Science Laboratories Infrastructure

Overview

The Science Laboratories Infrastructure (SLI) program mission is to support scientific and technological innovation at the Office of Science (SC) laboratories by funding and sustaining mission-ready infrastructure and fostering safe and environmentally responsible operations. The program provides the infrastructure necessary to support world leadership by the SC national laboratories in the area of basic scientific research, now and in the future.

SLI's primary focus is on long-term modernization of SC laboratory infrastructure to ensure the mission readiness of SC laboratories. Through this program, SC is ensuring that its laboratories have state-of-the-art facilities and utilities that are flexible, reliable, and sustainable, with environmentally stable research space and high performance computing space needed to support scientific discovery. Facility designs ensure safe, collaborative, and interactive work environments and allow for the integration of basic and applied research and development. Projects in many cases include removal of aged and outdated facilities that are being replaced by new ones. New and renovated buildings and utilities include the latest temperature and humidity controls, clean power, and isolation from vibration and electromagnetic interference where needed.

In addition to the construction program, SLI's Infrastructure Support program provides SC stewardship responsibilities for the Oak Ridge Reservation and the Federal facilities in the City of Oak Ridge, Tennessee, and Payments in Lieu of Taxes (PILT) to local communities around the Argonne, Brookhaven, and Oak Ridge National Laboratories. The SLI program also provides funding to support facilities and infrastructure expenses for the Office of Scientific and Technical Information (OSTI), the Oak Ridge Institute for Science and Education (ORISE) at Oak Ridge, and the New Brunswick Laboratory (NBL) at the Argonne Site.

Highlights of the FY 2015 Budget Request

The SLI program has successfully completed nearly $400 million of infrastructure projects since FY 2006 when SC initiated a modernization effort to provide impactful infrastructure investments across the laboratory complex. Ongoing projects that will provide new laboratories, renovated facilities, and new utilities are proceeding towards on-time completion within budget. The FY 2015 Request provides final funding for one of these ongoing projects, the Science and User Support Building project at SLAC National Accelerator Laboratory (SLAC). Importantly, this budget also provides initial funding for the start of new projects. While significant improvements to SC infrastructure have been made, it is important to maintain a strong level of investment and continue making improvements across the complex. This budget request does that in accordance with best budgeting practices by fully funding one new project and funding full design of three additional projects. The Infrastructure and Operational Improvements project at the Princeton Plasma Physics Laboratory (PPPL) will modernize facilities that, today, do not adequately support ongoing plasma physics research. The Materials Design Laboratory project at Argonne National Laboratory (ANL), the Photon Science Laboratory Building project at SLAC National Accelerator Laboratory (SLAC), and the Integrative Genomics Building project at Lawrence Berkeley National Laboratory (LBNL) will provide new research facilities to further SC's core capabilities in materials science, photon science, and biosciences, respectively.

Beginning in FY 2015, SLI will also provide funding to support facilities and infrastructure activities for the ORISE facility at Oak Ridge which was previously supported through the Biological and Environmental Research (BER) program.

Science Laboratories Infrastructure
Funding ($K)

	FY 2013 Current	FY 2014 Enacted	FY 2014 Current	FY 2015 Request	FY 2015 vs. FY 2014 Enacted
Infrastructure Support	**8,219**	**8,236**	**8,236**	**10,289**	**+2,053**
Construction					
Infrastructure and Operational Improvements at PPPL (15-SC-75)	0	0	0	25,000	+25,000
Materials Design Laboratory at ANL (15-SC-76)	0	0	0	7,000	+7,000
Photon Science Laboratory Building at SLAC (15-SC-77)	0	0	0	12,890	+12,890
Integrative Genomics Building at LBNL (15-SC-78)	0	0	0	12,090	+12,090
Utilities Upgrade at FNAL (13-SC-70)	0	34,900	34,900	0	-34,900
Utility Infrastructure Modernization at TJNAF (13-SC-71)	0	29,200	29,200	0	-29,200
Science and User Support Building at SLAC (12-SC-70)	14,512	25,482	25,482	11,920	-13,562
Research Support Building and Infrastructure Modernization at SLAC (10-SC-70)	36,382	0	0	0	0
Energy Sciences Building at ANL (10-SC-71)	32,030	0	0	0	0
Renovate Science Laboratories, Phase II, at BNL (10-SC-72)	14,530	0	0	0	0
Total, Construction	**97,454**	**89,582**	**89,582**	**68,900**	**-20,682**
Total, Science Laboratories Infrastructure	**105,673**	**97,818**	**97,818**	**79,189**	**-18,629**

