

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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 (dollars in thousands)

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..... | <u>+ 12,798</u> |
| 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 multi-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

| <u>Project No.</u> | <u>Project Title</u> | <u>Total Prior Year Obligations</u> | <u>FY 1991 Appropriated</u> | <u>FY 1992 Request</u> | <u>Unappropriated Balance</u> | <u>TEC</u> |
|----------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|---------------------------------|----------------------------|-----------------------------------|------------|
| <u>Multiprogram Energy Laboratories - General Purpose Facilities</u> | | | | | | |
| 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.

| <u>Project No.</u> | <u>Project Title</u> | <u>Total Prior Year Obligations</u> | <u>FY 1991 Appropriated</u> | <u>FY 1992 Request</u> | <u>Unappropriated Balance</u> | <u>TEC</u> |
|----------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------|---------------------------------|----------------------------|-----------------------------------|---------------|
| 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) | <u>17,745</u> | <u>6</u> | <u>0</u> | <u>0</u> | <u>17,751</u> |
| 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|------------------------|----------------|----------------|----------------------------|--------------------|
| 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 1991^{a/}
 Completion Date: FY 1994

2. Financial schedule:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 1991 | \$ 0 ^{a/} | \$ 0 ^{a/} | \$ 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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

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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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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
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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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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.

| | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 4. Total Project Funding (BA): | | | | | |
| 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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Multiprogram Energy Laboratories - Facilities Support
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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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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):

| | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|-------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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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 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|-----------------------|-----------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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 effect 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 0 | \$ 0 | \$ 1,238 | \$ 2,762 |
| 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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 eliminate 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 0 | \$ 3,678 | \$ 2,700 | \$ 422 |
| 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 148 | \$ 994 | \$ 533 | \$ 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 1,321 | \$ 1,967 | \$ 12 | \$ 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 493 | \$ 2,401 | \$ 806 | \$ 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 843 | \$ 1,449 | \$ 8 | \$ 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 247 | \$ 0 | \$ 2,703 | \$ 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 197 | \$ 0 | \$ 1,903 | \$ 0 |
| Capital Equipment..... | 0 | 0 | 0 | 0 | 0 |
| Operating Expenses..... | 0 | 0 | 0 | 0 | 0 |

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 (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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|------------------------|----------------|----------------|----------------------------|--------------------|
| Construction..... | \$ 0 | \$ 306 | \$ 1,366 | \$ 8 | \$ 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: 90-R-107 Boiler replacement, Project TEC: \$ 3,520
 Brookhaven National Start Date: FY 1990
 Laboratory (BNL), Upton, Completion Date: FY 1992
 New York

2. Financial schedule:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|------------------------|----------------|----------------|----------------------------|--------------------|
| Construction..... | \$ 0 | \$ 319 | \$ 3,182 | \$ 19 | \$ 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 0 | \$ 345 | \$ 1,377 | \$ 2,378 | \$ 0 |
| Capital Equipment..... | 0 | 0 | 0 | 0 | 0 |
| Operating Expenses..... | 0 | 0 | 0 | 0 | 0 |

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 (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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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 uninterrupted 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| Construction..... | \$ 1,500 | \$ 2,662 | \$ 893 | \$ 5 | \$ 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: 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|--------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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:

| <u>Fiscal Year</u> | <u>Appropriated</u> | <u>Obligations</u> | <u>Costs</u> |
|--------------------|---------------------|---------------------|--------------|
| 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): | <u>Prior Years</u> | <u>FY 1990</u> | <u>FY 1991</u> | <u>FY 1992 Request</u> | <u>To Complete</u> |
|--------------------------------|--------------------|----------------|----------------|------------------------|--------------------|
| 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.