

Under Contract with the Department of Energy (DOE) Contract DE-AC02-76SF00515

STANFORD LINEAR ACCELERATOR CENTER

**2007
TEN YEAR SITE PLAN**

FY 2009 – FY 2018



July 23, 2007

2007 TEN YEAR SITE PLAN
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I. Executive Summary

This Ten Year Site Plan (TYSP) is the Stanford Linear Accelerator Center's (SLAC) comprehensive plan that addresses how the Laboratory's real property assets will support the Department of Energy's (DOE) strategic plan, the Secretary of Energy's five-year planning guidance, and the Office of Science (SC) annual program direction and guidance. The DOE's 2006 Strategic Plan contains a new strategic theme of "Management Excellence." One Strategic goal under Management Excellence is "Build, modernize, and maintain facilities and infrastructure to achieve mission goals and ensure a safe and secure workplace."

This TYSP links facility and infrastructure planning, budgeting, implementation and evaluation in support of SLAC's scientific missions which are a part of the Scientific Discovery & Innovation theme of DOE's 2006 Strategic Plan. This plan is responsive to the goal "Build, modernize, and maintain facilities and infrastructure to achieve mission goals and ensure a safe and secure workplace." Under the Department of Energy's Real Property Management (RPAM) Order, DOE O 430.1B, this plan will become SLAC's planning document that provides annual updates of mission opportunities and resource requirements.

Photon Science is the most rapidly expanding area of research and user activity at SLAC. Photon Science consists of three central and interconnected elements: 1) synchrotron radiation based studies using SPEAR3, 2) x-ray free electron laser development, and 3) research using the Linac Coherent Light Source (LCLS) (which is expected to begin operations in 2009). These elements are coupled with four interdisciplinary, science-based initiatives that engage SLAC and other departments of Stanford University. SLAC continues to have a robust research program in particle physics and astrophysics with the B meson physics program, significant involvement in the International Linear Collider, GLAST, various new initiatives in particle astrophysics and energy frontier research efforts at the Large Hadron Collider at CERN.

Site development at SLAC is driven by the scientific missions under the Office of Science programs in Basic Energy Sciences (BES), High Energy Physics (HEP), and Biological and Environmental Research (BER). With the B Factory experimental operations completing in 2008 and LCLS becoming the primary experiment served by the Linac in 2009, transition of Linac operations from HEP to BES is underway and BES will have full responsibility for all Linac operations in FY2009.

The data presented in this TYSP is consistent with the funding provided in the Office of Science 5-Year Budget Plan and the instructions provided in the SC Guidance for the 2007 Ten Year Site Plans. This plan encompasses all line item construction, general plant projects, institutional general plant projects and potential third party financed construction. It also identifies direct and indirect funding for infrastructure and maintenance of real property. Institutional GPP funds will be used in place of GPP for facility projects for the first time in FY2009 as SLAC has evolved from a single program laboratory to a multi-program laboratory.

During the period of this plan SLAC will concentrate on modernizing its older facilities, replacing its aging electrical and mechanical utilities, and reducing its deferred maintenance backlog to meet the Office of Science target asset condition indices. The Laboratory will increase its spending on infrastructure toward meeting these goals, and will develop an integrated plan to ensure that the funding is spent most effectively. All facility investments for infrastructure, ES&H and direct program initiatives will be prioritized to maximize value and reduce risk in support of the science programs.

SLAC has analyzed its real property for condition, function, mission impact, safety, environmental protection, and property preservation to determine an acceptable funding level for sustainment and modernization. The infrastructure funding planned in this TYSP should be sufficient to reduce the deferred maintenance backlog from a forecasted \$34.5 million at the end of FY2007 to a level where the average asset condition index of all assets will be 0.98 in FY2013.

Two projects have been proposed to DOE-SC under the SLI Infrastructure Initiative, a new Research Support Building to replace 29 old and deteriorated trailers and a Building Modernization project to rehabilitate and convert inefficient and poorly utilized space in two major and seven minor buildings into badly needed office space to meet current mission needs. These projects, estimated to cost \$95 million, are key components in SLAC's strategy to upgrade its infrastructure. A potential SC line item construction project, a storm water treatment system to remove PCBs and lead from storm water, may be required under the Regional Water Quality Control Cleanup Order and is discussed in Section IV.A.5 "Cross-Program Issues – EM and SC."

This TYSP provides an infrastructure plan to achieve an annual maintenance investment index (MII) equal to 2% of the replacement plant value (RPV) in FY2010 if DOE approves SLAC's high value low maintenance RPV proposal which adjusts the RPV of its heavy concrete buildings and underground structures to an amount that represents the value of the systems and components that require maintenance.

II. Overview of Site F&I

The Stanford Linear Accelerator Center is a Department of Energy user facility that serves as a national resource in basic science, research and engineering. SLAC is managed and operated by Stanford University, and is located near the foothills on the San Francisco Peninsula about three miles west of the University campus in an unincorporated portion of San Mateo County. The site occupies 426 acres of land owned by Stanford University that was leased in 1962 to the Atomic Energy Commission, through the year 2012 at no fee. This plan assumes that a new long term lease will be negotiated by DOE and Stanford University.

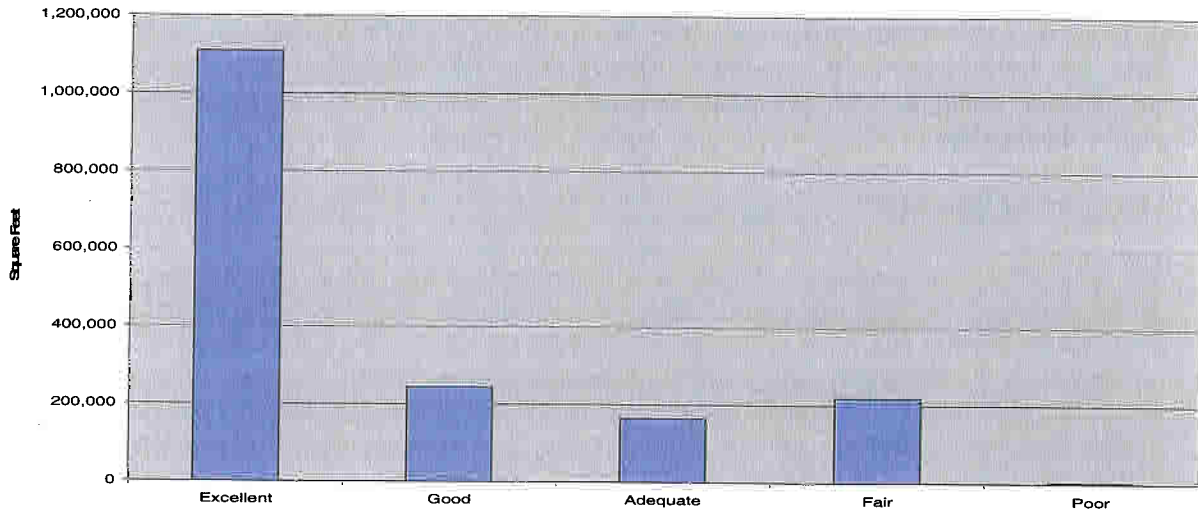
Operations began in 1966 with the two-mile long accelerator directing electrons into stationary targets in experimental halls End Station A and End Station B. In 1972 SPEAR, then the world's most powerful electron-positron colliding beam facility, began operations. In 1980 a new electron-positron beam machine called PEP, a storage ring about 800 meters in diameter operating off the Linac, began operations. The SLAC Linear Collider (SLC) completed in 1989 was the world's first linear electron-positron collider; it is slightly larger in size than PEP and also operated off the Linac. PEP-II, an upgrade of the original PEP machine, was completed in 1998 and provides beam to the BaBar detector. The Stanford Synchrotron Radiation Laboratory (SSRL) was established as an independent laboratory in 1973 and until 1990, shared SPEAR with the high energy physics program at SLAC. SPEAR was the world's first high-intensity synchrotron radiation source and it became a fully dedicated light source in 1990, and SSRL became a division of SLAC in 1992. The original SPEAR ring was upgraded to operate as a third generation light source, SPEAR3, in 2004. In 2006 construction began on the Linac Coherent Light Source (LCLS), which will be the world's first x-ray free electron laser.

SLAC's physical plant consists of 114 buildings and 40 real property trailers totaling nearly 1.8 million square feet, as well as site utilities and roadways. Total replacement plant value (RPV) to be used for FY2007 is \$849.5 million (the FY2004 RPV). The "actual" MII for FY2006 was 1.03% and the actual for FY2007 is forecasted to be 1.1% in accordance with the current update. However, if SLAC's High Value/Low Maintenance RPV Proposal is accepted by DOE, the Laboratory's

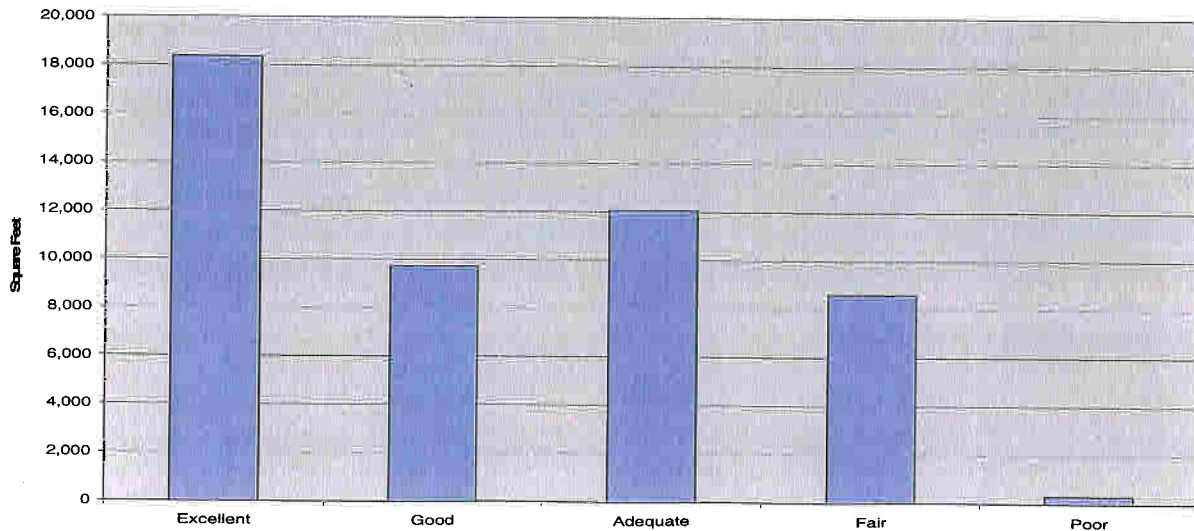
FY2007 RPV will decrease from its current value of \$1,052 million to approximately \$609 million, thereby increasing its MII. (See Section IV.G "Maintenance" for more details.) The physical plant includes many tunnels and other unique experimental facilities, the largest of which are the two-mile long Klystron Gallery (356,000 square feet) that houses support equipment for the linear accelerator and the Linac accelerator housing (115,000 square feet). The average asset utilization index for buildings and trailers is 99.82%. Except for the Kavli Building and the on-site Guest House owned by Stanford University, all SLAC facilities are owned by DOE. The data in this TYSP does not include the two non-DOE buildings. SLAC has four excess facilities, all trailers to be demolished in FY07.

The buildings are in good condition with an average asset condition index (ACI) of nearly 0.98. The trailers are in good condition with an average ACI of 0.96. These ACIs are based upon the RPVs currently in FIMS.

Asset Condition Index - Buildings



Asset Condition Index - Trailers



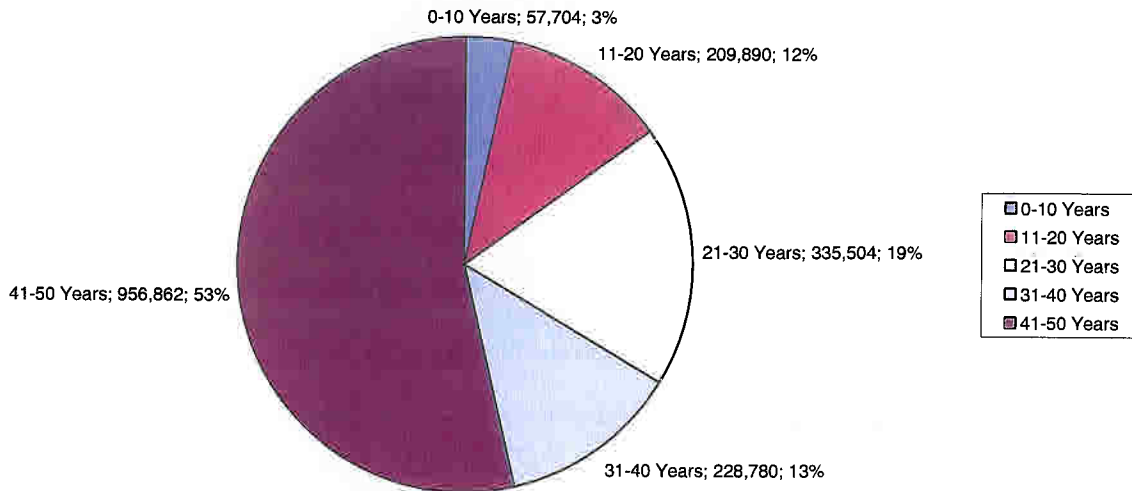
An aerial view of the SLAC site is provided in Attachment I. An electronic link for the site plan is listed in Attachment 2 and electronic links for the various utility drawings are listed in Attachment 3.

The current regular staff number approximately 1,650. Approximately 3000 users consisting of scientists, postdoctoral researchers, and students from the U.S. and abroad make use of SLAC's accelerator-based instrumentation and facilities for their research in photon science, particle physics and particle astrophysics. The estimated average daily site population is about 2,400, including staff, subcontractors, users and visitors.

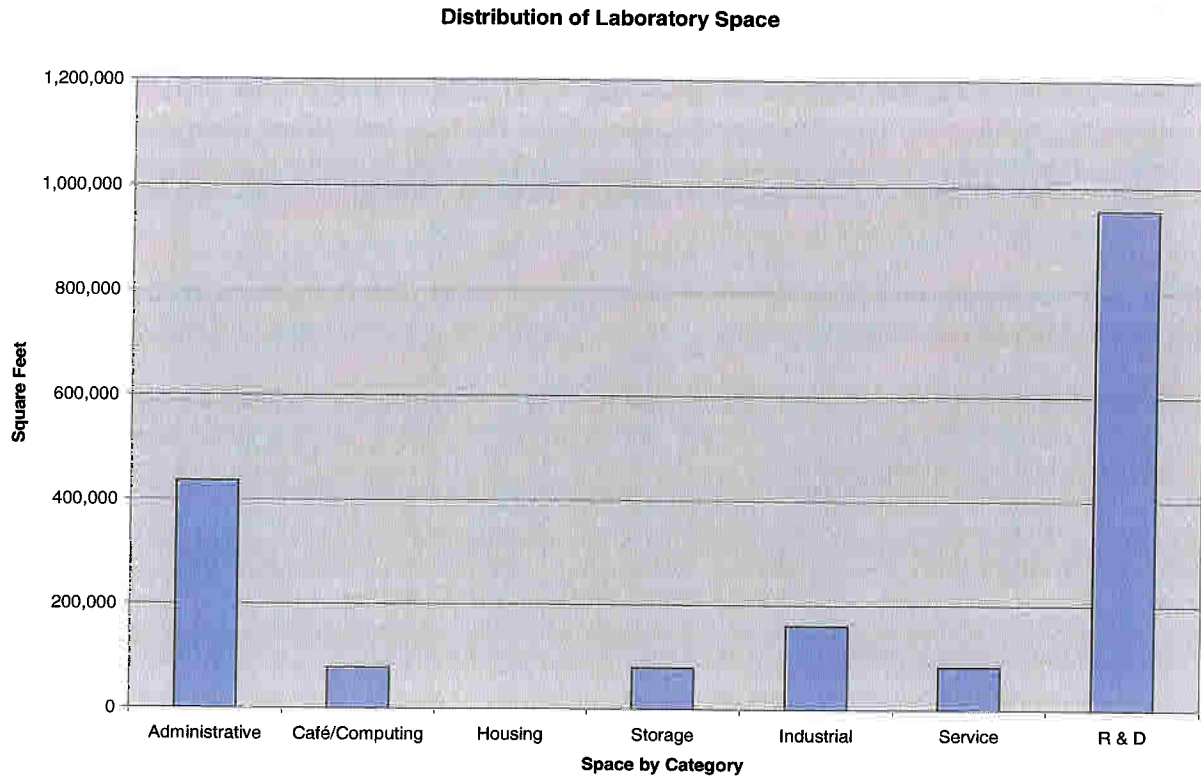
SLAC's total DOE budget in FY2007 is \$356 million, which includes \$107 million for two line item construction projects.

Most of the Laboratory's infrastructure dates back to the original construction between 1962 and 1966. The following graph illustrates that 85% of the Laboratory's building space is over 20 years old, and 53% is over 40 years old.

Buildings & Trailers - Square Footage by Age



The following chart illustrates the distribution of SLAC space, by GSA Use Code.



III. Current and Future Missions for the Site

A. Mission

SLAC's mission is to make discoveries in cutting-edge areas of photon science and particle and particle astrophysics, to effectively operate a safe laboratory for a national and international research user community, and to employ and train exceptionally talented scientists, engineers and the other professionals that support this mission.

The Laboratory's primary mission focus is on designing, constructing, and operating state-of-the-art electron accelerators and related experimental facilities for use in photon science and high energy physics research. Current major user facilities at SLAC include the Stanford Positron Electron Accelerator Ring (SPEAR), a synchrotron light source providing a resource for probing the structure of matter at the atomic and molecular scale, and the B Factory, a high energy electron-positron collider. The B Factory makes use of the two mile long linear accelerator, or Linac, on the SLAC site. SLAC is also the site for the Linac Coherent Light Source (LCLS), the world's first x-ray free-electron laser which will utilize the last third of the Linac and is currently under construction.

