

## Science Laboratories Infrastructure

### Funding Profile by Subprogram

(dollars in thousands)

|  | FY 2006 Current<br>Appropriation | FY 2007<br>Request | FY 2008<br>Request |
|--|----------------------------------|--------------------|--------------------|
| Science Laboratories Infrastructure        |                                  |                    |                    |
| Laboratories Facilities Support            | 22,165                           | 29,461             | 65,049             |
| Excess Facilities Disposition              | 14,491                           | 16,348             | 8,828              |
| Oak Ridge Landlord                         | 5,028                            | 5,079              | 5,079              |
| Total, Science Laboratories Infrastructure | 41,684 <sup>a</sup>              | 50,888             | 78,956             |

**Public Law Authorizations:**

Public Law 95-91, "Department of Energy Organization Act", 1977

Public Law 103-62, "Government Performance and Results Act of 1993"

Public Law 109-58, "Energy Policy Act of 2005"

### **Mission**

The mission of the Science Laboratories Infrastructure (SLI) program is to support Departmental research missions at the ten Office of Science (SC) laboratories and the Oak Ridge Institute for Science and Education (ORISE) by funding line item construction, general plant projects, and cleanup and removal of excess facilities to maintain the general purpose infrastructure. The program also supports SC stewardship responsibilities for over 24,000 acres of the Oak Ridge Reservation (ORR) and the Federal facilities in the town of Oak Ridge, and provides Payment in Lieu of Taxes (PILT) to local communities around Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL), and Oak Ridge National Laboratory (ORNL).

### **Benefits**

This program supports SC's research missions at SC laboratories, primarily by addressing general purpose facilities and infrastructure needs.

### **Significant Program Shifts**

In FY 2006, the Continuous Electron Beam Accelerator Facility (CEBAF) Center Addition, Phase I, at the Thomas Jefferson National Accelerator Facility (TJNAF), was completed on schedule, and within budget and scope.

FY 2008 funding of \$35,000,000 is held in reserve pending resolution of issues related to capability replacement and renovation of facilities at Pacific Northwest National Laboratory (PNNL).

### **External Independent Reviews**

The costs of conducting External Independent Reviews (EIRs) for Capital Asset Projects greater than \$100,000,000 within SC are funded by SC. Examples of EIRs include conducting Performance Baseline EIRs prior to Critical Decision-2 (CD-2) to verify the accuracy of cost and schedule baseline estimates and conducting Construction/Execution Readiness EIRs, which are done for all Major System projects

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<sup>a</sup> Total is reduced by \$421,000 for a rescission in accordance with P.L. 109-148, the Emergency Supplemental Act to Address Hurricanes in the Gulf of Mexico and Pandemic Influenza, 2006.

prior to CD-3. These funds, which are managed by the Office of Engineering and Construction Management, are exclusively used for EIRs directly related to the projects funded by SC.

## Laboratories Facilities Support

### Funding Schedule by Activity

(dollars in thousands)

|  | FY 2006 | FY 2007 | FY 2008 |
|--|---------|---------|---------|
| Laboratory Facilities Support          |         |         |         |
| General Purpose Facilities             | 12,376  | 14,671  | 56,529  |
| Environment, Safety and Health (ES&H)  | 5,314   | 13,270  | 7,000   |
| Payment in Lieu of Taxes (PILT)        | 1,505   | 1,520   | 1,520   |
| General Plant Projects (GPP)           | 2,970   | —       | —       |
| Total, Laboratories Facilities Support | 22,165  | 29,461  | 65,049  |

### Description

The Laboratories Facilities Support (LFS) subprogram supports the mission of the Office of Science (SC) by providing funding for line item construction to maintain the general purpose infrastructure, and for Payment in Lieu of Taxes (PILT) to local communities around Argonne and Brookhaven National Laboratories.

### Benefits

This subprogram improves the mission readiness of SC laboratories by refurbishing and replacing general purpose facilities and site-wide infrastructure, and by providing financial assistance to communities around Brookhaven National Laboratory and Argonne National Laboratory.

### Supporting Information

General purpose and site-wide infrastructure includes administrative, research laboratory, user support and testing space, as well as cafeterias, power plants, fire stations, electrical, gas and other utility distribution systems, sanitary sewers, roads, and other associated structures.

The ten SC research laboratories, and the Oak Ridge Institute for Science and Education (ORISE), together have 1,519 buildings and real property trailers, with 21.5 million gross square feet of space that are aging. Over 6,000 employees and users of SC research facilities are housed in wooden buildings, trailers and buildings more than 50 years old. The average age of active SC buildings is 34 years. In terms of square footage, 55% (11.6 million square feet) is 40 years old or older, including 30% (6.4 million square feet) that is over 50 years old.

