central Chilled Water System "Phase I".

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Rehabilitate laboratory space
Argonne National Laboratory (ANL)
Argonne, Illinois

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9. Purpose, Justification of Need for, and Scope of Project (continued)

The need exists, therefore, for a total upgrade of the building as described in the work scope above. If this facility upgrade is not supported, maintenance effort to keep the facility in an operational condition can be expected to continuously increase. Shutdowns due to major building equipment failures can be expected to cause major interruptions in current and future R&D activities and require long term experiments to start again. Health, safety, security and environmental risks will continue to increase. Personnel morale and productivity are also likely to be adversely affected.

10. Details of Cost Estimate*:

	Total Cost
a. Engineering, design, and inspection at approximately 17% of construction costs, item b	$ 1,530
b. Construction costs	9,000
c. Contingency at approximately 14% of above costs	1,505
Total estimated cost	$ 12,035

*Based upon a completed conceptual design and current cost data.

11. Method of Performance

Engineering, design and inspection will be performed by Laboratory engineering personnel, aided by outside A/E firms. Construction will be accomplished by fixed-price contract awarded specializing in fire protection design. Construction and procurement will be accomplished by fixed-price contracts and purchase orders awarded on the basis of competitive bidding.

1. Title and location of project: Rehabilitate laboratory space
Argonne National Laboratory (ANL)
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12. Funding Schedule of Project Funding and Other Related Funding Requirements (continued)

	Prior Years	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992	Total
a. Total project costs							
1. Total facility costs							
(a) Construction line item..	$ 521	$1,354	$1,992	$3,061	$3,517	$1,590	$12,035
(b) PE&D.....	0	0	0	0	0	0	0
(c) Expense funded equipment	0	0	0	0	0	0	0
(d) Inventories.....	0	0	0	0	0	0	0
Total direct costs....	$ 521	$1,354	$1,992	$3,061	$3,517	$1,590	$12,035
2. Other project costs							
(a) R&D necessary to complete construction.....	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
(b) Other project related costs.....	51	0	0	0	0	0	51
Total other project costs.....	$ 51	$ 0	$ 0	$ 0	$ 0	$ 0	$ 51
Total project costs..... (Item 1 and 2)	$ 572	$1,354	$1,992	$3,061	$3,517	$1,590	$12,086

b. Other related annual costs (estimated life of project: 20 years)

1. Facility operating costs.....	$ 0
2. Activity operating expenses directly related to the facility.....	0
3. Capital equipment not related to construction but related to the programmatic effort in the facility.....	0
4. GPP or other construction related to programmatic effort in the facility.....	0
5. Other costs.....	0
Total related annual costs.....	0

CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: Rehabilitate laboratory space
Argonne National Laboratory (ANL)
Argonne, Illinois

2. Project No.: 87-R-753

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

a. Total project funding
   1. Total facility
      (a) Construction line item - No narrative required
      (b) PE&D - None
      (c) Expense funded equipment - None
      (d) Inventories - None
   2. Other project funding
      (a) No R&D effort is required
      (b) $51,000 spent for conceptual design

b. Other related funding requirements

   1. Facility operating costs - Rehabilitation of this facility will increase energy efficiency and greatly lower operating costs, thus the facility operating cost is given as zero.

   2. Activity operating expenses directly related to the facility - There is no activity operating expense directly related to, or required for support of this project, thus the activity operating expense is given as zero.

   3. There is no capital equipment related to the activity effort, not related to construction.

   4. GPP or other construction related to activity effort - None

   5. Other costs - None