B. Transition

SLAC is currently going through a period of transition, evolving from a single purpose laboratory focused on high energy physics to a dual purpose facility with a key focus on photon science along with programs in high energy physics and particle astrophysics. Historically SLAC has been funded primarily by DOE High Energy Physics (HEP), but with the construction of LCLS and the transition of Linac operations from HEP to Basic Energy Sciences (BES), DOE Basic Energy Sciences is now providing the majority of SLAC's funding. Photon science will become the predominant research program at SLAC when the B Factory experiment ends operations in 2008 and operations at LCLS commence in 2009. With LCLS and SPEAR3, SLAC will have a suite of accelerator-based x-ray light sources for photon science research that will lead the world in exploring the behavior of the ultra-fast and the ultra-small. The high energy physics experimental program will evolve from research based on major on-site experimental facilities to the research and development involving off-site particle accelerators as well as non-accelerator based particle and particle astrophysics.

The major research activities planned at the Laboratory for the next decade, and their expected impact on facilities, are as follows.

1. Major Research Activities

a. Foundation: the Ongoing Programs

Enhance and maintain the necessary capabilities to support the growing and evolving research programs through operation of state-of-the-art facilities including the SPEAR3 synchrotron light source, the B Factory (until end of operations in 2008) and the Large Area Telescope/Gamma-Ray Large Area Space Telescope (LAT/GLAST). GLAST, a space-based detector, will begin its operation phase after the launch in 2007.

b. Linac Coherent Light Source (LCLS)

LCLS will be the world's first x-ray free electron laser. It will provide unique photon beams for research exploring previously inaccessible realms of structural dynamics in the chemical, biological and material sciences, as well as new applications in nanoscale phenomenology and atomic and plasma physics.

LCLS began conventional construction in 2006 and is scheduled to become operational in 2009. The science program of LCLS is expected to grow significantly and in recognition of this, the initial construction has been designed to accommodate substantial performance enhancements and a second undulator with additional experimental stations without requiring construction of conventional facilities. The infrastructure will readily accommodate future LCLS expansion of additional beam lines proposed in the horizon of this TYSP.

The last one-third of the Linac will generate the electron beams that are transported across the Research Yard (in a new above-ground structure) into a tunnel. Experiments will be done in two new underground experimental halls along the tunnel. The proposed expansion to LCLS in 2014–2020 will require the entire Linac to supply the electron beams.

The initial phase of LCLS will include beam line tunnels, experimental halls, and service buildings for a total building area addition of 93,400 square feet.

c. Photon Science Initiatives

Photon Science will seek new interdisciplinary initiatives with Stanford University on research in areas that cut across the physical, biomedical, engineering and computational sciences. In addition to the recently established Photon Ultrafast Laser Science and Engineering Center (PULSE), growth will also involve the X-Ray Laboratory for Advanced Materials Science, the Structural Biology Initiative and the Environmental Molecular Sciences program. To support these new initiatives, a 35,000 square foot Photon Science Building and 15,000 square foot building for the X-Ray Laboratory for Advanced Materials Science are planned.

In addition to the scientific instruments provided under LCLS, the LCLS Ultrafast Science Instruments (LUSI) project is building an additional suite of x-ray instruments for exploiting the unique scientific capability of LCLS. LUSI project received its initial funding in 2007, and will build three instruments over a period of about five years.

d. International Linear Collider (ILC)

Although the ILC is far too large to be built on the SLAC site, the Laboratory will be significantly involved in the development and design of the ILC machine and its detectors, and the testing of its subsystems.

e. New Initiatives in Particle Astrophysics and Neutrino Physics

GLAST, SLAC's first major venture into particle astrophysics, has led to the founding of the Kavli Institute for Particle Astrophysics and Cosmology (KIPAC), a joint institute of Stanford University and SLAC. Other projects such as the Large Synoptic Survey Telescope (LSST), a land-based telescope whose primary purpose is to determine the properties of dark energy and dark matter, are currently in the R&D phase. Other new initiatives are anticipated towards the end of this decade that will lead to the next generation of cosmological studies. The Kavli Institute is housed on Stanford campus and in the new third party (Stanford University) financed Kavli Building which opened in March 2006.

There is the R&D effort, which could lead to a full-scale experiment to measure neutrinoless double beta decays through the Enriched Xenon Observatory (EXO). The Enriched Xenon Observatory is an underground detector that will search for a rare type of nuclear decay that will lead to a fuller understanding of the neutrino. A 200 kg prototype of the EXO experiment will begin operations in 2007 at WIPP in New Mexico.

- f. SLAC HEP staff has joined the energy frontier research efforts at the Large Hadron Collider at CERN. Participation will include fundamental research, detector operation and upgrades and computing. SLAC has been designated as the Western Tier 2 (WT2) Center as an integral part of the globally distributed computing system of the ATLAS experiment. It is also a regional facility serving the ATLAS physicists in the western region of the United States. The Western Tier 2 Center is a collaborative effort of the following institutions: University of Arizona; University of California, Irvine; University of California, Santa Cruz; University of Oregon; University of Washington; University of Wisconsin, Madison; Lawrence Berkeley National Laboratory (LBNL) and Stanford Linear Accelerator Center (SLAC).

g. Accelerator R&D and Supporting Technologies

Accelerator R&D and R&D in scientific computing have paid off handsomely in the past and will be continued with initiatives that cross-cut to both photon science and particle science. SLAC has proposed to replace the Final Focus Test Beam (dismantled for the construction of the LCLS) with a new 30 GeV facility, SABER, capable of delivering high quality, high energy, short pulse electron beams to the user community for advanced accelerator investigations. SABER, which will be a modification of the Linac and South Arc region of the Stanford Linear Collider (SLC) which has been in operational standby, does not involve any conventional construction.

In the computing area SLAC would like to further develop its core competency in the "science of scientific computing" in support of experimental detector and accelerator simulation and in "computing for data intensive science" specializing in huge memory systems for data analysis and scalable data management initially driven by the B Factory's science program.

2. Impact on Existing Facilities

The end of B Factory operations in October 2008 will put the PEP-II tunnel into operational standby status for possible future use. The IR-2 (BaBar) experimental hall and support buildings are expected to be dedicated to an experiment elsewhere or put to use for other purposes – storage and assembly space in support of other ongoing programs. PEP-II support staff and supporting lab and shop space will be transitioned to support the operations of the Linac and LCLS or the other future programs. The front two-thirds of the Linac will be supported for continued use for generating electron beams to End Station A and SABER. Eventually it will need to be upgraded in support of LCLS in 2014-2020.

C. Funding Sources

SLAC will continue to be primarily funded by the DOE Office of Science (SC) (BES, HEP, BER, ASCR, SLI, S&S), with BES being the dominant program. As the PEP-II/BaBar experimental operations will be completing in 2008 and LCLS proceeds through its commissioning and with operations scheduled to begin in 2009, a three-year transition of the SLAC Linac operations from HEP to BES is in progress.

It should be noted that SLAC receives some funding from non-DOE sources. The current SLAC non-DOE funded activities are primarily sponsored by NASA, NIH, private foundation, and collaborative partners. All of the activities complement the DOE support of the research programs and/or the operation of experimental facilities at SLAC, and are well-aligned with the SLAC mission. NASA provides funding, together with DOE and an international collaboration, for the Large Area Telescope (LAT), of the NASA Gamma-Ray Large Area Space Telescope (GLAST) mission, and for particle astrophysics research. The NIH funding is in support of the macromolecular crystallography program within the SSRL Structural Molecular Biology program. SLAC's collaborative partners, in the U.S. and from abroad, provide support for the fabrication and operation of experimental facilities for photon science and particle science research.

Through its strong connection with Stanford, SLAC has been able to obtain funding for the SLAC Guest House, the Kavli Building and the construction of a Molecular Observatory for Structural Molecular Biology (from the Moore Foundation) at SPEAR3. Third party funding

will continue to be sought for other select facilities when DOE funding is not available. Potential donors to Stanford University have expressed interest in contributing to the construction of research facilities which are synergistic to the DOE programs. Potential third party financed projects are summarized in Section IV.M "Leasing & Third Party / Non-Federal Funded Construction of New Buildings."

Below is a summary table showing projected program funding (excluding construction) and staffing.

Summary of Expected Program Funding (excluding line-item construction projects) and Laboratory Staffing (FTE's):

Funding (excluding line-item const.):	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY 15	FY 16	FY 17	FY 18
Total \$(000,000):	250.5	266.0	282.8	332.0	352.7	357.0	372.6	383.4	402.1	421.8	442.5	464.2	487.1
Total Lab Staffing: (FTE's)	1600	1650	1650	1650	1720	1740	1740	1740	1740	1740	1740	1740	1740

D. Staffing and User Levels

Total staffing, currently about 1,650 FTE's, is expected to increase over the planning period, particularly in the areas associated with the LCLS and SPEAR3 programs. Two new beam lines are currently under construction at SPEAR3, which when operable will give the light source twenty-nine beam lines. SPEAR3 has the capability to easily add another twenty-nine beam lines for a total of fifty-eight. LCLS will begin operations in 2009, and expansions proposed to LCLS during the period of this TYSP include a second undulator and several additional undulator beam lines in three additional tunnels. The extraordinary LCLS beams will lead to new research opportunities in the chemical, biological and materials sciences as well as new applications in allied fields. The proposed Photon Science Building and other proposed facilities listed under Section IV.M "Leasing & Third Party / Non-Federal Funded Construction of New Buildings" will support the growth of both staff and users. Total user population is expected to grow from the current 3,000 as well, although the increases associated with the photon science programs will be somewhat offset by the expected conclusion of the B Factory experimental operations.

The user community is expected to rise with LCLS, possibly creating the need for an addition to the Guest House by FY2014.

E. Budgeted or Planned Research Program Funded Projects

Following are summary descriptions of budgeted or planned research program funded Line Item Construction Projects. Budget and schedule detail is shown in Attachment 4 "Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission."

Linac Coherent Light Source (BES)

The current baseline for total estimated cost (TEC) of this project is \$315 million, which includes \$36 million for project engineering and design and \$279 million for construction. The

FY2007 continuing resolution has impacted the project cost and schedule due to delay and shortfall in funding. A Baseline Change Request for the LCLS project will be submitted to DOE for review in August 2007.

The Linac Coherent Light Source (LCLS) will be the world's first x-ray free electron laser. Construction began during the summer of FY2006 and operations are scheduled to commence in 2009.

A new injector has been constructed, installed and commissioned that will inject electrons into the final kilometer of the three kilometer Linac to accelerate electrons into the new LCLS facility. Minor modifications are being made to the Linac to serve the LCLS. Two new experimental buildings, the Near Hall and the Far Hall connected by a beam line tunnel, are in construction during FY2007 and beneficial use will occur in FY2008.

The beam line tunnels, experimental halls, and service buildings will add about 93,400 square feet of building area. The new construction is located in the Research Yard and the experimental area east of the Research Yard.

Construction of the LCLS facilities required a waiver of DOE requirements for eliminating excess space at SLAC before any new facilities could be built. SLAC did not have enough excess space to meet the one-for-one offset requirement. The Director, Office of Science, applied excess space at other DOE sites to meet this offset, and the Secretary of Energy granted a waiver to SLAC, dated March 24, 2005.

Summary of Site Impacts

GSF Added: 93,400

GSF Demolished: 6,008

Space Bank: Offsetting space available with the Secretary of Energy space waiver

Completion Date: 2010

RPV (conventional facilities): \$42.2 million

Increase in Site Maintenance Funding: To be determined

Staff Increase: 70 in FY2010

Support: Existing site support (office space, cafeteria, craft support shops) adequate

Utilities: Existing site utilities adequate

Traffic & Parking: Existing roads adequate. Additional parking to be provided

Photon Ultrafast Laser Science and Engineering Building Renovation (BES)

Photon Ultrafast Laser Science and Engineering (PULSE) Center will be located in the Central Laboratory Building (B040). Approximately 18,000 square feet of existing space in the two-story wing will be renovated to provide offices, laboratory clusters, and meeting rooms to meet the needs of the PULSE Center research program. The current budgeted TEC is \$11.2M.

Summary of Site Impacts

GSF Added: 0

GSF Demolished: 0

Space Bank: Not applicable

Completion Date: 2009

RPV (conventional facilities): 0

Increase in Site Maintenance Funding: Not applicable
Staff Increase: Not applicable
Support: Not applicable
Utilities: Not applicable
Traffic & Parking: Not applicable

X-Ray Laboratory for Advanced Materials Science (XLAM) (BES)

This proposed project will consist of a 15,000 square foot office, seminar and laboratory building to house a group from SSRL and Stanford University that has created a strategic initiative focused on utilizing x-rays to characterize new materials and study their properties. The objective of this initiative is to enable forefront materials research in close collaboration with outside experts and to make available newly developed techniques to the broader SSRL and LCLS user community. The facility will serve faculty, post-doctorates and students. This project is proposed for FY2010 and is estimated to cost \$13.5 million.

Summary of Site Impacts

GSF Added: 15,000
GSF Demolished: 0
Space Bank: Offsetting space available with the Secretary of Energy space waiver
Completion Date: 2010
RPV (conventional facilities): \$10.8M
Increase in Site Maintenance Funding: To be determined
Staff Increase: Not applicable
Support: Not applicable
Utilities: Existing site utilities adequate
Traffic & Parking: Existing roads adequate. Additional parking to be provided

High Energy Density Science (HEDS) Research Center (non DOE-SC)

This proposed project will consist of a 7,500 square foot building to house a high energy (8kJ) laser and target station. The laser and target station will support a rich HEDS research program. Another target station will be housed in the Linac Coherent Light Source Far Experiment Hall, where the LCLS x-ray beam will be used to probe the extreme states of matter created by the 8 kJ laser. The estimated cost of this project, which is proposed for in FY2010 – FY2011, is \$13 million with funding coming from outside of DOE Office of Science.

Summary of Site Impacts

GSF Added: 7,500
GSF Demolished: None
Space Bank: None
Completion Date: 2011
RPV (conventional facilities): \$10.4M
Increase in Site Maintenance Funding: Unknown at this time
Staff Increase: Included with LCLS in FY2010
Support: Existing site support adequate
Utilities: Existing site utilities adequate
Traffic & Parking: Existing roads adequate, parking needs undetermined at this time

LCLS 2nd Undulator (Technical System Only) (BES) (for information only, does not add space)

The TEC of this proposed expansion is estimated at \$150-\$210 million.

The initial LCLS project was designed and constructed to accommodate two parallel undulator systems within a single undulator tunnel. The second undulator system allows the LCLS to build upon the initial LCLS investment and deliver a second FEL, providing additional scientific opportunities possibly at an even shorter wavelength. The second undulator system is foreseen to be constructed, installed and available for research in FY2015.

Summary of Site Impacts

GSF Added: None

GSF Demolished: None

Space Bank: Not applicable

Completion Date: 2014

RPV (conventional facilities): Non-programmatic facilities only

Increase in Site Maintenance Funding: Non-programmatic facilities only

Staff Increase: 75 in FY2015

Support: Existing site support (office space, cafeteria, craft support shops) adequate

Utilities: Existing site utilities adequate

Traffic & Parking: Existing roads adequate, parking needs undetermined at this time

LCLS Future FELs (Technical Systems and Conventional Facilities) (BES)

This proposed expansion project has a TEC of about \$1.2 billion for full implementation of six undulators. If fully funded, completion could be expected by FY2020.

To support the anticipated long-term growth of the LCLS science program, the current LCLS machine design allows for additional undulator beam lines to be accommodated in three additional tunnels, two to the south and one to the north of the original tunnel. Each tunnel is currently estimated to be 14 feet wide and 2,500 feet long. The expansion of the LCLS can be phased.

Summary of Site Impacts

GSF Added: To be determined

GSF Demolished: None

Space Bank: Unknown at this time

Completion Date: To be determined

RPV (conventional facilities): Unknown at this time

Increase in Site Maintenance Funding: Unknown at this time

Staff Increase: Unknown at this time

Support: Unknown at this time

Utilities: Unknown at this time

Traffic & Parking: Unknown at this time

IV. Meeting F&I Performance Requirements

A. Vision, Goals, and Strategy (VGS) for F&I

1. Vision

- a. SLAC's major facilities and infrastructure are maintained and modernized, and facilities and infrastructure are in place to effectively and efficiently support its expected research mission well into the 21st century.
- b. Facilities and infrastructure are efficient to operate and maintain.
- c. The maintenance backlog is maintained at an acceptable level.
- d. SLAC's office and laboratory facilities make it the "workplace of choice" for employees and research users and help attract and retain high quality staff.
- e. The latest advances in information technology are available to enhance worker productivity.
- f. Users have access to quality research support facilities and convenient and reasonable accommodations.
- g. The Laboratory's facilities and infrastructure provide a safe and healthy working environment for employees, users and visitors.
- h. The Laboratory continues to be viewed as a good neighbor to the community.

2. Goals

In support of this vision, SLAC will work toward the following goals:

- a. Meet the DOE MII target of 2%.
- b. Through asset replacement, recapitalization and maintenance, achieve and maintain asset condition indexes, by mission classification, that meet the SC ACI targets.
- c. Replace the aged and obsolete high voltage electrical distribution equipment serving the Linac complex with modern equipment.
- d. Replace the aged, undersized and deteriorated underground mechanical utilities and complete the building seismic strengthening program.
- e. Replace old and deteriorated occupied trailers with a permanent building.
- f. Renovate several buildings to modern standards and provide the improvements necessary to significantly improve utilization.
- g. Implement the provisions of the Energy Policy Act (EPACT) of 2005 and Executive Order 13423 which address energy and water management.
- h. Construct the Photon Science Building and the X-Ray Laboratory for Advanced Materials Science (XLAM) to support new initiatives with Stanford University in Photon Science.
- i. Complete site environmental cleanup requirements set forth by order of the California Regional Water Quality Control Board.

3. Strategy

The following strategy (numbered to correspond with the respective goals) will be followed to achieve the above goals:

- a.1. Review all non-maintenance indirect costs and planned programmatic budget targets with the intent to achieve and MII of 2% in FY2010.
- a.2. Gain DOE approval of SLAC's High Value/Low Maintenance RPV proposal which will significantly reduce the Laboratory's RPV.

- b.1. Proposed SLI Infrastructure Initiative project "Research Support Building" to replace 60K square feet of aged, deteriorated and seismically deficient trailers.
- b.2. Proposed SLI Infrastructure Initiative project "Building Modernization" to renovate two major and seven smaller buildings.
- b.3. Increase infrastructure spending, both for maintenance and recapitalization.