As required by DOE Order 430.1B, Real Property Asset Management, SC laboratories have prepared Ten Year Site Plans (TYSPs). These plans identify facility and infrastructure investments needed for real property assets to support mission requirements.

These TYSPs have identified a number of infrastructure needs that are primarily attributable to:

- the age of the facilities;
- the use of wood and other non-permanent building materials in the original construction of the laboratories in the 1940's and 1950's;

- changing research needs that require:
  - different kinds of facilities (e.g., nuclear facilities, such as hot cells, are in lower demand, while facilities that foster interaction and team-based research are in higher demand) and
  - higher quality facilities (e.g., reduced vibration and temperature variability, better air quality and increased power capability for computers and other electronic equipment);
- obsolescence of existing building systems and components, and changing technology (e.g., digital controls for heating and ventilation systems, fire alarms and security);
- need for improved reliability of utility operations to support the large number of researchers at SC user facilities; and
- changing environmental, safety and health regulations, and security needs.

All candidate construction projects are scored by the respective sites using the DOE Capital Asset Management Process (CAMP), which takes into account risk, impacts, and mission need. Those projects that have ES&H as the principal driver are further prioritized using the Risk Prioritization Model from the former DOE ES&H and Infrastructure Management Plan process. The projects are then evaluated by the LFS subprogram to establish a cross SC ranking. This is done by normalizing the site scoring and ensuring that available funds are distributed across the laboratories in accordance with SC program priorities. Selection of projects for funding is coordinated with SC program offices to confirm prioritization.

The LFS subprogram ensures that the funded subprojects are managed effectively and completed within the established cost, scope, and schedule baselines. Performance is measured by the number of all SLI subprojects completed within the approved baseline for cost, scope (within 10%), and schedule (within six months). For example, in FY 2006, the CEBAF Center Addition subproject was completed within its cost, scope, and schedule baseline.

SLI construction subprojects typically involve conventional construction and, as such, can usually be engineered, designed, and ready for construction contract award within one fiscal year. Accordingly, SLI construction subprojects are submitted with both Project Engineering and Design (PED) and construction funding identified. In most cases, these subprojects proceed (after normal reviews and approvals) directly from design into construction without delay. The Department’s December 2000 report to Congress, “The U.S. DOE Implementation Procedures for the Use of External Independent Reviews and Project Engineering and Design Funds,” allows this approach under the Section “Simplified Process for a Design-Procure-Build or Design-Build Project,” pages 15 to 18. The full report can be found at the following web site: <http://www.sc.doe.gov/sc-80/sc-82/documents/EIR-PED.pdf>.

### Detailed Justification

(dollars in thousands)

| FY 2006 | FY 2007 | FY 2008 |
|---------|---------|---------|
|---------|---------|---------|

#### General Purpose Facilities

**12,376      14,671      56,529**

Provides funding for three subprojects identified below. More detail is provided in construction project data sheet MEL-001. FY 2008 funding includes \$35,000,000 held in reserve pending resolution of issues related to capability replacement and renovation at PNNL. If the issues are resolved, DOE will

(dollars in thousands)

| FY 2006 | FY 2007 | FY 2008 |
|---------|---------|---------|
|---------|---------|---------|

initiate a reprogramming request to use these funds for replacing and/or upgrading mission-critical facilities currently located in the Hanford Site 300 Area.

**Ongoing:**

- Modernization of Laboratory, Building 4500N, Wing 4, Phase I, at Oak Ridge National Laboratory (ORNL), which will rehabilitate a facility housing many of the laboratory's chemical laboratory facilities, as well as administrative offices and the medical clinic (\$7,329,000);
- Building Electrical Services Upgrade, Phase II, at ANL, which will upgrade critical portions of the electrical power distribution system in 12 research buildings and support facilities, including the Canal Water Plant supplying cooling water for site experiments (\$6,000,000); and
- Renovate Science Laboratory, Phase I, at BNL, which will upgrade and rehabilitate existing obsolete and unsuitable laboratory facilities into modern, efficient facilities compatible with world-class scientific research (\$8,200,000).

**Environment, Safety and Health** **5,314** **13,270** **7,000**

Provides funding for one subproject identified below. More detail is provided in construction project data sheet MEL-001.