Science Laboratories Infrastructure
Explanation of Major Changes ($K)

	FY 2015 vs. FY 2014 Enacted
Infrastructure Support: Funding increases to accommodate the transfer of funding for facilities and infrastructure support at the Oak Ridge Institute for Science and Education (ORISE) at Oak Ridge that was previously funded under the Biological and Environmental Research (BER) program. Funding also increases for additional facilities and infrastructure support at the New Brunswick Laboratory (NBL) at the Argonne site and to support reservation road repairs, critical maintenance needs, and other landlord responsibilities at the Oak Ridge Reservation and other DOE facilities in Oak Ridge. Funding for Payments in Lieu of Taxes to local communities around the Argonne and Brookhaven Laboratories increases slightly to accommodate the anticipated rate increase.	+2,053
Construction: Two projects received full funding in FY 2014. Final funding is provided at the planned level for the Science and User Support Building project at SLAC. Funding is also provided for four new project starts: the Infrastructure and Operational Improvements project at PPPL; the Materials Design Laboratory at ANL; the Photon Science Laboratory Building at SLAC; and the Integrative Genomics Building project at LBNL.	-20,682
Total, Science Laboratories Infrastructure	**-18,629**

Program Accomplishments

The *Interdisciplinary Science Building, Phase I at Brookhaven National Laboratory (BNL).* Construction of this new 87,700 square foot laboratory was completed within budget and ahead of schedule. Beneficial Occupancy was achieved on February 27, 2013 and the project achieved CD-4, Approve Project Completion, on April 8, 2013. The project earned Leadership in Energy and Environmental Design (LEED) Gold certification from the US Green Building Council. This completed project accommodates researchers from a wide variety of scientific disciplines. The new building contains 60 standard laboratories and four specialized labs with unique features for safely assembling and testing new lithium-ion batteries, exploring materials' electronic structure at the atomic scale, and fabricating new materials one atomic layer at a time.

The *Technology and Engineering Development Facility at Thomas Jefferson National Accelerator Facility (TJNAF).* Construction and renovation of this project was completed within budget and ahead of schedule. The project achieved CD-4A, Approve Start of Operations—New Construction, on March 22, 2012 upon completion of a 46,550 gross square foot addition to the Test Lab and completion of the new 74,600 square foot Technology and Engineering Development building to support engineering and fabrication functions. The project achieved CD-4B, Approve Start of Operations—Renovation, on September 27, 2013 upon complete renovation of the 90,000 gross square foot Test Lab building. The project earned LEED Gold certification for the new Technology and Engineering Development building and is expected to earn LEED Gold certification for the expanded and renovated Test Lab. This completed project transformed the lab campus and provides state-of-the-art facilities used to research, develop, and test superconducting accelerator technology critical to research in high-energy physics, nuclear physics, nuclear astrophysics, life sciences, and materials science.

The *Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings, Phase II at Lawrence Berkeley National Laboratory (LBNL).* CD-4A/B was achieved on September 25, 2012. This marked the completion of construction of Building 74. Seismic strengthening of Building 85 was substantially completed in July 2013. This project rectified seismic deficiencies and provides modern general purpose laboratory space used for research in energy and the environment.

The *Research Support Building and Infrastructure Modernization at SLAC National Accelerator Laboratory (SLAC).* Construction was completed on the Research Support Building (B052) on May 31, 2013. The project replaced more than a dozen 35-year old trailers and achieved LEED Gold certification. CD-3B, which includes the modernization of Building 41, was approved on June 28, 2013. This project will provide administrative and support space to integrate the accelerator science and technology communities across programmatic boundaries.

The *Energy Sciences Building at Argonne National Laboratory (ANL).* Construction of the new, main building was deemed substantially complete on June 30, 2013. Subcontracts to complete enhanced scope elements for the Materials for Energy Module and the Post Occupancy Fit Out were awarded in June 2013. The Energy Sciences Building at ANL is a sustainable interdisciplinary physical sciences laboratory designed to encourage collaboration between some of the country’s leading scientists in chemistry, materials sciences, and condensed matter physics research. This 158,000 square foot facility will house over 240 researchers. It has linkages to the campus pathway system and connections to adjoining research and office buildings, creating a new consolidated campus for the energy sciences.