- c.1. Propose programmatic funding for those aspects of the Electrical Distribution Upgrade project that will serve LCLS.
- c.2. All of the substations serving the Linac complex that need replacement have been identified and prioritized, along with other infrastructure projects, for GPP/IGPP funding in the Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission in Attachment 4.

- d.1. Construction began on the Safety & Operational Reliability Improvements Project in mid-FY2007.
- d.2. The remainder of the needed replacements of underground mechanical utilities and seismic strengthening have been identified and prioritized, along with other infrastructure projects, for GPP/IGPP funding in the Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission in Attachment 4.

- e.1. Proposed SLI Infrastructure Initiative project "Research Support Building" to replace 60K square feet of aged, deteriorated and seismically deficient trailers.

- f.1. Proposed SLI Infrastructure Initiative project "Building Modernization" to renovate two major and seven smaller buildings.
- f.2. If the line item project is not approved, use IGPP, operating funding or indirect overhead funding as applicable, on a priority basis with other infrastructure projects, to renovate buildings to modern standards.

- g.1. Evaluate the use of Energy Saving Performance Contracts to implement energy and water conservation projects.
- g.2. Pursue DOE Departmental Energy Management Program funding for retrofit energy efficiency projects.
- g.3. Investigate California Energy Commission grants and rebates for eligible energy efficiency projects.

- g.4. Utilize IGPP, operating funding or indirect overhead funding as applicable, on a priority basis with other infrastructure projects, to implement energy and water conservation projects and to integrate conservation features into other projects.
- h.1. Work with BES to obtain funding for the Photon Science Building and the X-Ray Laboratory for Advanced Materials Science (XLAM).
- h.2. If DOE is unable to fund the buildings, seek third party financing.
- i.1. Investigate to identify the areas requiring remediation, evaluate alternative approaches and work with DOE-SC to fund the activities.

4. Facility and Infrastructure Issues

In order to implement the strategies and meet the goals listed in IV.A.2 above, the following key facility and infrastructure issues must be addressed.

a. Maintenance Funding and MII

For several years prior to FY2005 the maintenance budget remained at a constant dollar level due to flat operating budgets (declining in terms of purchasing power). In FY2005 actual maintenance costs increased by \$2,039K to \$6,916K or 42% over the FY2004 level of \$4,877K. This resulted in an MII increase from 0.57% to 0.81%. In FY2006 maintenance costs increased to \$9,324K for an MII of 1.03%. The Laboratory is intent on increasing its MII to the SC goal of 2% as indicated by the increase in its maintenance funding targets over the FY2008–FY2018 period shown in the Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget. A key to achieving an MII of 2% in the near future is DOE's validation and approval of SLAC's High Value/Low Maintenance (HV/LM) RPV proposal that was submitted in November 2006. In this TYSP RPV and MII data and analysis have been discussed under two scenarios, using the site RPV currently in FIMS and with the site RPV as calculated with the HV/LM RPVs for SLAC's unique facilities.

b. IGPP

General purpose GPP funds will no longer be provided in FY2009 and must be replaced by IGPP as SLAC is now considered a multi-program laboratory. IGPP is funded through Laboratory indirects. SLAC expects to receive GPP funding for general purpose facilities through FY2008. IGPP will replace GPP in FY2009 and forward for all non-line item real property improvement projects. All non-line item projects related to the program and not real property have been excluded from the FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget.

c. Aged High Voltage Electrical Distribution System

Most of the high voltage distribution equipment serving the Linac complex as well as a few other site substations will need replacement over the next ten plus years.

d. Aged and Undersized Underground Mechanical Utilities

Much of the nearly 45 year old underground mechanical utilities (domestic/fire protection water, heating hot water, chilled water, cooling tower water, compressed air, natural gas, sanitary sewer and storm drain system) will need repair or replacement over the next ten years. The SLI Safety & Operational Reliability Improvements

Project will replace those sections that have deteriorated to the greatest extent and will implement seismic upgrades to several facilities. However, additional work will be required to fully restore the underground utilities and complete the needed seismic upgrades.

e. Aged, deteriorated and seismically deficient trailers

60K square feet (29 trailers) of aged, deteriorated and in many cases seismically deficient office trailers and modular structures need to be replaced with a permanent building. These trailers average 28 years of age and greatly exceed the expected service life of 10 years. Collocation of staff along with readily available conference rooms will increase interaction and productivity. A project has been proposed for a "Research Support Building" as part of the SLI Infrastructure Initiative.

f. Building Modernizations

Two major (B003 & B024) and seven smaller buildings, ranging in age from 26 to 43 years, need to be modernized to provide a pleasant and productive working environment with the appropriate support infrastructure. These buildings are currently underutilized and will house 55% (91) more staff after modernization as compared to current occupancy. A project has been proposed to fund this "Building Modernization Project" as part of the SLI Infrastructure Initiative.

g. Facilities to Support the Changing Research Mission

SLAC has an expanded, science-driven program planned for the future that is dependent upon the availability of appropriated funds and programmatic decisions by DOE-SC. The Laboratory intends to position itself to take advantage of any opportunities that may be available through the American Competitiveness Initiative. In addition, SLAC and Stanford University are exploring new initiatives that are well-aligned with the SLAC mission and its science oriented business lines which leverage SLAC's existing facilities and staff. This TYSP anticipates this collaboration by including some new buildings in Section IV.M "Leasing & Third Party / Non-Federal Funded Construction of New Buildings" that may be constructed with third party funding if DOE-SC is unable to fund them.

5. Cross-Program Issues - EM And SC

The primary environmental management issue at SLAC is control and remediation of legacy materials in soil or groundwater. In May 2005, the California Regional Water Quality Control Board, San Francisco Bay Region, issued Order R2-2005-0022 for the investigation and remediation of impacted soil and groundwater at SLAC.

Since the early 1990s, the DOE Office of Environmental Management (EM) has funded the investigation and remediation of soil and groundwater at SLAC. The primary soil concerns are polychlorinated biphenyls (PCBs) and lead. The EM program has completed a number of soil remediations over the last 12 years, and is scheduled to complete additional work. The primary chemicals of concern in limited areas of groundwater at SLAC are chlorinated solvents. One groundwater remediation system has been in operation since 2001, one was constructed in 2005-2006, one is currently being upgraded, and two more are planned to be installed in the next several years. In addition, a monitoring network and database have been established to monitor chemical movement in groundwater.

EM is currently working with SC on plans to transfer the responsibility for "Long-Term Response and Stewardship" activities at SLAC, possibly beginning in 2009. The remediation activities no longer funded by EM would include at least the operation and maintenance (O&M) of the groundwater containment and treatment system at the Former Solvent Underground Storage Tank Area (FSUST), and the O&M of two dual-phase extraction and treatment systems, one located at the Former Hazardous Waste Storage Area (FHWSA) and one to be located at the Plating Shop (PS) Area. EM and SC are negotiating transfer agreements, including program responsibilities.

There are additional SLAC sites identified as requiring environmental investigation and cleanup which EM and SC are negotiating responsibility for. In FY2004, an Independent Review Team (IRT) was convened to determine the appropriate scope and schedule for this remaining cleanup work. The IRT report recommended a split in responsibility between SC and EM. The IRT viewed PCB impacts to storm water as an operational issue and therefore should be an SC responsibility. EM would however be responsible for remediating PCB source areas.

A formal Feasibility Study will be prepared under a current Regional Water Quality Control Cleanup Order (No. R2-2005-0022) to evaluate remedial alternatives to address PCBs and lead in storm water. Despite past remedial actions, PCBs and lead continue to be found in sediment samples taken from two unlined drainage channels located upstream of San Francisquito Creek which contains federally threatened species. A potential remedial alternative that may be required by the Cleanup Order consists of a detention basin with chemical addition followed by physical treatment using ultra-filtration or carbon adsorption. This alternative will require an SC funded three year line item construction project, possibly to begin around FY2013, and may cost over \$15.0 million.

To complete additional work scope, EM completed two baseline change proposals in 2005 to obtain the extra funding to support the EM activities, based on an estimated EM completion of FY2009, although EM will fund the majority of FY2010 Long-Term Response and Stewardship activities. A third baseline change proposal is anticipated at the CD-2 and Performance Baseline. The costs and work schedule will be re-evaluated during completion of the Performance Baseline. Based on the currently approved funding profile, SLAC currently expects to receive EM funding of \$5.7 million in FY2007, \$5.6 million in FY2008, and \$4.7 million in FY2009. EM has also requested \$1.5 million to cover one year of operations and maintenance costs for the groundwater treatment systems. The \$1.5 million would be transferred to SC in FY2010 to fund former EM activities (e.g., operations and maintenance of treatment systems). As mentioned above, the funding profile may change based on the CD-2 and completion of the Baseline. EM communicated to SLAC in May, 2007 that a large portion of the Environmental Restoration Project EM work scope would be transferred from SLAC to an indefinite delivery indefinite quantity (IDIQ) contractor. The extent of the impact on FY08 and subsequent year funding is unknown at the present time.

B. Process for Identifying F&I Needs and Development of Plans to Meet the VGS

The Conventional and Experimental Facilities Department (CEF) annually prepares its preliminary Five Year Plan that identifies the major infrastructure projects requested for the period. Projects are identified by technical experts within CEF. This plan is prepared without regard to availability of funding or resources to accomplish the projects. The projects are then prioritized by a group consisting of technical experts, CEF management and CEF ES&H

coordinators. From this list CEF finalizes its Five Year Plan and submits those projects it wants to be considered for funding to Operations Planning, the department within the Operations Directorate that has responsibility to prepare, maintain, track and report on the infrastructure projects and budget. With CEF's Five Year Plan as the basis, Operations Planning prepares and maintains the ongoing Laboratory Infrastructure Plan which consists of all requested infrastructure projects tentatively planned for the upcoming five-plus years. Groups other than CEF also submit projects to Operations Planning that are included in the Laboratory Infrastructure Plan.

A select committee chaired by Operations Planning and including representatives from various segments of the Laboratory who have interest and knowledge of facilities, program operations and ES&H use the CAMP process to prioritize the projects. The Laboratory Infrastructure Plan and the CAMP ratings are submitted to the SLAC Infrastructure Committee which has the task of recommending the projects to be funded in the upcoming fiscal year. The Infrastructure Committee is comprised of representatives from each Directorate and includes the Director of Operations, Chief Financial Officer, CEF Department Head and Assistant Associate Director of ES&H. The Infrastructure Committee makes its project recommendations to the Lab Director within the funding limits afforded by the Laboratory's current year budget plan. When approved this "project list" becomes the infrastructure "Operating Plan" for the fiscal year. This list is the basis for the GPP and maintenance projects in the annual Integrated Facilities and Infrastructure Budget submittal and the TYSP. The Environmental Safety and Health Coordinating Council, chaired by the SLAC Director, reviews the Infrastructure list on a quarterly basis.

Line item projects for new buildings are proposed to the Directorate by individual directorates (Photon Science, Particle and Particle Astrophysics or Operations) based upon mission need. Infrastructure line item projects are proposed to the Directorate by CEF. Directorate-approved projects are included in the annual Integrated Facilities and Infrastructure Budget submittal and the TYSP.

Maintenance funding for preventive and repair work (non-project) is derived from past history and the deferred maintenance list. The deferred maintenance list is the culmination of the past five years of CAS inspections plus other SLAC identified deficiencies.

The environmental remediation projects are scoped to comply with California Regional Water Quality Control Board orders and other local regulations.

C. Land Use Plans

SLAC updated its master land use plan, Stanford Linear Accelerator Center Long Range Development Plan (LRDP), in June 2003. This Ten Year Site Plan is generally consistent with these long range plans.

The LRDP includes a 10-Year Plan that identifies facilities needed to support near term mission objectives, and a 20+ Year Plan that creates a framework for long term growth. The plan also preserves the buffer zones at SLAC boundaries that are important to the community at large, and encourages redevelopment and infill which minimizes expansion into undeveloped areas in order to minimize environmental impact. The LRDP employs strategies to make room for growth: redevelopment of low-density areas at higher density, expansion and intensification of existing facilities, and careful consideration of expansion into undeveloped areas. The logic of well-planned development will make room for research program expansion and the human

support systems (offices, parking, food service, short-term lodging, and computer facilities) necessary to serve those programs.

A major land use challenge is removal of recyclable scrap metal, which continues to accumulate as a result of DOE’s suspension of recycling of surveyed and cleared metals from Radiological Areas. This requires considerable storage space and incurs considerable expense. SLAC costs are increasing as new storage locations are required and additional storage containers are acquired to protect these metals from the environment. The alternative to storage is even more costly low-level radioactive waste disposal, even though these materials have passed required screening criteria for no detectable radioactive contamination.

SLAC’s LRDP serves as a working document and a guide for future development. The plan will be updated as necessary to meet the needs and goals of the Laboratory and its stakeholders. The URL for SLAC’s LRDP is:
http://www-group.slac.stanford.edu/bsd/SLAC_LRDP_final.pdf.

D. Utilization & Excess Real Property

The asset utilization indexes (AUI) for the Laboratory’s offices, warehouses and laboratories are shown in the following table. All are above the DOE targets.

Usage Type	SLAC AUI	DOE Target for FY2007	DOE Long Term Target
Offices	99.32%	93.50%	95.00%
Warehouses	100.00%	88.50%	89.00%
Laboratories	100.00%	86.00%	90.00%

SLAC has four trailers, 288, 289, 290 and 293 that have been declared excess to the DOE. See Attachment 5 for details.

E. Long Term Stewardship

Based on the current programmatic assumptions, no contaminated buildings or structures are expected to be excessed during the planning period through 2018. However, there are contaminated facilities as identified in SLAC’s Active Facilities Data Collection System (AFDCS) that would require remediation.

The SLC Arcs have been on “Operational Standby” since 1998 but, similar to the PEP Ring before PEP-II, are expected to be utilized in the future. SABER, the replacement for the Final Focus Test Beam, is located in the first third of the South Arc region of the SLC. The PEP-II Ring will be placed on Operational Standby after the B Factory ends operations in 2008.

F. Replacement Plant Value (RPV) Estimates

The estimated RPVs for SLAC’s buildings, trailers and OSFs in FIMS, based upon the “February 2007 RPV update” value of \$1,050,825,554 (to be used for FY2007), including the new conventional facilities projects and escalated annually at 2.3% per year, is shown in Table A. RPVs for those buildings in Section IV.M “Leasing & Third Party / Non-Federal Funded Construction of New Buildings” are not included.

Table A

RPV Estimates for the Planning Period - Current FIMS Value for FY2007

	RPV of Existing Facilities at Beginning of FY	Additions/Subtractions by Project	Total Estimated RPV at End of FY	Escalated RPV at End of FY
FY 04	\$849,482,895	NA	NA	NA
FY 05	\$904,804,001	NA	NA	NA
FY 06	\$978,616,497	NA	NA	\$1,050,825,554
FY 07	\$1,050,825,554	Remove trailers 288, 289, 290 & 293 - (\$503,694)	\$1,050,321,860	\$1,074,479,263
FY 08	\$1,074,479,263	Salvage Operations Bldg. - \$752,000, Remove trailers 234 & 238 - (\$275,630)	\$1,074,955,633	\$1,099,679,612
FY 09	\$1,099,679,612	LCLS conventional - \$65,370,366	\$1,165,049,978	\$1,191,846,128
FY 10	\$1,191,846,128	Remove trailers - (\$2,415,700)	\$1,189,430,428	\$1,216,787,328
FY 11	\$1,216,787,328	XLAM - \$10,800,000	\$1,227,587,328	\$1,255,821,836
FY 12	\$1,255,821,836	Radiological Calibration Facility - \$240,000	\$1,256,061,836	\$1,284,951,258
FY 13	\$1,284,951,258		\$1,284,951,258	\$1,314,505,137
FY 14	\$1,314,505,137		\$1,314,505,137	\$1,344,738,756
FY 15	\$1,344,738,756	Research Support Building - \$42,160,000, Remove trailers - (\$8,140,400)	\$1,378,758,356	\$1,410,469,798
FY 16	\$1,410,469,798		\$1,410,469,798	\$1,442,910,603
FY 17	\$1,442,910,603		\$1,442,910,603	\$1,476,097,547
FY 18	\$1,476,097,547		\$1,476,097,547	\$1,510,047,791

On November 3, 2006 SLAC submitted a proposal to DOE that included re-estimated RPVs for each of the 19 unique facilities at SLAC and the adjustments to these RPVs to appropriately reflect the value of each asset that requires maintenance (High Value/Low Maintenance RPVs). These 19 assets comprise the Laboratory's "high value-low maintenance" facilities. In response to DOE's request, SLAC proposed updated site factors on February 5, 2007 to DOE for review. Four site factors plus a separate site factor for each of the 19 unique facilities were developed to replace the current single 1.547 site factor to better reflect the Laboratory's mix of assets. Both proposals are still under DOE review.

Table B shows the site RPVs over the planning period, but differs from Table A in that the re-estimated RPVs for the 19 unique facilities are substituted for the less accurate contractor-calculated values currently in FIMS, and the updated site factors are used for all assets from FY2007 on. This table reflects a more accurate RPV for the site.

Table B

RPV Estimates for the Planning Period – Includes Re-Estimated RPVs for 19 Unique Facilities

	RPV of Existing Facilities at Beginning of FY	Additions/Subtractions by Project	Total Estimated RPV at End of FY	Escalated RPV at End of FY
FY 04	\$849,482,895	NA	NA	NA
FY 05	\$904,804,001	NA	NA	NA
FY 06	\$978,616,497	NA	NA	\$1,050,825,554
FY 07	\$920,980,550	Remove trailers 288, 289, 290 & 293 - (\$503,694)	\$920,476,856	\$941,647,824
FY 08	\$941,647,824	Salvage Operations Bldg. - \$752,000, Remove trailers 234 & 238 - (\$275,630)	\$942,124,194	\$963,793,051
FY 09	\$963,793,051	LCLS conventional - \$65,370,366	\$1,029,163,417	\$1,052,834,175
FY 10	\$1,052,834,175	Remove trailers - (\$2,415,700)	\$1,050,418,475	\$1,074,578,100
FY 11	\$1,074,578,100	XLAM - \$10,800,000	\$1,085,378,100	\$1,110,341,796
FY 12	\$1,110,341,796	Radiological Calibration Facility - \$240,000	\$1,110,581,796	\$1,136,125,178
FY 13	\$1,136,125,178		\$1,136,125,178	\$1,162,256,057
FY 14	\$1,162,256,057		\$1,162,256,057	\$1,188,987,946
FY 15	\$1,188,987,946	Research Support Building - \$42,160,000, Remove trailers - (\$8,140,400)	\$1,223,007,546	\$1,251,136,720
FY 16	\$1,251,136,720		\$1,251,136,720	\$1,279,912,864
FY 17	\$1,279,912,864		\$1,279,912,864	\$1,309,350,860
FY 18	\$1,309,350,860		\$1,309,350,860	\$1,339,465,930

Table C also shows the site RPVs over the planning period, but differs from Table B in that the high value/low maintenance RPVs for the 19 unique facilities are substituted for the re-estimated RPVs. This table reflects the RPVs of only the systems and components of those unique assets that require maintenance. High value/low maintenance (HV/LM) RPVs were also estimated for the current LCLS project.