**Ongoing:**

- Seismic Safety Upgrade of Buildings, Phase I, at Lawrence Berkley National Laboratory (LBNL), which will address the seismic vulnerability of laboratory buildings where high life-safety risks have been identified (\$7,000,000).

**Payment in Lieu of Taxes (PILT)** **1,505** **1,520** **1,520**

Provides PILT to support assistance requirements for communities around Brookhaven National Laboratory and Argonne National Laboratory. PILT payments are negotiated between the Department and local governments based on land values and tax rates.

**General Plant Projects (GPP)** **2,970** **—** **—**

Provides funding for GPP projects (Total Estimated Cost less than \$5,000,000) to refurbish and rehabilitate general purpose infrastructure necessary to perform research throughout the SC Laboratory complex. Funding for GPP in FY 2007 and FY 2008 is contained in other SC program budgets.

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**Total, Laboratories Facilities Support** **22,165** **29,461** **65,049**

## Explanation of Funding Changes

|                                   |
|-----------------------------------|
| FY 2008 vs.<br>FY 2007<br>(\$000) |
|-----------------------------------|

### General Purpose Facilities (GPF)

- The increase is due to the inclusion of funding (+\$35,000,000) held in reserve pending resolution of issues related to the capability replacement and renovation effort for facilities located in the Hanford Site 300 Area; and, for increased funding, per schedule, of the four subprojects requested in FY 2007. +41,858

### Environmental Safety & Health (ES&H)

- The decrease is due primarily to completion of funding for the Stanford Linear Accelerator Center (SLAC) Safety and Operational Reliability Improvements subproject in FY 2007. -6,270

**Total Funding Change, Laboratories Facilities Support** +35,588

## Excess Facilities Disposition

### Funding Schedule by Activity

(dollars in thousands)

|                               | FY 2006 | FY 2007 | FY 2008 |
|-------------------------------|---------|---------|---------|
| Excess Facilities Disposition | 14,491  | 16,348  | 8,828   |

#### Description

The Excess Facilities Disposition (EFD) subprogram removes excess facilities at the SC laboratories to reduce long-term costs and liabilities in support of programmatic initiatives (e.g., making land available for new programs). In addition to removal of excess facilities, the subprogram also supports cleanup of facilities for reuse when such reuse is economical and provides needed functionality.

#### Benefits

This subprogram reduces the long-term costs, risks, and liabilities at the SC laboratories associated with excess facilities by removing them or cleaning them up for reuse or transfer. It also supports programmatic initiatives by making land available for new programs, by reducing expenditures on surveillance and maintenance of excess facilities and by providing space to offset new construction, in accordance with the Congressional requirement to offset new building space with the removal of existing building space.

#### Supporting Information

SC has a current backlog of facilities whose cost of disposal (i.e., demolition or cleanup for reuse) is estimated to be \$325,000,000. The EFD subprogram evaluates and prioritizes this backlog based on footprint reduction, risk reduction (e.g., removal of hazards), availability of space/land for research activities and cost savings (e.g., elimination of surveillance and maintenance costs). The prioritized list is further evaluated for mission impact by an integrated infrastructure management team representing the EFD subprogram and SC research program offices.

In FY 2008, the EFD subprogram will continue funding for decontamination and demolition (D&D) of Building 51 and the Bevatron at LBNL. This effort, whose total project cost is estimated to range from \$65,000,000 to \$75,300,000, will, by FY 2011, eliminate a legacy facility which ceased operation in 1993, and free up 125,040 square feet—approximately 7.5% of the total usable land at the LBNL site—for programmatic use. Both laboratory and office space are in critically short supply at LBNL. The shortage of onsite space has necessitated leasing of approximately 95,000 square feet in offsite buildings. Continued reliance on an aged and decaying physical plant impedes research, reduces productivity, and makes recruitment and retention of top-quality scientists and engineers much more difficult. Removal of Building 51 and the Bevatron will free up land for re-development to support on-going and new mission activities.

The original D&D approach for Building 51 and the Bevatron was to use the existing 50 year old crane in Building 51, which covers the Bevatron, to remove the shielding blocks and beam line. The speed of the crane meant the project would take four to five years. A review team proposed an alternative approach of first removing Building 51 entirely and then employing two or more modern cranes to remove the shielding blocks and beam line quickly and efficiently. This new approach which was selected at Critical Decision 1—Approve Alternative Selection and Cost Range—allows the removal

portion of the project to be completed over a two year period, reducing project costs 10 to 20% and increasing safety. Funding provided in FY 2008 and remaining funding from prior years will be consolidated and used to support removal work over two adjacent fiscal years in the near future.