The *Science and User Support Building at SLAC National Accelerator Laboratory (SLAC).* Preliminary construction work, including demolition of the existing cafeteria, commenced in September 2013.

Science Laboratories Infrastructure
Infrastructure Support

Description

The Infrastructure Support subprogram provides SC stewardship responsibilities for the Oak Ridge Reservation and DOE facilities and provides infrastructure support for the OSTI and ORISE facilities in Oak Ridge, Tennessee. This subprogram also provides facilities infrastructure support for the New Brunswick Laboratory (NBL) at the Argonne site and provides Payments in Lieu of Taxes (PILT) to local communities around the Argonne, Brookhaven, and Oak Ridge National Laboratories.

Funding ($K)

	FY 2013 Current	FY 2014 Enacted	FY 2014 Current	FY 2015 Request	FY 2015 vs. FY 2014 Enacted
Infrastructure Support					
Payments in Lieu of Taxes	1,385	1,385	1,385	1,412	+27
Facilities and Infrastructure	900	900	900	3,100	+2,200
Oak Ridge Landlord	5,934	5,951	5,951	5,777	-174
Total, Infrastructure Support	**8,219**	**8,236**	**8,236**	**10,289**	**+2,053**

Payments in Lieu of Taxes

The Department is authorized to provide discretionary payments to state and local government authorities for real property that is not subject to taxation because it is owned by the United States and operated by the Department. Under this authorization, PILT is provided to communities around the Argonne and Brookhaven National Laboratories to compensate for lost tax revenues for land removed from local tax rolls. PILT payments are negotiated between the Department and local governments based on land values and tax rates.

Facilities and Infrastructure

Funding within this activity is provided for support of general purpose infrastructure at NBL located on the site of the Argonne National Laboratory and at the OSTI and ORISE facilities in the city of Oak Ridge, Tennessee. Activities include general facilities and infrastructure support, General Plant Projects, and General Purpose Equipment.

Oak Ridge Landlord

Funding supports landlord responsibilities, including infrastructure for the 24,000–acre Oak Ridge Reservation and DOE facilities in the city of Oak Ridge, Tennessee. Activities include maintenance of roads, grounds, and other infrastructure; support and improvement of environmental protection, safety, and health; and Payments in Lieu of Taxes (PILT) to Oak Ridge communities. Landlord responsibilities exclude the Y-12 plant, ORNL, and the East Tennessee Technology Park.

Science Laboratories Infrastructure
Infrastructure Support

Activities and Explanation of Changes

FY 2014 Enacted	FY 2015 Request	Explanation of Changes FY 2015 vs. FY 2014 Enacted
Payments in Lieu of Taxes		
FY 2014 funding supports PILT payments to communities around the Argonne and Brookhaven National Laboratories.	The FY 2015 request provides funding for PILT payments to communities around the Argonne and Brookhaven National Laboratories.	Funding increases to accommodate increases in PILT requirements.
Facilities and Infrastructure		
Funding provided for general facilities and infrastructure support activities at NBL at Argonne.	The FY 2015 request provides funding for general facility and infrastructure support at NBL, OSTI, and ORISE.	Funding increases to accommodate additional support for facilities and infrastructure expenses at NBL. Funding also increases to support the transfer of general facility and infrastructure expenses for the ORISE facility at Oak Ridge which was previously funded through the SC BER program, and for OSTI which was previously included in the Oak Ridge Landlord line.
Oak Ridge Landlord		
FY 2014 funding supports activities to ensure continuity of operations and minimize interruptions due to infrastructure or other system failures and for facilities and infrastructure at OSTI.	The FY 2015 request provides funding for activities to ensure continuity of operations and minimize interruptions due to infrastructure or other system failures.	Funding decreases as support for general facility and infrastructure for OSTI is moved to the facilities and infrastructure line.

Science Laboratories Infrastructure
Construction

Description

The SLI Construction program funds line item projects to maintain and enhance the general purpose infrastructure at SC laboratories. SLI's infrastructure modernization construction projects are focused on the accomplishment of long-term science goals and strategies at each SC laboratory.

New Project Starts

Infrastructure and Operational Improvements at PPPL (15-SC-75)

The Infrastructure and Operational Improvements project will provide critical improvements to infrastructure and operations that support plasma and fusion-energy sciences research. Existing facilities and infrastructure at PPPL are marginally adequate to support cost effective research operations. For example, many researchers and engineers are housed in buildings that were originally built in the 1960s and include obsolete and inadequate enclosure, mechanical, electrical, and plumbing systems. This project will rectify the most significant site, building, utility and other infrastructure deficiencies as part of a comprehensive campus strategic facilities investment plan being developed for PPPL. Completion of this project will result in improved operational efficiency and modernized infrastructure that is essential necessary to support fusion energy sciences research.