Table C

RPV Estimates for the Planning Period – Includes High Value/Low Maintenance RPVs for 19 Unique Facilities and the LCLS Project

	RPV of Existing Facilities at Beginning of FY	Additions/Subtractions by Project	Total Estimated RPV at End of FY	Escalated RPV at End of FY
FY 04	\$849,482,895	NA	NA	NA
FY 05	\$904,804,001	NA	NA	NA
FY 06	\$978,616,497	NA	NA	\$1,050,825,554
FY 07	\$608,930,694	Remove trailers 288, 289, 290 & 293 - (\$503,694)	\$608,427,000	\$622,420,821
FY 08	\$622,420,821	Salvage Operations Bldg. - \$752,000, Remove trailers 234 & 238 - (\$275,630)	\$622,897,191	\$637,223,826
FY 09	\$637,223,826	LCLS conventional - \$65,370,366 x 11.2% FCI	\$644,545,307	\$659,369,849
FY 10	\$659,369,849	Remove trailers - (\$2,415,700)	\$656,954,149	\$672,064,094
FY 11	\$672,064,094	XLAM - \$10,800,000	\$682,864,094	\$698,569,969
FY 12	\$698,569,969	Radiological Calibration Facility - \$240,000	\$698,809,969	\$714,882,598
FY 13	\$714,882,598		\$714,882,598	\$731,324,898
FY 14	\$731,324,898		\$731,324,898	\$748,145,370
FY 15	\$748,145,370	Research Support Building - \$42,160,000, Remove trailers - (\$8,140,400)	\$782,164,970	\$800,154,765
FY 16	\$800,154,765		\$800,154,765	\$818,558,324
FY 17	\$818,558,324		\$818,558,324	\$837,385,166
FY 18	\$837,385,166		\$837,385,166	\$856,645,024

Unique facilities include tunnels, other underground structures, and heavy concrete experimental halls that required a considerable amount of excavation to construct and contain much thick concrete (for radiation shielding) that typically does not require maintenance. These unique facilities comprise 884,176 of the 1,788,740 square feet (49%) of building space on site. See Attachment 6 "High Value/Low Maintenance Unique Buildings & Structures" for a list of these facilities.

Source documentation acceptable to DOE does not exist for the RPVs currently in FIMS for these unique assets. The re-calculated RPVs are based on RS Means cost data and developed at the system level following the NIST Uniformat Category II Elemental Classification system. This detail permitted identification of the systems and components that require little to no maintenance to arrive at the HV/LM RPVs. If approved, the re-calculated RPVs will be entered into FIMS and through the use of the "conventional facility Indicator" (CFI), the HV/LM RPVs will be used as the basis for calculating MII.

Using the FY2007 RPV currently in FIMS as the basis, the re-calculated RPVs reduce the site RPV by 12.4% and the HV/LM RPVs reduce the site RPV by 42.1%. The impact that the HV/LM RPVs have on MII is discussed in Section G "Maintenance" below.

G. Maintenance

The planned maintenance funding is shown in Table D.

Table D

Maintenance Funding Table - Current FIMS Value for FY2010

Fiscal Year	RPV	SC Goal (Minimum of 2% of RPV)	Planned Site Direct Funded Maintenance	Planned Site Indirect Funded Maintenance	Total Planned Site Maintenance Funding	SC DMR Funding Target	MII Calculation
FY 07	\$849,482,895	\$16,989,658	\$4,601,000	\$5,491,000	\$10,092,000	\$792,000	1.09%
FY 08	\$904,804,001	\$18,096,080	\$6,737,000	\$5,319,000	\$12,056,000	\$686,000	1.26%
FY 09	\$978,616,497	\$19,572,330	\$6,283,000	\$6,632,000	\$12,915,000	\$1,001,000	1.22%
FY 10	\$1,050,825,554	\$21,016,511	\$7,560,000	\$6,672,000	\$14,232,000	\$1,315,000	1.23%
FY 11	\$1,074,479,263	\$21,489,585	\$7,878,210	\$7,106,420	\$14,984,630	\$1,315,000	1.27%
FY 12	\$1,099,679,612	\$21,993,592	\$8,337,756	\$6,946,263	\$15,284,019	\$1,315,000	1.27%
FY 13	\$1,191,846,128	\$23,836,923	\$8,410,739	\$7,471,660	\$15,882,399	\$1,315,000	1.22%
FY 14	\$1,216,787,328	\$24,335,747	\$7,712,261	\$8,252,750	\$15,965,011	\$1,315,000	1.20%
FY 15	\$1,255,821,836	\$25,116,437	\$7,857,429	\$9,139,673	\$16,997,102	\$1,315,000	1.25%
FY 16	\$1,284,951,258	\$25,699,025	\$8,006,352	\$9,332,573	\$17,338,925	\$1,315,000	1.25%
FY 17	\$1,314,505,137	\$26,290,103	\$8,309,142	\$9,408,600	\$17,717,743	\$1,315,000	1.25%
FY 18	\$1,344,738,756	\$26,894,775	\$8,415,917	\$9,667,908	\$18,083,825	\$1,315,000	1.25%

Notes:

1. Per TYSP Guidance, MII does not include the SC DM Reduction Plan funds.
2. As shown in the Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget, the maintenance budget for FY2007 is \$12,270K. However, some projects even though funded will not be costed in FY2007 because they require coordination with the Linac downtime. Project HVAC - B005 HVAC Replacement is an example. The actual amount spent on maintenance is estimated to be \$10,092K.

As explained in Section F "Replacement Plant Value (RPV) Estimates" above, substituting the re-estimated RPVs for the 19 unique facilities for the less accurate contractor-calculated values currently in FIMS and using the updated site factors for all assets provides a more accurate RPV for the site. Table E illustrates the MII profile using the site HV/LM RPVs.

Table E

Maintenance Funding Table - Includes High Value/Low Maintenance RPVs for 19 Unique Facilities (FY2007 and forward) and the LCLS Project

Fiscal Year	RPV	SC Goal (Minimum of 2% of RPV)	Planned Site Direct Funded Maintenance	Planned Site Indirect Funded Maintenance	Total Planned Site Maintenance Funding	SC DMR Funding Target	MII Calculation
FY 07	\$608,930,694	\$12,178,614	\$4,601,000	\$5,491,000	\$10,092,000	\$792,000	1.53%
FY 08	\$608,930,694	\$12,178,614	\$6,737,000	\$5,319,000	\$12,056,000	\$686,000	1.87%
FY 09	\$608,930,694	\$12,178,614	\$6,283,000	\$6,632,000	\$12,915,000	\$1,001,000	1.96%
FY 10	\$608,930,694	\$12,178,614	\$7,560,000	\$6,672,000	\$14,232,000	\$1,315,000	2.12%
FY 11	\$622,420,821	\$12,448,416	\$7,878,210	\$7,106,420	\$14,984,630	\$1,315,000	2.20%
FY 12	\$637,223,826	\$12,744,477	\$8,337,756	\$6,946,263	\$15,284,019	\$1,315,000	2.19%
FY 13	\$659,369,849	\$13,187,397	\$8,410,739	\$7,471,660	\$15,882,399	\$1,315,000	2.21%
FY 14	\$672,064,094	\$13,441,282	\$7,712,261	\$8,252,750	\$15,965,011	\$1,315,000	2.18%
FY 15	\$698,569,969	\$13,971,399	\$7,857,429	\$9,139,673	\$16,997,102	\$1,315,000	2.24%
FY 16	\$714,882,598	\$14,297,652	\$8,006,352	\$9,332,573	\$17,338,925	\$1,315,000	2.24%
FY 17	\$731,324,898	\$14,626,498	\$8,309,142	\$9,408,600	\$17,717,743	\$1,315,000	2.24%
FY 18	\$748,145,370	\$14,962,907	\$8,415,917	\$9,667,908	\$18,083,825	\$1,315,000	2.24%

With the planned maintenance funding during the period, SLAC will not achieve an MII of 2% unless its High Value/Low Maintenance RPV proposal is approved. With approval, a 2% MII is projected to be achieved in FY2010 and maintained throughout the remainder of the ten year period. This funding profile is such that no maintenance is expected to be deferred annually. See Section H "Deferred Maintenance Reduction (DMR)" for additional information on the effect that this funding profile will have on the deferred maintenance backlog.

See Attachment 4 "Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission" for a list of the major repairs and "replacements in kind" projects planned for FY2008 and FY2009.

H. Deferred Maintenance Reduction (DMR)

SLAC had a deferred maintenance (DM) backlog of \$30,794,913 at the end of FY2006. With the FY2004 RPV as the basis, the overall asset condition index (ACI) was 0.964. Using the current RPV, the overall ACI is 0.971. See Table F for the ACIs by mission dependency for FY2007.

Table F

ACI by Mission Dependency for FY2007

Mission Dependency	ACI with FY07 RPVs	ACI with FY04 RPVs	ACI with HV/LM FY07 RPVs (see note below)	DOE ACI Goal for FY07
Mission Critical	0.971	0.959	0.949	0.962
Mission Dependent, Not Critical	0.971	0.969	0.950	0.947
Not Mission Dependent	0.951	0.888	0.915	0.850
All Assets	0.971	0.964	0.950	

Note: ACIs by mission dependency for FY2007 HV/LM RPVs were calculated by normalizing to the FY2007 RPV breakdown.

The DOE ACI goals by mission dependency for FY2007 were not met for mission critical assets using the FY2004 RPVs but were exceeded in all mission dependency categories using the FY07 RPVs. Looking toward the future, if the HV/LM RPV Proposal is approved, the ACI for Mission Critical assets, at 0.949, would be below the DOE goal of 0.962; the ACIs for the other mission dependency categories would exceed the DOE goals. The ACI for all assets with the HV/LM RPV Proposal would be 0.950.

Attachment 7 "Deferred Maintenance Reduction" shows the estimated DM and overall site ACI for FY2007 through FY2018, using the estimated DM at fiscal year end. The DM is forecast to increase from \$30,794,913 to \$34,521,056 or \$3,726,143 (12.1%) in FY2007 and decrease each year thereafter. The increase in FY2007 is not due to an actual increase in scope of DM included in the backlog but because recent bids received for the Safety and Operating Reliability Improvements Project (SORIP) were significantly above the construction estimate. The estimate of the DM for the underground mechanical utilities was increased accordingly, resulting in an increase of \$4,243K. Without the cost increase in SORIP, the estimated DM backlog would have decreased by \$614K.

The projections in Attachment 7 are based upon very rough estimates. The DOE CFO's instruction to use 2.3% inflation per year is well below the average inflation in construction over the past several decades in the San Francisco Bay area. The estimated annual growth in DM is necessarily "ballpark" because good historical data does not exist and the fact that a third party CAS inspection program was just initiated for OSFs in FY2006 may result in the identification of more deferred maintenance than expected over the next four years. However, given these assumptions, Attachment 7 does show that the DM backlog will be minimal at the end of FY2018 with the maintenance budgets targeted at this time. The overall ACI will meet the DOE long term goal (for mission critical facilities) of 0.98 in FY2010 with current FIMS RPVs and in FY2013 with the HV/LM RPVs.

See Attachment 4 "Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission" for the identification of the DMR projects planned for FY2008 and FY2009.

I. Recapitalization & Modernization

SLAC has planned a series of line item projects, GPPs and IGPPs to keep its existing conventional facilities modern and relevant in an environment of changing standards and missions. The recapitalization requirements are in addition to sustainment activities and

deferred maintenance reduction and consist of activities to replace or modernize existing facilities.

See Attachment 4 "Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission" for the identification of the planned line item projects, GPPs and IGPPs that are "RIC."

1. IGPP

As a newly declared multi-program lab, SLAC has not utilized IGPP in the past. Under the SLI Infrastructure Initiative, the Laboratory must now fund "landlord GPP projects" with IGPP funding from overhead rather than GPP funds beginning in FY2009. GPP funding for programmatic projects is expected to continue to be provided.

Planned IGPP funding levels and projects are identified in Block 3 of the Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget.

2. Line Items

See Attachment 8, "Prioritized List of Line Item Projects," for the list of planned SLI line item projects. This list consists of one project that is in progress, "Safety and Operational Reliability Improvements," two projects that were proposed for the SLI Infrastructure Initiative to modernize the Laboratory, "Research Support Building" and "Building Modernization," and a major environmental project, "Storm Water Treatment System" that may be required by Regional Water Quality Control Cleanup Order No. R2-2005-0022).

The Building Modernization project is inextricably tied to the Research Support Building. Staff displaced by the trailer removals will need a place to go while the Research Support Building is being constructed, and this project will accommodate them.

3. GPP

See Block 2 of the Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget for the GPP plan. GPP is replaced with IGPP in FY2009.

Planned programmatic GPP is shown in Attachment 9 "Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Display Programmatic GPP Only."

J. Site Space Bank Analysis

The table below provides a year by year summary of SLAC's Space Bank status. Only buildings that are proposed at this time to be SC-funded are included. Potential third party financed projects (see Section IV. M. "Leasing & Third Party / Non-Federal Funded Construction of New Buildings") are not included.

Table G

Space Bank Plan

Fiscal Year	Expected Additions (GSF)	Expected Removals (GSF)	Net Change (GSF)	Available Offsetting Space at the Site (GSF)
FY06	NA	NA	NA	120,734
FY 07		2,148 (Trailers 288, 289, 290 & 293)	(2,148)	122,882
FY 08	5,000 (Salvage Operations)	1,560 (Trailers 234 & 238)	3,440	119,442
FY 09	93,400 (LCLS)		93,400	26,042
FY 10	15,000 (X-Ray Laboratory for Advanced Materials Science)	13,406 (Trailer Removals)	1,600	24,442
FY 11			0	24,442
FY 12	1,000 (Radiation Calibration Center)	223 (Radiation Calibration Center)	777	23,665
FY 13			0	23,665
FY 14			0	23,665
FY 15	65,880 (Research Support Building)	45,176 (Trailer Removals)	20,704	2,961
FY 16			0	2,961
FY 17			0	2,961
FY 18			0	2,961

Note: On March 4, 2005 Secretary of Energy Samuel Bodman approved a "Waiver of Requirement for Eliminated Excess Space at SLAC" for a space offset of 55,396 square feet of excess facility space at the Lauristen High Energy Laboratory at California Institute of Technology and 93,056 square feet of excess space at Argonne National Laboratory – East. The excess space at Lauristen High Energy Laboratory was scheduled for title transfer no later than the end of FY2005, but has yet to occur. This transfer is assumed to be executed in FY2008.

K. Performance Indicators and Measures

The FY2007 Facilities Management Contract Performance Measures are in Attachment 10.

The Proposed FY2008 Facilities Management Contract Performance Measures are in Attachment 11.

L. Energy and "Sustainability" Management

SLAC maintains a Comprehensive Energy Management Program and Plan (CEMP) consistent with related sections of the Energy Policy Act (EPACT) of 2005 and Executive Order 13423. On an annual basis SLAC develops Energy Management Performance-Based Objectives and Measures in conformance with DOE Office of Science. Energy management performance agreements are developed, as appropriate, for the mission of the site and are based upon the graded approach.

In order to achieve the mandatory, as well as voluntary elements of the EPACT of 2005 and EO 13423 SLAC has developed the following major goals for Energy and Water Management.

1. Implementation of Sec. 2 of EO 13423: “(a) reduce greenhouse gas emissions of the agency, relative to the baseline of the agency's emissions in fiscal year 2003, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015.”

Baseline electrical energy consumption for FY2003 is only available for the entire site. The energy-intensive programmatic loads related to accelerator operations cannot be separated because SLAC has no electric meters at the substation/building levels. Until an electric power monitoring system is in place (see item 4 below), it will not be possible to demonstrate percent reduction in non-programmatic energy intensity as a consequence of energy conservation alone. However, SLAC continually implements projects that result in reduction of energy intensity and, therefore, greenhouse gas emission.

Currently an estimated 90% of electrical use is programmatic. Due to the expected termination of B Factory operations in 2008 and the beginning of LCLS in 2009, programmatic electrical energy consumption is expected to decrease by about 17% in FY09 and 23% (compared to FY2003) in the out years. SLAC’s energy consumption projections are shown in Table H.

Table H

SLAC’s Energy Consumption Projections

Performance Measures	Baseline	Actual	Actual	Target				Achieve Target
	FY 2003	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Long Term	
Energy Consumption, BTU/SF. 2005 EPACT – 20% reduction from 2003 baseline by 2015.	640,597	568,613	657,965	710,321	850,302	529,271	495,900	2010 -20% reduction
Energy Consumption BTU/SF. EO 13423 3% annual reduction or 30% reduction by 2015.	640,597	568,613	657,965	710,321	850,302	529,271	495,900	Info on 30% reduction is not available
% change due to programmatic reduction	-	-11%	3%	11%	33%	-17%	-23%	

Note: The data in this table include the entire site energy intensity (BTU/GSF) with no exclusion of the programmatic facilities.