The EFD subprogram will also fund demolition of legacy facilities at ANL, BNL, and ORNL, whose continued deterioration presents an increasing risk to the workers and the environment, and for which SC can “bank” space to meet the requirement for offsetting new construction with elimination of excess space.

The EFD subprogram does not fund projects that replace currently active and occupied buildings. Such building replacement projects are funded under the previously described LFS subprogram, and would include removal of the old buildings as part of the justification for the projects.

### Detailed Justification

(dollars in thousands)

| FY 2006 | FY 2007 | FY 2008 |
|---------|---------|---------|
|---------|---------|---------|

#### Excess Facilities Disposition

**14,491      16,348      8,828**

In FY 2006, funding supported the projects listed below and allowed for the cleanup/removal of an estimated 107,000 square feet of space:

- Ames (\$45,000) – Completion of the Closeout and Demolition of the Waste Handling Facility and the Hydrogen Test Cell Facility (9,900 square feet)
- ANL (\$770,000) – Demolition of Buildings 374A, and 40, Phase II, and Site Beryllium Remediation, Phase I, (approximately 11,000 square feet)
- BNL (\$600,000) – Completion of demolition of Buildings 197, 527, 933B and 934, and demolition of Buildings 86, 422A (partial), 482, 628, 649 and 650, Phase I (approximately 19,000 square feet)
- Fermi National Accelerator Laboratory (FNAL) (\$125,000) – Demolition of Trailers T-017, T-024, T-025 and T-069 (approximately 1,440 square feet)
- LBNL (\$10,900,000) – This funding supported surveys and planning activities required to execute the total removal of the Building 51 and the Bevatron complex, including: preparation of project documentation, engineering plans and specifications, waste management plan, characterization plan, health & safety plan, and community relations plan
- Lawrence Livermore National Laboratory (LLNL) (\$150,000) – Demolition of SC Trailer 4325 and Building 363 (approximately 3,700 square feet)
- ORISE (\$768,000) – Demolition of Buildings SC-2, Isotope Laboratory, and SC-5, Large Animal Containment Facility (approximately 6,600 square feet)
- ORNL (\$858,000) – Demolition of Solway and Freels Bend Excess Facilities (approximately 50,000 square feet)

FY 2006 funding also included \$275,000 to conduct External Independent Reviews (EIRs) of SLI projects.



(dollars in thousands)

| FY 2006 | FY 2007 | FY 2008 |
|---------|---------|---------|
|---------|---------|---------|

In FY 2007, funding will support the projects listed below, allowing the cleanup/removal of an estimated 22,000 square feet of space:

- ANL (\$500,000) – Building 205 F-111 Vault Cleanup & Hood Demolition (Phase 3 Vault/Corridor Cleanup)
- BNL (\$697,000) – Continued demolition of Building 650 Hot Laundry Facility
- LBNL (\$14,000,000) – Continued demolition of the Bevatron
- ORNL (\$976,000) – Cleanout and deactivation of Building 3503, and demolition of Buildings 3008, 3111, and 2018 (approximately 22,000 square feet)

FY 2007 funding also includes \$175,000 to conduct External Independent Reviews (EIRs) of SLI construction projects.

In FY 2008, funding will support the projects listed below, allowing the cleanup/removal of an estimated 41,000 square feet of space:

- ANL (\$469,000) – Demolition of Building 40 Calibration Lab (approximately 4,900 square feet)
- BNL (\$650,000) – Demolition of Building 130 Office Facility (approximately 20,000 square feet)
- LBNL (\$6,145,000) – Continued demolition of the Bevatron
- ORNL (\$1,289,000) – Demolition of multiple small buildings and trailers, e.g., Museum Office Trailer-XC1405, ESD/NOAA USAF Instrument Trailer-822, Temporary Waste Storage Facility-7020B and Temporary Waste Storage Facility-7020C (approximately 23,000 square feet)

FY 2008 funding also includes \$275,000 to conduct External Independent Reviews (EIRs) of SLI construction projects.

Note: Individual EFD projects and amounts are subject to revision based on evolving program priorities, including risk reduction (e.g., removal of hazards), footprint reduction, cost savings (e.g., elimination of surveillance and maintenance costs), and availability of space/land for new research activities.