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on September 17, 2013. The estimated preliminary Total Project Cost (TPC) range for this project is $21,000,000 to $26,000,000. This cost range and project schedule will be further evaluated prior to CD-2.

Full funding is requested in FY 2015 which will cover all design and construction for this project.

Materials Design Laboratory at ANL (15-SC-76)

The Materials Design Laboratory project will support research in materials science in energy and a range of other fields. It will entail construction of a 90,000–150,000 gsf high–performance laboratory office building and adjacent building renovations. The existing research buildings at Argonne dedicated to this SC research mission are all more than 40 years old, some as old as 55 years. These structures require frequent repair, resulting in interruptions to research activities, and they are unable to meet modern standards for instruments requiring vibration, electromagnetic and/or thermal stability. Additional supporting functions such as utilities or site modifications may be included in the project, if necessary.

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on August 27, 2010. The estimated preliminary TPC range for this project is $85,500,000 to $96,000,000. This cost range and project schedule will be further evaluated prior to CD-2.

FY 2015 funding will support full design of the project.

Photon Science Laboratory Building at SLAC (15-SC-77)

The Photon Science Laboratory Building project will provide centralized modern laboratory and office space to enable the development and expansion of SLAC's photon science programs. The Photon Science Laboratory Building will support the Linac Coherent Light Source; the Stanford Synchrotron Radiation Lightsource; the Photon Ultrafast Laser Science and Engineering Institute; and the Stanford Institute for Materials and Energy Sciences. Additional supporting functions such as utilities or site modifications may be included in the project, if necessary.

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on May 11, 2011. The estimated preliminary Total Project Cost (TPC) range for this project is $49,500,000 to $57,000,000. This cost range and project schedule will be further evaluated prior to CD-2.

FY 2015 funding will support full design and initial construction work packages for this project.

Integrative Genomics Building at LBNL (15-SC-78)

Portions of the biosciences program at LBNL are located off-site, away from the main laboratory, and dispersed across multiple locations up to 20 miles apart. This project will relocate a significant fraction of the research and operations currently located in commercially leased space onto the main LBNL campus. Collocation of these programs will increase the synergy and efficiency of biosciences and other research at LBNL and will provide a state-of-the-art facility for biosciences research in a collaborative environment close to other key LBNL facilities and programs. Additional supporting functions such as utilities or site modifications may be included in the project, if necessary.

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on September 17, 2013. The estimated preliminary Total Project Cost (TPC) range for this project is $71,500,000 to $91,500,000. This cost range and project schedule will be further evaluated prior to CD-2.

FY 2015 funding will support full design of the project.

On-Going Projects

Utilities Upgrade at FNAL (13-SC-70)

The reliability of Fermilab's current industrial cooling water and high-voltage electrical distribution systems is suffering due to increased pipe break and electrical failures. Also, current and future accelerator and experimental facilities at Fermilab will exhaust the capacity of the existing utility systems, and additional stresses to the system will exacerbate these problems. The Utilities Upgrade project will upgrade the laboratory's industrial cooling water and high voltage electrical system, which will mitigate environmental liability, improve reliability, and enable Fermilab to effectively perform high energy physics research.

This project received CD-1 approval on November 15, 2010.

This project is a new start in FY 2014 with full funding provided.

Utility Infrastructure Modernization at TJNAF (13-SC-71)

Existing utilities, including cryogenic, power distribution, cooling water, and communication systems at TNJAF continue to experience failures at increasing rates, which limits the laboratory's ability to support SC research programs. For example, the current cryogenic capacity is inadequate to support the needs in the Test Lab, which is the key facility for superconducting radio frequency development and production activities. This limits various superconducting radiofrequency research, fabrication, and testing supported by the SC Nuclear Physics (NP) program. In addition, the current power distribution system does not have the necessary redundancy to maintain operation of critical systems during power outages. The most critical shortfall is the inability to use an alternative power feed to restart the Central Helium Liquefier, a critical component to maintaining constant cryogenic temperatures in the accelerator cryomodules that prevent degradation of accelerator performance and costly repairs. These inadequacies reduce reliability and could jeopardize the laboratory's capability to support ongoing research supported by SC's Office of Nuclear Physics and High Energy Physics.