Strategies

- a) Implement energy conservation projects utilizing the following funding:
 - 1) Indirect
 - 2) Direct operating
 - 3) IGPP
 - 4) GPP
 - 5) SLI line item
 - b) Evaluate the use of Energy Saving Performance Contracts (ESPCs)
 - c) Pursue DOE DEMP (Departmental Energy Management Program) funding for retrofit energy-efficiency projects. SLAC will consider contributing to these projects to increase the probability of receiving DEMP funds.
 - d) Investigate CEC (California Energy Commission) grants/rebates for eligible energy-efficiency projects.
 - e) See Attachment 12 "FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Display Energy Management Projects Only" for a crosscut of the energy (including water) management projects that are included in this TYSP.
2. Implementation of Sec. 203 (a) of EPAC of 2005: "ensure that, to the extent economically feasible and technically practicable, of the total amount of electric energy the Federal Government consumes during any fiscal year, the following amounts shall be renewable energy: (1) Not less than 3 percent in fiscal years 2007 through 2009. (2) Not less than 5 percent in fiscal years 2010 through 2012. (3) Not less than 7.5 percent in fiscal year 2013 and each fiscal year thereafter."

Strategy

Continue purchasing electrical power and Renewable Energy Certificates (REC) through a consortium of Northern California Laboratories (LLNL, LBNL and SLAC) in accordance with this required schedule.

3. Implementation of Sec. 109 (3) (A) of EPACT of 2005: "(i) if life-cycle cost-effective for new Federal buildings - (I) the buildings be designed to achieve energy consumption levels that are at least 30 percent below the levels established in the version of the ASHRAE Standard or the International Energy Conservation Code, as appropriate, that is in effect as of the date of enactment of this paragraph; and (II) sustainable design principles are applied to the siting, design, and construction of all new and replacement buildings; and (ii) if water is used to achieve energy efficiency, water conservation technologies shall be applied to the extent that the technologies are life-cycle cost-effective."

Strategy

Additional funding will be requested for new buildings to meet this requirement.

4. Implementation of Sec. 103 (e) (1) of EPACT of 2005: "By October 1 2012...all Federal buildings shall, for the purposes of efficient use of energy and reduction in the cost of electricity used in such buildings be metered. Each agency shall use, to the maximum extent practicable, advanced meters or advanced metering devices."

Strategies

- a) SLAC will develop Site Electrical Metering Plan as required by the Office of Science.
 - b) SLAC will proceed with implementation of this objective in accordance with Site Electrical Metering Plan goals.
5. Implementation of Sec. 2 (c) of EO 13423: “beginning in FY2008, reduce water consumption intensity, relative to the baseline of the agency's water consumption in fiscal year 2007, through life-cycle cost-effective measures by 2 percent annually through the end of fiscal year 2015 or 16 percent by the end of fiscal year 2015.”

An estimated 60% of the total domestic water used by SLAC is for process cooling, most of which is evaporated in cooling towers dissipating heat from the heat-generating accelerator, klystrons, magnets and other experiment-supporting equipment. The water usage is dependent on the types and durations of experiments and somewhat tracks the programmatic electrical energy usage. There is no metering system in place to track domestic water consumption separately from programmatic consumption. Until a water monitoring system is in place, it will not be possible to demonstrate percent of reduction in water use as a consequence of water conservation alone. However, SLAC will continue implementing projects that result in reduction in water consumption intensity.

Strategies

- a) Develop Water Management Plan.
- b) Install water meters at heavily occupied buildings and for irrigation systems.

M. Leasing & Third Party / Non-Federal Funded Construction of New Buildings

Third Party Financed Projects

Through its strong connection with Stanford, SLAC has the opportunity to raise third party funding. The following projects are planned for the next decade, and the option of third party funding will be considered for each if DOE-SC funding is not available.

Photon Science Building

Scientific initiatives organized as centers of excellence with Stanford campus schools will bring together research scientists and students to work towards common goals in areas that cut across the physical, biomedical, engineering and computational sciences. A plan has been developed to create a new Center building located at SLAC to house these activities. A 35,000 square foot multi-story building will provide for the staff, faculty, students and visiting scientists with supporting infrastructure such as office, meeting, conference, training and laboratory space. It will house laboratory facilities and computing equipment. The siting of the building is under consideration and will be determined based upon a complete integrated space plan for SLAC that overlays the SLAC/Stanford 10-year strategic plan that is currently being developed. Based upon planned occupancy in FY2012, the estimated cost of this building is \$30 million.

SLAC Guest House, Phase 2

A 13,000 square foot addition will be needed if occupancy of SLAC’s new 112 room Guest House increases. The project will consist of approximately 53 rooms and would be sited to utilize the common areas constructed for the initial facility, including the lobby, offices, meeting rooms, exercise facility and service areas. The estimated cost of this building is \$7 million in FY2014.

N. Operating Costs for Sustainment and Operations

The DOE Three Year Rolling Timeline has identified targets and goals for operating costs for buildings and trailers. Operating costs include recurring maintenance and repair, utilities, cleaning and janitorial, and roads and grounds maintenance. Operations include all costs excluding sustainment and DMR costs. Utility costs via energy consumption are addressed in Table I of Section M. Table I contains baseline (FY2005) costs for sustainment and operations, FY2006 actuals and estimates for the three year timeline FY2007-FY2010.

Table I

SLAC’s Operating Costs for Sustainment and Operations – Buildings & Trailers

Performance Measures	Baseline	Actual	Target				Achieve Target
	FY2005	FY2006	FY2007	FY2008	FY2009	Long Term	
Operating Costs - Sustainment and DM Reduction (\$/SF)	2.51	3.40	3.78	4.06	4.37	4.95	FY2010
Operating Costs - Operations (\$/SF) (includes grounds, janitorial, pest control, refuse, and recycling)	\$1.08	\$1.03	\$1.08	\$1.14	\$1.19	\$1.34	FY2014 (Snapshot in the future)

Sustainment and DM reduction targets are based upon the budget targets in the Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget. The long term target is shown as \$4.95/SF in FY2010 when SLAC expects to first achieve an MII of 2% with the HV/LM RPV approach.

Recent expenditures for operations (landscaping and grounds maintenance, janitorial, pest control and refuse) have been sufficient and no extraordinary projects are planned, so “Long Term” was arbitrarily selected at FY2014 with the target escalated at 2.3% per year.

V. Attachments

- Attachment 1 Aerial View of SLAC
- Attachment 2 Inventory and Maps of Buildings
- Attachment 3 Inventory and Maps of Infrastructure/ Site Utility Systems
- Attachment 4 Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission
- Attachment 5 List of Excess Facilities
- Attachment 6 High Value/Low Maintenance Unique Buildings & Structures
- Attachment 7 Deferred Maintenance Reduction
- Attachment 8 Prioritized List of Line Items Projects
- Attachment 9 FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Display Programmatic GPP Only
- Attachment 10 FY2007 Facilities Management Contract Performance Measures
- Attachment 11 Proposed FY2008 Facilities Management Contract Performance Measures
- Attachment 12 FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Display Energy Management Projects Only

Attachment 1

Aerial View of SLAC



Attachment 2

Inventory and Maps of Buildings

The SLAC Site Plan and building and trailer inventory list can be found at:

DWG #: GP-581-721-49-C10, Sheet 1, Sheet 2 and Sheet 3

Title: SLAC SITE PLAN CAMPUS & RESEARCH AREA

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5817214910.pdf>

Attachment 3

Inventory and Maps of Infrastructure/ Site Utility Systems

The site utility drawings can be found at:

DWG #: GP-581-656-23-C6, Sheet 1 and Sheet 2

Title: SITE UTILITIES DOMESTIC & FIRE WATER LINAC, CAMPUS, BSY, PEP2 & SLC AREA PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816562306.pdf>

DWG #: GP-581-656-17-C1

Title: SITE UTILITIES CHILLED WATER S. & R. CAMPUS, B.S.Y. AREA PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816561701.pdf>

DWG #: GP-581-656-20-C1

Title: SITE UTILITIES HOT WATER SUPPLY & RETURN CAMPUS, B.S.Y. AREA PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816562001.pdf>

DWG #: GP-581-656-32-C1

Title: SITE UTILITIES SANITARY SEWERS CAMPUS, BSY, PEP & SLC AREA PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816563201.pdf>

DWG #: GP-581-656-34-C2, Sheet 1 and Sheet 2

Title: SITE UTILITIES STORM DRAIN LINAC, CAMPUS, BSY, PEP2 & SLC AREA PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/id5816563402.pdf>

DWG #: GP-581-656-14-C1

Title: SITE UTILITIES NATURAL GAS CAMPUS, BSY, PEP & SLC AREA PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816561401.pdf>

DWG #: GP-581-656-53-C1

Title: SITE UTILITIES COMPRESSED AIR CAMPUS, BSY, PEP & SLC AREA PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816565301.pdf>

DWG #:GP-581-656-03-C2

Title: SITE UTILITIES COOLING TOWER CAMPUS, BSY, PEP & SLC AREA PLAN ..

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816560302.pdf>

DWG #: GP-581-656-05-R0

Title: UNDERGROUND UTILITIES COOLING TOWER WATER KLYSTRON GALLERY SCHEMATIC

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/5/gp5816560500.pdf>

DWG #: GP-885-106-01-R6

Title: ELECTRICAL SYSTEMS POWER & SIGNAL MANHOLES KEY PLAN

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/8/gp8851060106.pdf>

DWG #: GP-885-105-01-R10

Title: ELECTRICAL SYSTEMS MASTER SUBSTATION PG&E METERING SCHEME

<http://mdweb.slac.stanford.edu/Doc%20Control.Utilities.View%20Images.displayImage.php?img=pdf/Released/8/gp8851050110.pdf>

Attachment 4

Updated FY 09 Integrated Facilities and Infrastructure (IFI) Crosscut Budget Submission (Excel Spreadsheet)

The FY09 Integrated Facilities and Infrastructure Crosscut Budget has been modified to conform to TYSP Guidance.

Attachment 4

FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IF) - Modified to Conform to TYSP Guidance	Deferred Maint. Reduction	Gross Building Area Added	Gross Building Area Removed	FY 07 Approp. (\$000)	FY 08 Pres Budget (\$000)	FY 09 Budget (\$000)	FY 10 Budget (\$000)	FY 11 Budget (\$000)	FY 12 Budget (\$000)	FY 13 Budget (\$000)	FY 14 Budget (\$000)	FY 15 Budget (\$000)	FY 16 Budget (\$000)	FY 17 Budget (\$000)	FY 18 Budget (\$000)	RIC (\$000)
Stanford Linear Accelerator Center (SLAC)																
1.0 Capital Line Item																
1.1 New Infrastructure Construction																
SLI																
SLI Initiative 001- Research Support Building	10,814,000	66,880				7,300	22,700	22,700	22,700							52,700
BES							13,500									
X-Ray Laboratory for Advanced Materials Science (XLAM)		15,000					20,800	22,700	22,700							
1.1 New Infrastructure Construction Total	10,814,000	80,880	0	0	0	7,300	20,800	22,700	22,700	0	0	0	0	0	0	
1.2 All Other Infrastructure Projects																
SLI																
Safety and Operating Reliability Improvements Project	8,973,000			5,770												
SLI Initiative 002- Building Modernization Project	732,400						6,600	17,800	17,800							15,620
1.2 All Other Infrastructure Projects Total	9,705,400	0	0	5,770	0	0	6,600	17,800	17,800	0	0	0	0	0	0	42,200
1.3 Programmatic Line Items that Add Space																
BES/LCLS																
Linac Coherent Light Source (LCLS) Construction		93,400	4,728	101,000	51,356	10,000										
Linac Coherent Light Source (LCLS) PED				161												
LCLS Future FELs (Technical Systems&Conventional Facilities)		TBD														
1.3 Programmatic Line Items that Add Space Total	0	93,400	4,728	101,161	51,356	10,000	0	0	0	0	14,000	51,000	135,000	420,000	316,000	
2.0 General Plant Project (GPP)	20,519,400	174,280	4,728	106,931	51,356	10,000	27,400	40,500	40,500	0	14,000	51,000	135,000	420,000	316,000	
2.1 New Construction																
HEP/Landlord																
New Building -Salvage Operations		5,000		100	840											
2.1 New Construction Total	0	5,000	0	100	840	0	0	0	0	0	0	0	0	0	0	
2.2 All Other GPP																
HEP/Landlord																
Bldg. 50 Active Harmonic Filters				30	108											
Bldg. 50, 2nd Floor Power Management Modules				245												138
Bldg 50 1st Flr Infrastructure for Water Cooled Racks				790	100											245
Electrical Distribution Upgrade for CEH				172	659											100
Electrical Distribution Upgrade for Computer Building				29												790
ESA/ESB Storm Drain Connections					130											831
B050 HVAC Upgrade SCS 1st and 2nd Floor				100												29
Building 18 Elevated Storage Area				166												130
Directors Office Remodel				1,532	997	0	0	0	0	0	0	0	0	0	0	100
2.2 All Other GPP Total	0	0	0	1,532	997	0	0	0	0	0	0	0	0	0	0	166

FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IF) - Modified to Conform to TYSP Guidance																
	Deterred Maint. Reduction	Gross Building Area Added	Gross Building Area Removed	FY 07 Approp. (\$000)	FY 08 Pres Budget (\$000)	FY 09 Budget (\$000)	FY 10 Budget (\$000)	FY 11 Budget (\$000)	FY 12 Budget (\$000)	FY 13 Budget (\$000)	FY 14 Budget (\$000)	FY 15 Budget (\$000)	FY 16 Budget (\$000)	FY 17 Budget (\$000)	FY 18 Budget (\$000)	RIC (\$000)
Stanford Linear Accelerator Center (SLAC)																
2.0 General Plant Project (GPP) Total	0	5,000	0	1,632	1,837	0	0	0	0	0	0	0	0	0	0	
3.0 Institutional GPP																
3.1 New Construction																
Landlord																
New Building - Radiological Calibration Facility		1,000	223						300							
3.1 New Construction Total	0	1,000	223	0	0	0	0	0	300	0	0	0	0	0	0	300
3.2 All Other IGPP																
Landlord																
Building 50 Backup Power								350	350							1,050
Central Boiler Controls Upgrd (Linked to HVAC Crisis - Site wide)							284									284
Electrical Distribution Upgrade for Computer Building							700									1,400
Erosion - Site-wide Improvements							250	250	250	250	250	250	250	250	250	2,500
On-Site Compressed Natural Gas Fueling Station																
Orange Conference Room Remodel							800									800
Radioactive Material Storage Yard (RAMSY) Upgrade																
Replace Telephone Switch							300	373								800
Seismic Retrofit (Various Bldgs)								860								673
Seismic Upgrade - Beam Dump East Structural Upgrade																850
Seismic Upgrade - End Station B Structural Upgrade											37	300	263			600
Site Electrical Metering																509
Site Utilities Improvements							281	606	225	352						175
Space Upgrades/Utilization Improvements																1,464
Underground Mechanical Utilities - Chilled Water System											400	485	700	700	700	2,985
Underground Mechanical Utilities - Compressed Air System	1,602									652	525	677	499	1,244	1,544	5,141
Underground Mechanical Utilities - Cooling Tower Water System	450							267	267	267	267	267	267			1,602
Underground Mechanical Utilities - Fire Protection Water System	1,200							225	225							450
Underground Mechanical Utilities - Natural Gas	1,100							240	240	240	240	240	240	240	240	1,200
Underground Mechanical Utilities - Sewer Drainage System	1,075							220	220	220	220	215	215	215	215	1,100
Underground Mechanical Utilities - Storm Drainage System	3,542															1,075
Underground Mechanical Utilities - Storm Drainage System	1,800															3,542
3.2 All Other IGPP Total	11,053	0	0	0	0	3,000	3,000	3,000	2,700	3,000	3,000	3,000	3,000	3,000	3,000	1,800
3.0 Institutional GPP Total	11,053	1,000	223	0	0	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	
4.0 Operating Expense for Excess Facilities and Other																
4.1 Excess Elimination - SLI																
4.1 Excess Elimination Total																
4.2 All Other		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.2 Subtotal		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0 Operating Expense Projects																

FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Conform to TYSP Guidance		Deferred Maint. Reduction	Gross Building Area Added	Gross Building Area Removed	FY 07 Approp. (\$000)	FY 08 Pres Budget (\$000)	FY 09 Budget (\$000)	FY 10 Budget (\$000)	FY 11 Budget (\$000)	FY 12 Budget (\$000)	FY 13 Budget (\$000)	FY 14 Budget (\$000)	FY 15 Budget (\$000)	FY 16 Budget (\$000)	FY 17 Budget (\$000)	FY 18 Budget (\$000)	RIC (\$000)
Stanford Linear Accelerator Center (SLAC)																	
5.0 Maintenance & Repair																	
5.1 Direct Funded																	
HEP&BES/Linac Complex																	
Heavy Fabrication Bldg 026 480 Volt Switchgear Replacement		800						400									
HVAC Building 015 Replacement		981			50			931									
HVAC Replacement MZ-622, (Bldg 025)		375								375							
Misc Maintenance Projects																	
Replace High Voltage Cable (various sites-except Research Yard)		700							450	400	600	2,300	2,800	2,800	2,950	2,900	
Replace HV Cable to Sub 507		182				850	840	182									
Replace K10 Switchgear		1,700			10												
Replace K-Substations (Sector 20-30)							1,200	1,700	1,700	1,700	1,700	500					
Re-roof Bldg 26 Heavy Fab		400							400								
Re-roof Counting House 060		350									350						
Re-roof IR-6 Bldg 680 High Bay		500								500							
Re-roof IR-8 Bldg 620, IR-2		500								500							
Re-roof IR-8 Bldg 680 High Bay		500								500							
BES/SSRL																	
Building 118 Chiller Replacement																	
Non-project Facilities Maintenance						250											
Re-Roof Building 120					600	820	640	680	680	700	720	740	760	780	800	820	
Upgrade of Walkways around Trailer Complex											250						
HEP									200								
C-3 and C-4 Feeder Replacement																	
Communications Relocation						160											
CT404 Shelter and Platform					10												
Electrical Deferred Maintenance in the Klystron Gallery		67			97												
HVAC - B005 HVAC Replacement		350			67												
IR-4 Chiller Replacement		25			1,000	244											
Master Sub T1 Tap Changer					25												
Replace Failed HV Cable to Sub 507		130			200	200											
Replace K1A and K1B Switchgear		295			130												
Replace K5 Switchgear		1,688			295												
Replacement of Diesel Storage Tank (B505)					850	838											
Secondary Containment Replacements					20												
Sector 10 Storm Drain Pipe Clean Out		13			75												
Site Interior Lighting (T12 Ballasts Replacements Bldg 40 and 84)		15															
Non-project CEF Maintenance					3,397	3,500	3,608	3,707	3,818	3,933	4,051	4,172	4,297	4,426	4,559	4,686	

FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Conform to TYSP Guidance

Stanford Linear Accelerator Center (SLAC)

	Deferred Maint. Reduction	Gross Building Area Added	Gross Building Area Removed	FY 07 Approp. (\$000)	FY 08 Pres Budget (\$000)	FY 09 Budget (\$000)	FY 10 Budget (\$000)	FY 11 Budget (\$000)	FY 12 Budget (\$000)	FY 13 Budget (\$000)	FY 14 Budget (\$000)	FY 15 Budget (\$000)	FY 16 Budget (\$000)	FY 17 Budget (\$000)	FY 18 Budget (\$000)	RIC (\$000)
5.1 Direct Funded Total	9,551			6,779	6,737	6,283	7,560	7,878	8,338	8,411	7,712	7,857	8,006	8,309	8,416	
5.2 Indirect from Overhead																
Building 81, Room 100 Ceiling Repair				36												
Auditorium Chair Replacement (3 Rows)					28											
Building 137 Hot Water Repair	90			90												
Cafeteria Electrical Modifications				2												
Erosion - Site-wide Engineering				25												
HVAC - Replace ALC Modules					100		100	100	100	100						
Misc Maintenance Items																
Non-project CEF Maintenance				3,871	3,989	4,106	4,224	4,351	4,481	4,616	4,754	4,897	5,044	5,195	5,351	
Re-roof Bldg 40 Central Lab (3 Story)	1,455			30		1,425										
Re-roof Cafeteria/Auditorium 42/43	330						343									
Re-roof Computer Center 050	343															
Bldg 81 Site Interior Lighting (T12 Ballasts replacements)				16	136											
Site Interior Lighting Upgrad (T12 Ballasts replace Site-wide)																
Site Lighting & Paths: Continuing				133	100	100	100	100	100	100	100	100	100	100	100	
Sector 10 Slope Stability - Design				38												
5.2 Indirect from Overhead Total	2,218			4,243	4,353	5,631	4,867	5,231	4,981	5,416	6,054	6,697	6,844	6,795	7,051	
5.4 Indirect Funded Deferred Maintenance from Overhead																
Alpine Gate Road and Drainage	36			38												
Misc Deferred Maintenance Items	9,318						768	800	850	900	1,000	1,200	1,200	1,300	1,300	
Sector 10 Storm Drain Pipe Repair	243			243												
Verify/Correct Breaker Panel Labels Site wide:	4,681			300	315	331	347	365	383	402	422	443	465	465	443	
Wooden Deck Replacements	35			35												
Non-project CEF Maintenance	8,968			632	651	670	690	711	732	754	777	800	824	849	874	
5.4 Indirect Funded Deferred Maintenance from Overhead Total	23,278			1,248	966	1,001	1,805	1,876	1,965	2,056	2,199	2,443	2,489	2,614	2,617	
5.0 Maintenance & Repair Total	35,047			12,270	12,056	12,915	14,232	14,985	15,284	15,882	15,965	16,997	17,339	17,718	18,084	
6.0 Indirect O&E																
6.2 Other Indirect Funded																
HEP																
CEF/Salvage Storage Relocation				47												
Indirect																
American Disabilities Act (ADA) Comp.					50	50	75	75	75	75	75	75	75	75	75	775
Bone Yard Cleanup				75	75	239	236	236	236	270	270	200	270			
Energy / Water				36	30	30	60	60	90	90	100	100	100	100	100	
Environmental Projects				312	500	750	500	100	100	200	200	200	200	200	200	
Fall Protection - Site-wide					75											75

FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (FI) - Modified to Conform to TYSP Guidance																
	Deferred Maint. Reduction	Gross Building Area Added	Gross Building Area Removed	FY 07 Approp. (\$000)	FY 08 Pres Budget (\$000)	FY 09 Budget (\$000)	FY 10 Budget (\$000)	FY 11 Budget (\$000)	FY 12 Budget (\$000)	FY 13 Budget (\$000)	FY 14 Budget (\$000)	FY 15 Budget (\$000)	FY 16 Budget (\$000)	FY 17 Budget (\$000)	FY 18 Budget (\$000)	RIC (\$000)
Stanford Linear Accelerator Center (SLAC)																
General Electrical Safety				34												
Implement Maintenance Mgmt. System				285	122											
Main Gate Backup Power				76												76
OSHA Audit Response Management				12												
PBX Switch Capacity Increase				52	25	25										
Power Exhaust To Cool Substation 7				54												
Replace Data Transmission Lines in Auditorium							54									102
Roof Access & Personnel Protection Systems											90					54
Seismic Upgrade to RY Comm. Modular Bldg 209						39										
Tepid Eyewash Installation						50										39
Trailer Demolition			60,142		30		200					660				50
6.2 Other Indirect Funded Total	0	0	60,142	1,033	907	1,133	1,125	471	501	635	735	1,255	645	375	375	
6.0 Indirect O&E Total	0	0	60,142	1,033	907	1,133	1,125	471	501	635	735	1,255	645	375	375	
Grand Total	20,565,500	180,280	65,093	121,866	66,156	27,048	45,757	58,956	59,285	19,517	33,700	72,252	155,984	441,093	337,459	

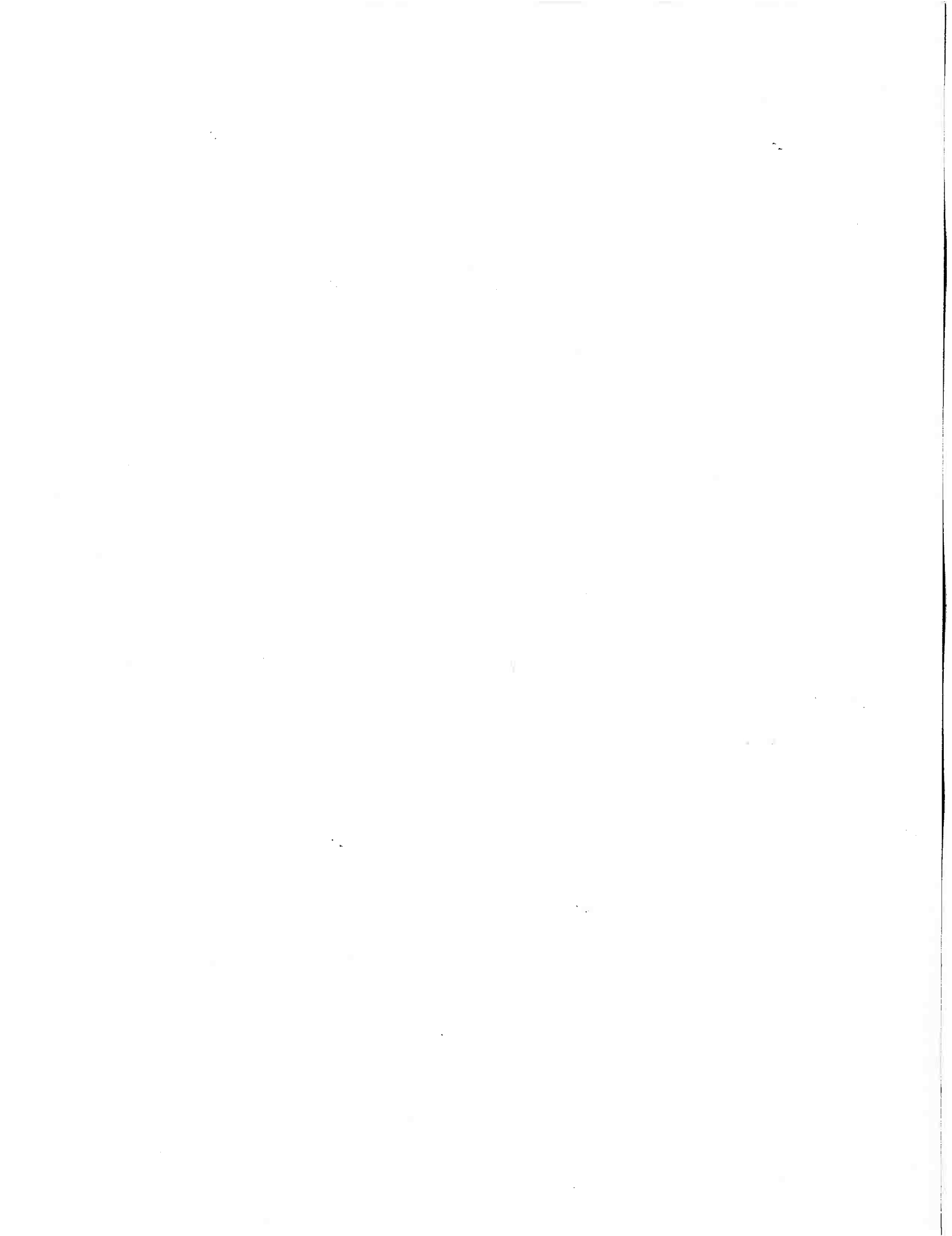
Attachment 5

List of Excess Facilities

Excess Facilities

SLAC has four trailers, 288, 289, 290 and 293 that have been declared excess to the DOE.

Property ID	Disposition Cost	Funding Program	Expected Start	Expected Completion
Trailer 288	\$70.5K	Excess Facility Disposition	August 2007	August 2007
Trailer 289	Included w/ T288	Same as above	Same as above	Same as above
Trailer 290	Included w/ T288	Same as above	Same as above	Same as above
Trailer 293	Included w/ T288	Same as above	Same as above	Same as above



Attachment 6

High Value/Low Maintenance Unique Buildings & Structures

Property ID	Property Name	Usage	Gross SF
001	Acceleration Housing	Accelerator Tunnel	115,461
002	Klystron Gallery	Accelerator Support Bldg.	355,821
009	Beam Switch Yard	Underground Accelerator Structure	70,175
010	Damping Ring Vault – South	Underground Accelerator Structure	4,068
011	Damping Ring Vault – North	Underground Accelerator Structure	5,460
061	End Station A	Experimental Hall	27,880
062	End Station B	Experimental Hall	16,828
063	Beam Dump East	Underground Utility Structure	2,000
132	Crane Shelter West Pit	Houses SPEAR Support Equipment, Part of Ring Tunnel	4,620
140	SSRL Injector Shelter	Accelerator Shelter	9,750
600	Pep Ring Accelerator Housing	Beam Line Tunnel	85,656
620	IR 2 Hall	Experimental Hall	9,324
640	IR 4 Hall	Experimental Hall	3,089
660	IR 6 Hall	Experimental Hall	9,375
680	IR 8 Hall	Experimental Hall	10,743
720	IR 12 Hall	Experimental Hall	7,713
748	Collider North Arc	Beam Line Tunnel	47,972
749	Collider South Arc	Beam Line Tunnel	51,490
750	Collider Hall	Experimental Hall	46,751
Total	19 buildings & structures		884,176 SF

Attachment 7

Deferred Maintenance Reduction

(Excel Spreadsheet)

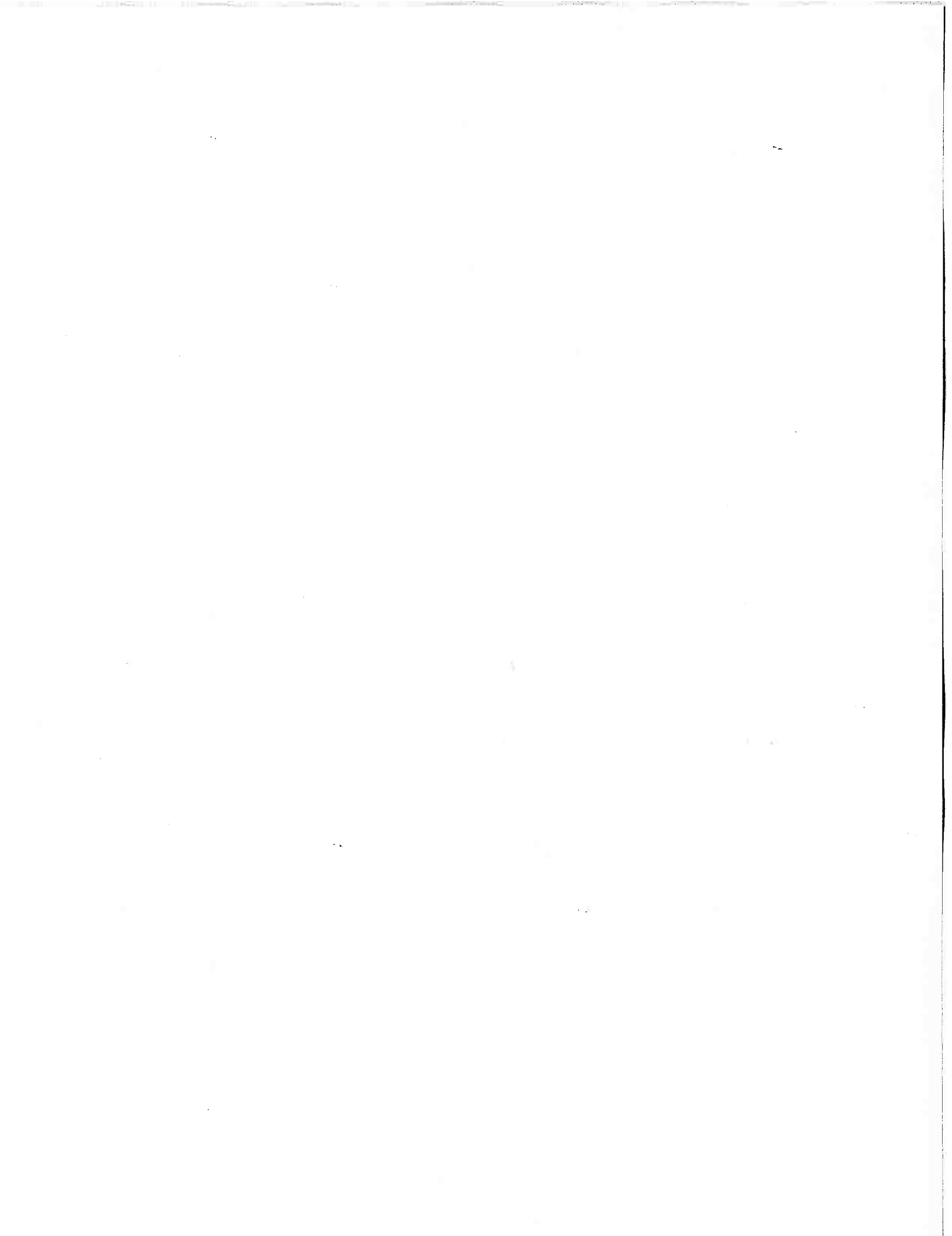
Attachment 7

Deferred Maintenance Reduction - Current FIMS RPV

FY	DM from FIMS or Estimated	Estimate of DM Growth	SC DMR Funding Target	Lab Planned DM Reduction Funding (1)	Portion of DMR from GPP, IGPP or Major Repairs (2)	DM Reduction: Other Contributions (3)	Expected DM at the end of the FY	DM Escalation @ 2.3%	Estimated RPV ACI	Estimated
FY 07	\$30,794,913	\$5,243,010	\$792,000	\$1,338,000	\$955,000	\$0	\$33,744,923	\$34,521,056	\$849,482,895	0.959
FY 08	\$34,521,056	\$1,329,900	\$686,000	\$966,000	\$2,538,000	\$0	\$32,346,956	\$33,090,936	\$904,804,001	0.963
FY 09	\$33,090,936	\$1,360,488	\$1,001,000	\$1,770,000	\$1,300,000	\$9,909,396	\$21,472,028	\$21,965,885	\$978,616,497	0.978
FY 10	\$21,965,885	\$1,391,779	\$1,315,000	\$2,148,000	\$2,462,000	\$0	\$18,747,664	\$19,178,860	\$1,050,825,554	0.982
FY 11	\$19,178,860	\$1,423,790	\$1,315,000	\$2,205,700	\$1,982,000	\$0	\$16,414,950	\$16,792,494	\$1,074,479,263	0.984
FY 12	\$16,792,494	\$1,456,537	\$1,315,000	\$1,965,021	\$3,353,000	\$0	\$12,931,010	\$13,228,423	\$1,099,679,612	0.988
FY 13	\$13,228,423	\$1,490,037	\$1,315,000	\$2,055,982	\$2,598,000	\$0	\$10,064,479	\$10,295,962	\$1,191,846,128	0.991
FY 14	\$10,295,962	\$1,524,308	\$1,315,000	\$2,198,601	\$1,288,000	\$0	\$8,333,669	\$8,525,343	\$1,216,787,328	0.993
FY 15	\$8,525,343	\$1,559,367	\$1,315,000	\$2,442,899	\$1,288,000	\$1,025,000	\$5,328,812	\$5,451,374	\$1,255,821,836	0.996
FY 16	\$5,451,374	\$1,595,233	\$1,315,000	\$2,488,896	\$1,288,000	\$0	\$3,269,711	\$3,344,914	\$1,284,951,258	0.997
FY 17	\$3,344,914	\$1,631,923	\$1,315,000	\$2,613,613	\$806,000	\$0	\$1,557,224	\$1,593,041	\$1,314,505,137	0.999
FY 18	\$1,593,041	\$1,669,457	\$1,315,000	\$2,617,071	\$506,000	\$0	\$139,427	\$142,633	\$1,344,738,756	1.000

Notes

1. Funding that the Laboratory has allocated from overhead to meet or exceed the SC DMR quota.
2. Estimates of the value of DMR resulting from GPP, IGPP and direct funded maintenance.
3. Estimates of the value of DMR resulting from the SLI Modernization Initiative, from impacts of Energy Savings Performance Contracts, etc