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|   |               |               |              |
|---|---------------|---------------|--------------|
| <b>Total, Excess Facilities Disposition</b> | <b>14,491</b> | <b>16,348</b> | <b>8,828</b> |
|---|---------------|---------------|--------------|

### Explanation of Funding Changes

|                                   |
|-----------------------------------|
| FY 2008 vs.<br>FY 2007<br>(\$000) |
|-----------------------------------|

#### Excess Facilities Disposition

- The decrease is due to reduction in funding for demolition of the Bevatron at LBNL. -7,520

## Oak Ridge Landlord

### Funding Schedule by Activity

(dollars in thousands)

|                    | FY 2006 | FY 2007 | FY 2008 |
|--------------------|---------|---------|---------|
| Oak Ridge Landlord | 5,028   | 5,079   | 5,079   |

#### Description

The Oak Ridge Landlord subprogram supports activities to maintain continuity of operations at the Oak Ridge Reservation (ORR) and the Oak Ridge Service Center (OR).

#### Benefits

This subprogram maintains continuity of operations at ORR and OR by minimizing interruptions due to infrastructure and/or other systems failures. The subprogram also provides Payment in Lieu of Taxes (PILT) assistance to communities around Oak Ridge.

#### Supporting Information

The subprogram supports landlord responsibilities, including infrastructure for the 24,000 acres of the ORR outside of the Y-12 plant, ORNL and the East Tennessee Technology Park, and DOE facilities in the town of Oak Ridge. The supported activities include maintenance of roads, grounds and other infrastructure, support and improvement of environment, safety and health (ES&H) posture, payment of PILT to Oak Ridge communities, and other needs related to landlord responsibilities. These activities maintain continuity of operations at the ORR and OR, and minimize interruptions due to infrastructure and/or other systems failures.

#### Detailed Justification

(dollars in thousands)

|   | FY 2006      | FY 2007      | FY 2008      |
|---|--------------|--------------|--------------|
| <b>Roads, Grounds and Other Infrastructure and ES&amp;H Support and Improvements</b>  | <b>1,981</b> | <b>2,051</b> | <b>2,300</b> |
| <b>General Purpose Equipment (GPE)</b>  | <b>219</b>   | —            | —            |
| <b>General Plant Projects (GPP)</b>   | —            | <b>200</b>   | <b>100</b>   |
| Major road repair.  |              |              |              |
| <b>Payment in Lieu of Taxes (PILT)</b>  | <b>2,550</b> | <b>2,550</b> | <b>2,550</b> |
| PILT to the City of Oak Ridge, and Anderson and Roane Counties.   |              |              |              |
| <b>Reservation Technical Support</b>  | <b>278</b>   | <b>278</b>   | <b>129</b>   |
| Includes meteorological monitoring system, public warning siren system, ORR command media, records management, mapping, and real estate activities. |              |              |              |
| <b>Total, Oak Ridge Landlord</b>  | <b>5,028</b> | <b>5,079</b> | <b>5,079</b> |

## Capital Operating Expenses and Construction Summary

### Capital Operating Expenses

(dollars in thousands)

|  | FY 2006      | FY 2007    | FY 2008    |
|--|--------------|------------|------------|
| General Plant Projects                   | 2,970        | 200        | 100        |
| General Purpose Equipment                | 219          | —          | —          |
| <b>Total, Capital Operating Expenses</b> | <b>3,189</b> | <b>200</b> | <b>100</b> |

### Construction Projects

(dollars in thousands)

|   | Total<br>Estimated<br>Cost (TEC) | Prior Year<br>Appropriations | FY 2006       | FY 2007       | FY 2008             | Unapprop.<br>Balance |
|---|----------------------------------|------------------------------|---------------|---------------|---------------------|----------------------|
| 07-SC-04, Project Engineering Design, Various Locations                 | 8,908                            | —                            | —             | 8,908         | —                   | —                    |
| 04-SC-01, Physical Sciences Facility (PNNL), Project Engineering Design | 27,486 <sup>a</sup>              | 5,946                        | 2,970         | —             | —                   | —                    |
| MEL-001, Science Laboratories Infrastructure Project                    | N/A                              | N/A                          | 14,720        | 19,033        | 63,529 <sup>b</sup> | N/A                  |
| <b>Total, Construction</b>  |                                  |                              | <b>17,690</b> | <b>27,941</b> | <b>63,529</b>       |                      |

<sup>a</sup> Includes \$8,916,000 of PED funded in SC; \$16,570,000 of PED funded in NNSA; and \$2,000,000 of PED funded in DHS.

<sup>b</sup> FY 2008 funding includes \$35,000,000 held in reserve pending resolution of issues related to capability replacement and renovation at PNNL. If the issues are resolved, DOE will initiate a reprogramming request to use these funds for replacing and/or upgrading mission-critical facilities currently located in the Hanford Site 300 Area.