This project received CD-1 approval on October 14, 2010.

This project is a new start in FY 2014 with full funding provided.

Science and User Support Building at SLAC (12-SC-70)

With the success of the Linear Coherent Light Source (LCLS), SLAC is benefiting from a large influx of visitors and users and expects the demand to use SLAC's research facilities will continue to grow. The Science and User Support Building project will provide the expanded user space needed to ensure that the world-class research conducted at SLAC is supported by mission-ready facilities. This project will replace aging structures with a newly constructed building with an estimated area of 58,000–72,000 gsf that will house a centrally located user support hub; the visitor's center; a new cafeteria; office space

needed to centralize SLAC communications, security, and laboratory administration; and a state-of-the-art auditorium, conference space, and associated site improvements. The Science and User Support Building will replace the aging structure that currently holds Panofsky Auditorium and the cafeteria built in 1962, the same year SLAC was founded. In order to meet the congressional mandates for replacement, the project plans to demolish the Panofsky Auditorium and the cafeteria (approximately 13,200 gsf) and use banked excess for the balance.

The most recent DOE 413.3B approved Critical Decision (CD) is CD-2/3, Approve Performance Baseline and Start of Construction, achieved on June 18, 2013.

FY 2015 funding will support the continuation of construction activities per the planned profile in the Preliminary Project Execution Plan. This project will receive final year funding in FY 2015.

Activities and Explanation of Changes

FY 2014 Enacted	FY 2015 Request	Explanation of Changes FY 2015 vs. FY 2014 Enacted
Infrastructure and Operational Improvements at PPPL (15-SC-75)		
	Funding requested in FY 2015 will support full design and construction of the project.	Funding is requested in FY 2015 to support the new start of this project.
Materials Design Laboratory at ANL (15-SC-76)		
	Funding requested in FY 2015 will support full design of the project.	Funding is requested in FY 2015 to support the new start of this project.
Photon Sciences Laboratory Building at SLAC (15-SC-77)		
	Funding requested in FY 2015 will support full design and the start of construction.	Funding is requested in FY 2015 to support the new start of this project.
Integrative Genomics Building at LBNL (15-SC-78)		
	Funding requested in FY 2015 will support full design of the project.	Funding is requested in FY 2015 to support the new start of this project.
Utilities Upgrade at FNAL (13-SC-70)		
Project is fully funded in FY 2014. Design and construction will commence this year.		Full funding is provided in FY 2014 for this project.
Utility Infrastructure Modernization at TJNAF (13-SC-71)		
Project is fully funded in FY 2014. Design and construction will commence this year.		Full funding is provided in FY 2014 for this project.
Science and User Support Building at SLAC (12-SC-70)		
Funding supports construction activities which will continue in FY 2014.	Funding in FY 2015 will support the continuation of construction activities. FY 2015 is the final year of funding for this project.	Funding requested in FY 2015 will complete funding for construction activities.

Science Laboratories Infrastructure
Capital Summary ($K)

	Total	Prior Years	FY 2013 Current	FY 2014 Enacted	FY 2014 Current	FY 2015 Request	FY 2015 vs. FY 2014 Enacted
Capital Operating Expenses							
General plant projects	n/a	n/a	300	300	800	800	+500

Construction Projects Summary ($K)

	Total Project Cost(TPC)	Prior Years	FY 2013 Current	FY 2014 Enacted	FY 2014 Current	FY 2015 Request	FY 2015 vs. FY 2014 Enacted
Infrastructure and Operational Improvements at PPPL (15-SC-75)							
TEC	25,000[a]	0	0	0	0	25,000	+25,000
OPC[b]	1,000	0	0	1,000	1,000	0	-1,000
TPC	26,000[a]	0	0	1,000	1,000	25,000	+24,000
Materials Design Laboratory at ANL (15-SC-76)							
TEC	95,000[a]	0	0	0	0	7,000	+7,000
OPC[b]	882	882	0	0	0	0	0
TPC	95,882[a]	882	0	0	0	7,000	+7,000

[a] This project has not received CD-2 approval; therefore, preliminary cost estimates are shown for TEC and TPC.

[b] Other Project Costs shown are funded through laboratory overhead.