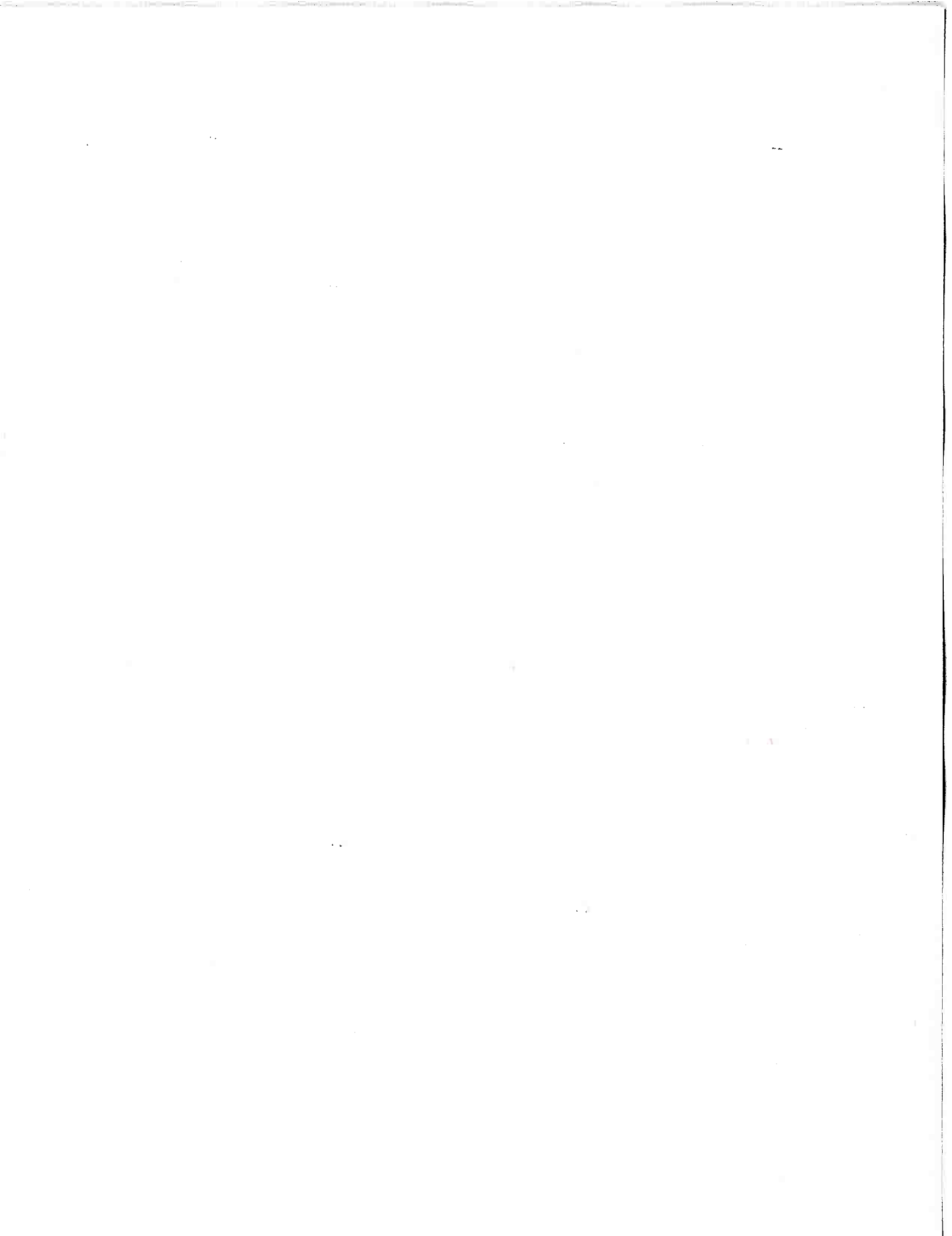


Deferred Maintenance Reduction with HV/LM RPVs

FY	DM from FIMS or Estimated	Estimate of DM Growth	SC DMR Funding Target	Lab Planned DM Reduction Funding (1)	Portion of DMR from GPP, IGPP or Major Repairs (2)	DM Reduction: Other Contributions (3)	Expected DM at the end of the FY	DM Escalation @ 2.3%	Estimated RPV ACI	Estimated ACI
FY 07	\$30,794,913	\$5,243,010	\$792,000	\$1,338,000	\$955,000	\$0	\$33,744,923	\$34,521,056	\$849,482,895	0.959
FY 08	\$34,521,056	\$1,329,900	\$686,000	\$966,000	\$2,538,000	\$0	\$32,346,956	\$33,090,936	\$904,804,001	0.963
FY 09	\$33,090,936	\$1,360,488	\$1,001,000	\$1,770,000	\$1,300,000	\$9,909,396	\$21,472,028	\$21,965,885	\$978,616,497	0.978
FY 10	\$21,965,885	\$1,391,779	\$1,315,000	\$2,148,000	\$2,462,000	\$0	\$18,747,664	\$19,178,860	\$608,930,694	0.969
FY 11	\$19,178,860	\$1,423,790	\$1,315,000	\$2,205,700	\$1,982,000	\$0	\$16,414,950	\$16,792,494	\$622,420,821	0.973
FY 12	\$16,792,494	\$1,456,537	\$1,315,000	\$1,965,021	\$3,353,000	\$0	\$12,931,010	\$13,228,423	\$637,223,826	0.979
FY 13	\$13,228,423	\$1,490,037	\$1,315,000	\$2,055,982	\$2,598,000	\$0	\$10,064,479	\$10,295,962	\$659,369,849	0.984
FY 14	\$10,295,962	\$1,524,308	\$1,315,000	\$2,198,601	\$1,288,000	\$0	\$8,333,669	\$8,525,343	\$672,064,094	0.987
FY 15	\$8,525,343	\$1,559,367	\$1,315,000	\$2,442,899	\$1,288,000	\$1,025,000	\$5,328,812	\$5,451,374	\$698,569,969	0.992
FY 16	\$5,451,374	\$1,595,233	\$1,315,000	\$2,488,896	\$1,288,000	\$0	\$3,269,711	\$3,344,914	\$714,882,598	0.995
FY 17	\$3,344,914	\$1,631,923	\$1,315,000	\$2,613,613	\$806,000	\$0	\$1,557,224	\$1,593,041	\$731,324,898	0.998
FY 18	\$1,593,041	\$1,669,457	\$1,315,000	\$2,617,071	\$506,000	\$0	\$139,427	\$142,633	\$748,145,370	1.000

Notes

1. Funding that the Laboratory has allocated from overhead to meet or exceed the SC DMR quota.
2. Estimates of the value of DMR resulting from GPP, IGPP and direct funded maintenance.
3. Estimates of the value of DMR resulting from the SLI Modernization Initiative, from impacts of Energy Savings Performance Contracts, etc



Attachment 8

Prioritized List of Line Items Projects

SLI Projects

Safety and Operational Reliability Improvements

Funding for this project commenced in FY2004 and will continue through FY2007. Construction began in FY07. The TEC is \$15.6 million.

This project addresses the Laboratory's aging and deteriorated underground utility systems and many of the remaining seismic remediation issues identified in the 1998 report required by Executive Order 12941, "Seismic Safety of Existing Federally Owned or Leased Buildings." Most of the infrastructure at SLAC dates back to the original construction of the Laboratory between 1962 and 1966. After nearly 45 years, many of the original utility systems are reaching end-of-life and are becoming unreliable and very expensive to maintain. A number of systems fail to meet modern safety standards. Serious deficiencies in the underground piping systems for cooling tower water, chilled water and hot water that result in leaks and failures that impact operations and create the potential for environmental hazards will be corrected. Seismic upgrades to several buildings and structures that are necessary to provide for safety, protect the DOE's investment in valuable infrastructure, and allow the Laboratory to operate critical facilities shortly after a major earthquake are included.

Site Project Identifier: 04-MEL-001-036

Gross SF Added: N/A

Gross SF Removed: N/A

Gross SF Rehabbed: N/A

DM Reduction: \$8,973K

RIC Eliminated: \$8,241K

Raw CAMP Score: Scored at the task level

Adjusted CAMP Score: Range at the task level (several tasks) – 62.3 to 85.5

TEC: \$15,620,000

PED: \$1,988,000

OPC: \$100,000

Funding in FY2007: \$5,770,000

Research Support Building

This 65,880 SF multi-story Research Support Building will replace 59,622 SF of aged, deteriorated and in many cases seismically deficient office trailers and modular structures. This new centrally located research support facility will house 250 scientific, technical and indirect staff currently located in 29 trailers & modulares dispersed throughout the site. Collocation of staff along with readily available conference rooms will increase interaction and productivity. The facility will be required for SLAC's mission future. The building will meet the Guiding Principles in E.O 13423 for high performance and sustainable buildings. The trailers, which will be removed from the site, average 28 years of age and greatly exceed the expected service life of 10 years. The reduction in DM will be

\$10.8 million, which is the RPV of the trailers that will be demolished. The TEC is \$52.7 million. This project has an Internal Rate of Return of 6.9%. The present value of the cost savings, assuming a 50 year building life, is \$31.8M. The payback period is 18.3 years.

Gross SF Added: 65,880

Gross SF Removed: 59,622

Gross SF Rehabbed: 0

DM Reduction: \$10,814K

RIC Eliminated: 0

CAMP Score: 52.2

Proposed Funding Profile: FY2010 - \$7,300K, FY2011 - \$22,700K, FY2012 - \$22,700K

Building Modernization

Two major (#003 & #024) and seven smaller buildings will be modernized to provide a pleasant and productive working environment with the appropriate support infrastructure and will house 55% (91) more staff after modernization as compared to current occupancy. 76,159 SF of the most inefficiently used space at SLAC will be renewed to increase occupancy from 166 to 257 scientific, technical and indirect staff. Most of the additional occupancy will be relocated from substandard trailers. Energy efficient and sustainable measures will be incorporated into the new systems and components including the mechanical and electrical in accordance with E.O. 13423. These buildings range in age from 26 to 43 years and with this upgrade, are expected to meet mission needs for several decades. \$1.8 million in RIC will be eliminated. The TEC is \$42.2 million. The Internal Rate of Return for this project is 4.0%. The present value of the cost savings is \$8.3M. The simple payback period is 22.4 years.

This project is inextricably tied to the Research Support Building. Staff displaced by the trailer removals will need a place to go while the Research Support Building is being constructed, and this project will exactly accommodate them.

Gross SF Added: 0

Gross SF Removed: 0

Gross SF Rehabbed: 76,159

DM Reduction: \$732K

RIC Eliminated: \$1,800K

CAMP Score: 52.2

Proposed Funding Profile: FY2010 - \$6,600K, FY2011 - \$17,800K, FY2012 - \$17,800K

Storm Water Treatment System

The majority of storm water is conveyed off SLAC property via two primary unlined drainage channels located on Stanford Lands. Despite past remedial actions, PCBs and lead continue to be found in sediment samples taken from within the channels. The drainage channels are located upstream of San Francisquito Creek, which contains federally threatened species including the California red-legged frog and steelhead trout.

A formal Feasibility Study will be prepared under a current Regional Water Quality Control Cleanup Order (No. R2-2005-0022) to evaluate remedial alternatives to address PCB and lead in storm water originating from SLAC. A potential remedial alternative which may be required by the Cleanup Order consists of a detention basin with chemical addition to facilitate precipitation, followed by physical treatment using ultra-filtration or carbon adsorption. The TEC of this alternative is \$19.0 million.

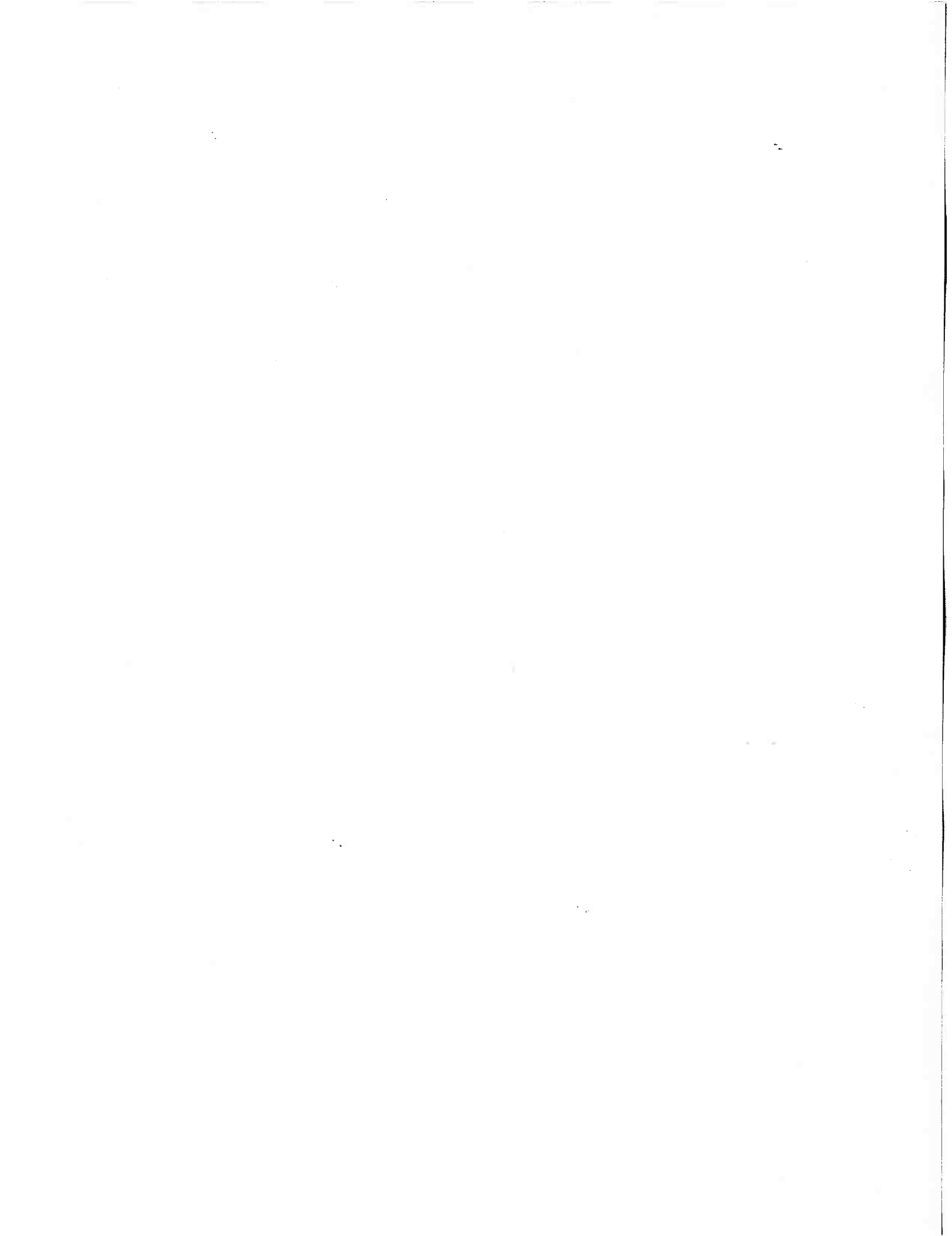
Gross SF Added: 0
Gross SF Removed: 0
Gross SF Rehabbed: 0
DM Reduction: 0
RIC Eliminated: 0
CAMP Score: 54.3

Proposed Funding Profile: FY2013 - \$1,000K, FY2014 - \$9,500K, FY2015 - \$8,500K

Attachment 9

FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Display Programmatic GPP Only (Excel Spreadsheet)

FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Display Programmatic GPP Only																
	Deferred Maint. Reduction	Gross Building Area Added	Gross Building Area Removed	FY 07 Approp. (\$000)	FY 08 Pres Budget (\$000)	FY 09 Budget (\$000)	FY 10 Budget (\$000)	FY 11 Budget (\$000)	FY 12 Budget (\$000)	FY 13 Budget (\$000)	FY 14 Budget (\$000)	FY 15 Budget (\$000)	FY 16 Budget (\$000)	FY 17 Budget (\$000)	FY 18 Budget (\$000)	RIC (\$000)
Stanford Linear Accelerator Center (SLAC)																
2.0 General Plant Project (GPP)																
2.2 All Other Programmatic GPP																
BES/Linac Complex																
He Recovery System																
LCW System in the Research Yard										300		300				300
Replace Linac VVS Transformers (Sec 20-30)						700	700	700	700							
Underground Mechanical Utilities - LCW System						200	200									
Other Linac Complex Programmatic										700	700	700	700	700	700	700
BES/SSRL																
Beam Line Ventilation Upgrade										250						
Bldg 40 Modernization Phase 1				650												650
Building 131 Cooling Tower Water Input Line Upgrade						350										
Building 28 Space Upgrade					677											
Install Additional LN Storage Capacity						250										2,000
LN Monochromator Backup Power System						250										
Seismic Upgrade - BTS and Booster Seismic Reinforcement								650								
Seismic Upgrade - SPEAR3 South Arc Seismic Upgrade Proj							650									
SeisUpgrad-SPEAR3 Seismic Retrofit at Beam Lines 1 & 9									650							
SPEAR Tresle Upgrade										400						
SSRL Programmatic													650	650	650	650
HEP/Linac Complex																
Replace Linac VVS Transformers (VVS-10 first)				368	376											
HEP Programmatic																
Instrument Science Operating Center (ISOC)																
LINAC Klystron Gallery & Accelerator Smoke Detection Upgrad					168	168	168	168								
2.2 All Other GPP Total	0	0	0	1,018	1,821	1,668	1,718	1,518	1,350	1,650	1,550	1,650	1,650	1,350	1,650	1,650



Attachment 10

FY2007 Facilities Management Contract Performance Measures

7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to meet Laboratory Needs

The Contractor provides appropriate planning for, construction and management of Laboratory facilities and infrastructures required to efficiently and effectively carry out current and future S&T programs.

The weight of this Goal is 15%.

The sustained excellence in operating, maintaining, and renewing the Facility and Infrastructure Portfolio to meet Laboratory needs shall measure the overall effectiveness and performance of the Contractor in planning for, delivering, and operations of Laboratory facilities and equipment needed to ensure required capabilities are present to meet today's and tomorrow's complex challenges.

Each Objective within this Goal is to be assigned the appropriate numerical score by the evaluating office as described within Section I of this document. Each Objective has one or more performance measures, the outcomes of which collectively assist the evaluating office in determining the Contractor's overall performance in meeting that Objective. Each of the performance measures identifies significant tasks, activities, requirements, accomplishments, and/or milestones for which the outcomes/results are important to the success of the corresponding Objective. DOE and SLAC will identify and agree to annual milestones/activities for performance measures by November 2007. Higher or lower ratings will be determined as a percentage above or below the Meets Expectations rating level. Although other performance information available to the evaluating office from other sources may be used, the outcomes of performance measures identified for each Objective shall be the primary means of determining the Contractor's success in meeting an Objective. The overall Goal score is computed by multiplying numerical scores earned by the weight of each Objective, and summing them (see Table 7.1 at the end of this section). The overall score earned is then compared to Table 7.2 to determine the overall Goal letter grade.

7.1 Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage and Minimizes Life Cycle Costs

In measuring the performance of this Objective the DOE evaluator(s) shall consider the following:

- The management of real property assets to maintain effective operational safety, worker health, environmental protection and compliance, property preservation, and cost effectiveness while meeting program missions, through effective facility utilization, maintenance and budget execution; and
- The maintenance and renewal of building systems, structures and components associated with the Laboratory's facility and land assets.
- The management of energy use and conservation practices.
- The contractor makes progress toward completing the environment restoration project through strong project management and an effective closure strategy.

The overall performance (outcomes/results) of the following set of performance measures (tasks, activities, requirements, accomplishments, and/or milestones) shall be utilized by evaluators as the primary measure of the Contractor's success in meeting this Objective and for determining the numerical score awarded.

The evaluation of this Objective may also consider other tasks, activities, requirements, accomplishments, and/or milestones not otherwise identified below but that provide evidence to the effectiveness/performance of the Contractor in meeting this Objective. The weight of this Objective is 50%.

7.1.1 Achieve the Office of Science Maintenance Investment Index (MII) goal of 2.0% for non-waiver assets.

Target 7.1.1.1 B+ = SLAC achieves the Office of Science MII goal of 2.0% in FY07.

7.1.2 Effective reduction of Deferred Maintenance (DM).

Target 7.1.2.1 B+ = SLAC meets DM reduction goal as stated in the Ten Year Site Plan for FY07.

7.1.3 Efficient completion of scheduled preventive maintenance activities for conventional facilities.

Target 7.1.3.1 B+ = SLAC completes 100% of planned preventive maintenance within 30 days.

Target 7.1.3.2 B+ = Meets agreed-on milestones on the FY07 Computerized Maintenance Management System (CMMS) plan.

7.1.4 Effective execution of annual goals within the Energy Performance Management Agreement.

Target 7.1.4.1 B+ = SLAC accomplishes 100% of annual goals identified and agreed to by DOE and SLAC.

7.1.5 Provide Efficient, and Effective Implementation of Project Management (Relates to 2.1).

Target 7.1.5.1 B+ = SLAC successfully implemented DOE O 413.3A, Program & Project Management for the Acquisition of Capital Assets. The overall performance of the following set of performance measures shall be utilized by evaluator as the primary measure of the Contractor's success in meeting this measure.

- SLAC has developed a Performance Measurement Baseline.
- SLAC has implemented and self-certified their Performance Management System that meets ANSI/EIA-748-A-1998.
- SLAC is maintaining a resource loaded critical path and a project master schedule.
- SLAC has implemented a risk management plan.
- SLAC has implemented a project management plan.

The evaluation of this measure may also consider other tasks, activities, requirements, accomplishments, and/or milestones not otherwise identified above but that provide evidence to the effectiveness/performance of the Contractor in meeting this measure.

7.1.6 Make Substantial Progress in Completing the Project (Relates to 2.2).

Target 7.1.6.1 B+ = Reasonable progress is being made in relations to the amount of funding that is provided to SLAC. The overall performance of the following set of performance measures shall be utilized by evaluator as the primary measure of the Contractor's success in meeting this measure.

- The completion of designs for treatment systems at the Plating Shop and Former Solvent Underground Storage Tank areas.
- Construction of the FSUST Dual Phase Extraction (DPE) system is at least 80% complete and the construction of the Plating Shop DPE has commenced.
- Contaminated soil from seven Investigation/Misc. Soil Areas (EBR Table 4-3) has been removed, disposed, and all confirmation sampling completed.
- Issue the Feasibility Study for the Groundwater VOC Operable Unit.
- Obtain and present sufficient data to allow the Core Team to make decisions on whether Investigation Areas and Misc. Soil Sites are either No Further Action or require Removal or Remedial

Action.

The evaluation of this measure may also consider other tasks, activities, requirements, accomplishments, and/or milestones not otherwise identified above but that provide evidence to the effectiveness/performance of the Contractor in meeting this measure.

7.2 Provide Planning for and Acquire the Facilities and Infrastructure Required to support Future Laboratory Programs

In measuring the performance of this Objective the DOE evaluator(s) shall consider the following:

- Integration and alignment of the Ten Year Site Plan to the Laboratory's comprehensive strategic plan;
- The facility planning, forecasting, and acquisition for effective translation of business needs into comprehensive and integrated facility site plans;
- The effectiveness in producing quality site and facility planning documents as required;
- The involvement of relevant stakeholders in all appropriate aspects of facility planning and preparation of required documentation;
- Overall responsiveness to customer mission needs; and
- Efficiency in meeting cost and schedule performance indices for facility construction projects.

The overall performance (outcomes/results) of the following set of performance measures (tasks, activities, requirements, accomplishments, and/or milestones) shall be utilized by evaluators as the primary measure of the Contractor's success in meeting this Objective and for determining the numerical score awarded. The evaluation of this Objective may also consider other tasks, activities, requirements, accomplishments, and/or milestones not otherwise identified below but that provide evidence to the effectiveness/performance of the Contractor in meeting this Objective. The weight of this Objective is 50%.

7.2.1 Effective integrated planning for the acquisition, utilization, maintenance, infrastructure recapitalization and disposition of real property.

Target 7.2.1.1 B+ = SLAC completes 100% of integrated planning milestones identified and agreed to by DOE and SLAC in the areas of deferred maintenance, maintenance plan, FIMS and Rehab and Improvement Cost. Prior year carryover shall be 100% costed in the following year. The Infrastructure Recapitalization program consist of small capital projects and may include:

- Strategic Laboratory Projects (SLI)
- General Planned Projects (GPP)
- Energy Efficiency projects
- Other small capitalized projects

7.2.2 Effective execution of the Safety and Operational Reliability Improvement (SORI) project.

Target 7.2.2.1 B+ = SLAC executes the SORI project within 10% of target for cost at Work Breakdown Structure (WBS) level 2 and no level II milestone is more than 1 month overdue as defined in the SORI Project Execution Plan (PEP). The cost variance will be 10% or less of the baseline value established in the PEP.

7.2.3 Effective execution of facility and infrastructure projects greater than \$250K.

Target 7.2.3.1 B+ = SLAC executes effective facility and infrastructure projects (General Plant Project and Operating projects) by completing projects within 10% of target for cost and 3 months of scheduled completion. All projects >\$250K will be completed within 3 years of start date. The cost performance rating is established by calculating the cost performance index at completion for each project. The cost variance for each project will be multiplied by a weighted factor based on their Total Project Cost (TPC) all projects > \$250K completed within the Fiscal Year (FY).

Attachment 11

Proposed FY2008 Facilities Management Contract Performance Measures

7.1 Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage and Minimizes Life Cycle Costs

In measuring the performance of this Objective the DOE evaluator(s) shall consider the following:

- The management of real property assets to maintain effective operational safety, worker health, environmental protection and compliance, property preservation, and cost effectiveness while meeting program missions, through effective facility utilization, maintenance and budget execution; and
- The maintenance and renewal of building systems, structures and components associated with the Laboratory's facility and land assets.
- The management of energy use and conservation practices.
- The contractor makes progress toward completing the environment restoration project through strong project management and an effective closure strategy.

The overall performance (outcomes/results) of the following set of performance measures (tasks, activities, requirements, accomplishments, and/or milestones) shall be utilized by evaluators as the primary measure of the Contractor's success in meeting this Objective and for determining the numerical score awarded.

The evaluation of this Objective may also consider other tasks, activities, requirements, accomplishments, and/or milestones not otherwise identified below but that provide evidence to the effectiveness/performance of the Contractor in meeting this Objective. The weight of this Objective is 55%

7.1.1 Achieve the Office of Science Maintenance Investment Index (MII) goal of 2.0% for non-waiver assets.

Target 7.1.1.1 SLAC achieves the Office of Science MII goal of 2.0% to following grading (20%):

7.1.2 Effective reduction of Deferred Maintenance (DM). The DMR is expressed as the dollar amount by which the Deferred Maintenance Backlog list is reduced during the course of the fiscal year for the site.

Target 7.1.2.1 B+ = SLAC meets DM reduction goal as stated in the Approved FY08 Ten Year Site Plan. (8%)

7.1.3 Efficient completion of scheduled preventive maintenance activities for conventional facilities. (5%)

Target 7.1.3.1 B+ = SLAC completes 85% of Planned Preventive Maintenance within 30 days. (Planned Preventative Maintenance for this measure is defined as those activities that are not dependent on an interruption of operations for completion)

Target 7.1.3.2 B+ = Meets 90% agreed-on milestones on the FY08 Computerized Maintenance Management System (CMMS) plan.

7.1.4 Asset Condition Index (ACI). (5%)

The ACI is (1) one minus the Facility Condition Index (FCI). FCI is the ratio of Deferred Maintenance (DM) to Replacement Plant Value (RPV).

ACI = 1 minus the Facility Condition Index (FCI). FCI is the ratio of Deferred Maintenance to Replacement Plant Value. The FCI is derived from data in FIMS.

Target 7.1.4.1: B+ = Greater than or equal to 95% for all assets.

7.1.5 Effective execution of annual goals within the Energy Performance Management Agreement. Energy Policy Act of 2005 and include: the development and implementation of a Comprehensive Energy Management Program and Plan; Energy Use Reductions of two percent per year compared to FY 2003; Purchase of at least 3 percent of electricity from renewable energy sources; New buildings scheduled for construction beginning in FY 2008 are designed to use 30 percent less energy than the ASHRAE 2004 standard; and Meter buildings with advance meters and meters by 2012. (8%)

Target 7.1.5.1 B+ = SLAC accomplishes (meets expectations) for all five "required" (out of 16 suggested) objectives listed below in FY 2008:

OBJECTIVE 1 (Required): Energy Management initiatives are managed consistent with a Comprehensive Energy Management Program and Plan (CEMP) that includes the minimum requirements of Department of Energy (DOE) O 430.2A, Departmental Energy and Utilities Management.

OBJECTIVE 2 (Required): Energy Use Reductions and Green House Gas reductions show continuous improvement and are on target toward meeting the EPACT reduction target of 2 percent per year (accumulating to a 20 percent reduction in FY 2015 as compared to FY 2003).

OBJECTIVE 3 (Required): To the extent economically feasible and technically practicable, at least 3 percent of electricity purchases are from renewable energy sources. (This can include Renewable Energy Certificates).

OBJECTIVE 4 (Required): New buildings (scheduled for construction beginning in FY 2008) are designed (conceptual design, Title 1, and Title 2) to use 30 percent less energy than the ASHRAE 90.1 2004 standard, if life-cycle cost-effective.

OBJECTIVE 5 (Required): Meter all SLAC Buildings by 2012.

OBJECTIVE 6: Develop and Implement Water Efficiency Program and Plans.

OBJECTIVE 7: Increased use of alternatives to Energy Management Program funding.

OBJECTIVE 8: Retro-commission buildings for improved energy efficiency and to qualify office buildings for receipt of the Energy Star Building label.

OBJECTIVE 9: Purchases of energy efficient technologies include low standby power devices.

OBJECTIVE 10: Control electric, steam, gas, and water demand to control costs and mitigate supply disruptions.

OBJECTIVE 11: Application of sustainable design principles to new buildings.

OBJECTIVE 12: DEMP Retrofit Projects and Model Programs are completed in accordance with the schedules provided in the funding letters and DEMP funds are costed in a timely fashion

OBJECTIVE 13: Conduct energy and water audits to identify cost effective retrofit projects that save energy, water, and operations and maintenance expenses

OBJECTIVE 14: Increase use of off-grid generation systems.

OBJECTIVE 15: Effectively measure and manage the energy consumption for each of the site's major buildings and operations and establish an incentive program for reducing energy consumption in these facilities.

OBJECTIVE 16: Designate exemplary new and existing facilities with significant public access and exposure as showcase facilities in order to highlight the energy or water efficiency and renewable energy improvements at those facilities.

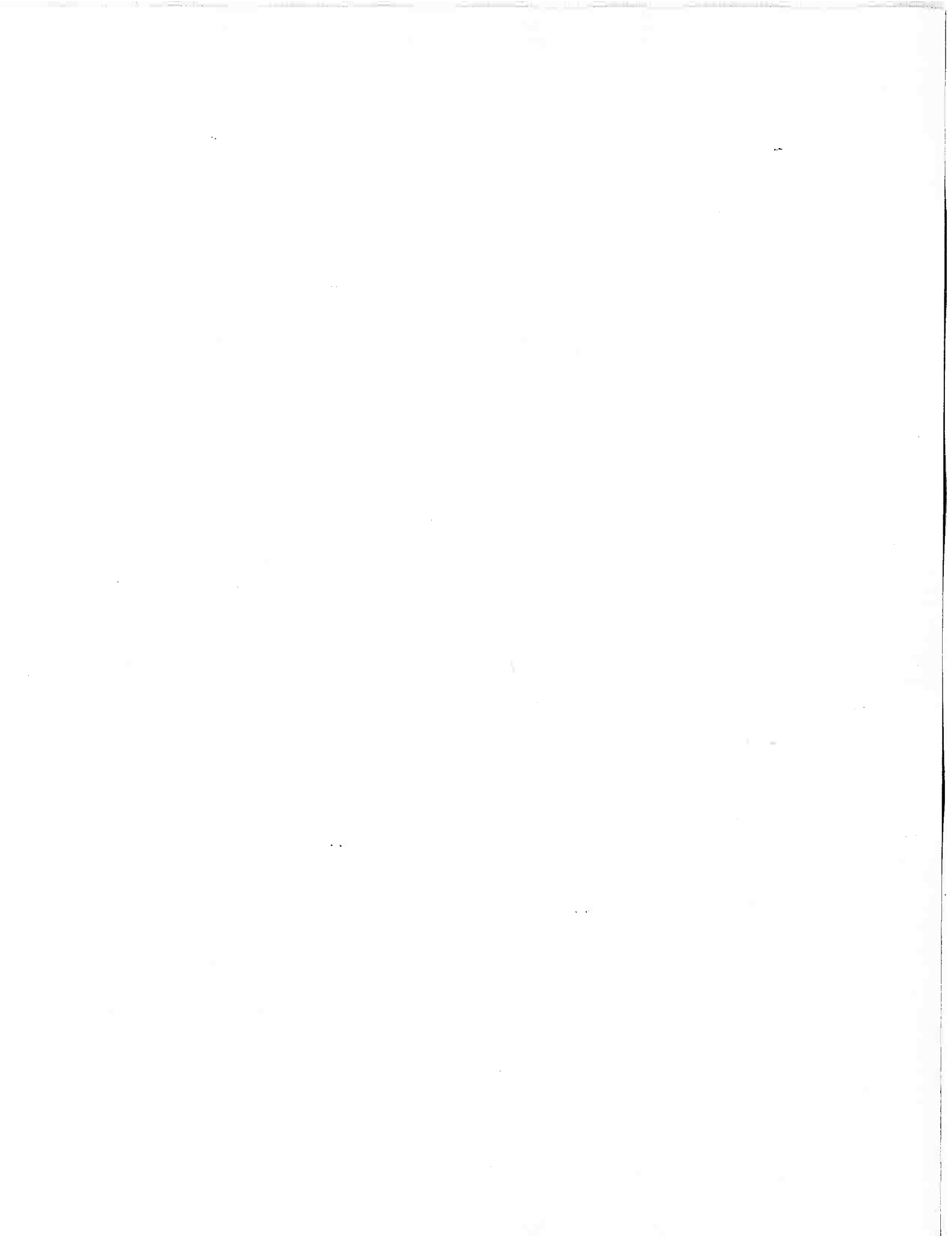
7.1.6 Timely completion and submission of all plans, reports, data and inputs as requested by DOE according to DOE schedule.

Target 7.1.6.1 B+ = SLAC completes all critical tasks and submits all reports, plans and inputs on time as required by DOE to meet required schedules. (10%)

ELEMENT	Letter Grade	Numeric Score	Objective Weight	Total Points	Total Points
7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs					
7.1 Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage and Minimizes Life Cycle Costs			55%		
7.2 Provide Planning for and Acquire the Facilities and Infrastructure Required to support Future Laboratory Programs			45%		
Performance Goal 7.0 Total					

Attachment 12

**FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) -
Modified to Display Energy Management Projects Only
(Excel Spreadsheet)**



FY 09 Integrated Facilities and Infrastructure Budget Data Sheet (IFI) - Modified to Display Energy Management Projects Only															
Stanford Linear Accelerator Center (SLAC)	Deferred Maint. Reduction	Gross Building Area Added	Gross Building Area Removed	FY 07 Approp. (\$000)	FY 08 Pres Budget (\$000)	FY 09 Budget (\$000)	FY 10 Budget (\$000)	FY 11 Budget (\$000)	FY 12 Budget (\$000)	FY 13 Budget (\$000)	FY 14 Budget (\$000)	FY 15 Budget (\$000)	FY 16 Budget (\$000)	FY 17 Budget (\$000)	FY 18 Budget (\$000)
1.0 Capital Line Item															
SLI															
SLI Initiative 001- Research Support Building	10,814,000	65,880					7,300	22,700	22,700						
BES															
X-Ray Laboratory for Advanced Materials Science (XLAM)		15,000					13,500								
SLI															
SLI Initiative 002- Building Modernization Project	732,400						6,600	17,800	17,800						
3.0 Institutional GPP															
Central Boiler Controls Upgrd (Linked to HVAC Cirrs - Site wide)	284						284								
On-Site Compressed Natural Gas Fueling Station											500				
Site Electrical Metering							606	225	352						
5.0 Maintenance & Repair															
5.1 Direct Funded															
HVAC Building 015 Replacement	981			50			931								
HVAC Replacement MZ-622; (Bldg 025)	375								375						
Building 118 Chiller Replacement					250										
HVAC - B005 HVAC Replacement	350			1,000	244										
Site Interior Lighting (T12 Ballasts Replacements Bldg 40 and 84)	15			15											
5.2 Indirect from Overhead															
HVAC - Replace ALC Modules					100		100	100	100	100					
Bldg 81 Site Interior Lighting (T12 Ballasts replacements)				16	136										
Site Interior Lighting Upgrd (T12 Ballasts replace Site-wide)						100	100	100	100	100	100		100		
6.2 Other Indirect Funded				36	30	30	60	60	90	90	100	100	100	100	100
Energy / Water															