	Total Project Cost(TPC)	Prior Years	FY 2013 Current	FY 2014 Enacted	FY 2014 Current	FY 2015 Request	FY 2015 vs. FY 2014 Enacted
Photon Sciences Laboratory Building at SLAC (15-SC-77)							
TEC	55,000[a]	0	0	0	0	12,890	+12,890
OPC[b]	2,000	1,341	0	0	0	0	0
TPC	57,000[a]	1,341	0	0	0	12,890	+12,890
Integrative Genomics Building at LBNL (15-SC-78)							
TEC	90,000[a]	0	0	0	0	12,090	+12,090
OPC[b]	1,500	0	0	1,500	1,500	0	-1,500
TPC	91,500[a]	0	0	1,500	1,500	12,090	+10,590
Utilities Upgrade at FNAL (13-SC-70)							
TEC	34,900[a]	0	0	34,900	34,900	0	-34,900
OPC[b]	1,100	1,100	0	0	0	0	0
TPC	36,000[a]	1,100	0	34,900	34,900	0	-34,900
Utility Infrastructure Modernization at TJNAF (13-SC-71)							
TEC	29,200[a]	0	0	29,200	29,200	0	-29,200
OPC[b]	700	700	0	0	0	0	0
TPC	29,900[a]	700	0	29,200	29,200	0	-29,200
Science & User Support Building at SLAC (12-SC-70)							
TEC	64,000[a]	0	14,512	25,482	25,482	11,920	-13,562
OPC[b]	1,000	562	0	238	238	200	-38
TPC	65,000[a]	562	14,512	25,720	25,720	12,120	-13,600

[a]This project has not received CD-2 approval; therefore, preliminary cost estimates are shown for TEC and TPC.

[b] Other Project Costs shown are funded through laboratory overhead.

	Total Project Cost(TPC)	Prior Years	FY 2013 Current	FY 2014 Enacted	FY 2014 Current	FY 2015 Request	FY 2015 vs. FY 2014 Enacted
Research Support Building and Infrastructure Modernization at SLAC (10-SC-70)							
TEC	96,000	47,594	36,382	0	0	0	0
OPC[a]	1,400	705	216	230	230	0	-230
TPC	97,400	48,299	36,598	230	230	0	-230
Energy Sciences Building at ANL (10-SC-71)							
TEC	95,000	22,970	32,030	0	0	0	0
OPC[a]	956	956	0	0	0	0	0
TPC	95,956	23,926	32,030	0	0	0	0
Renovate Science Laboratories, Phase II, at BNL (10-SC-72)							
TEC	50,000	19,970	14,530	0	0	0	0
OPC[a]	800	800	0	0	0	0	0
TPC	50,800	20,770	14,530	0	0	0	0
Total, Construction							
TEC	n/a	n/a	97,454	89,582	89,582	68,900	-20,682
OPC[a]	n/a	n/a	216	2,968	2,968	200	-2,768
TPC	n/a	n/a	97,670	92,550	92,550	69,100	-23,450

[a] Other Project Costs shown are funded through laboratory overhead.

15-SC-75, Infrastructure and Operational Improvements
Princeton Plasma Physics Laboratory (PPPL), Princeton, New Jersey
Project is for Design and Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on September 17, 2013. The preliminary Total Estimated Cost (TEC) range for this project is $20,000,000 to $25,000,000. The preliminary Total Project Cost (TPC) range is $21,000,000 to $26,000,000.

A Federal Project Director with a certification level 2 has been assigned to this project.

This Project Data Sheet (PDS) includes a new start for the budget year.

This PDS is new.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	Design Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2015	09/17/2013	4Q FY 2014	4Q FY 2015	4Q FY 2015[a]	4Q FY 2015[a]	4Q FY 2019[a]	4Q FY 2015[a]	4Q FY 2019[a]

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC[b] Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	2,500	22,500[c]	25,000[c]	1,000	0	1,000	26,000[c]

4. Project Description, Justification, and Scope

Mission Need

Princeton Plasma Physics Laboratory (PPPL) has a dual mission to enable fusion energy research for the Office of Science and to lead discoveries across the broad frontier of plasma science and technology. PPPL's major collaborative facility, the National Spherical Torus Experiment (NSTX), is exploring the potential of a spherical torus plasma configuration for fusion

[a] This project is pre-CD-2, and schedule estimates are preliminary. Construction funds will not be executed without appropriate CD approvals.
[b] Other project costs (OPC) are funded through laboratory overhead.
[c] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $20,000,000 to $25,000,000. The preliminary TPC range for this project is $21,000,000 to $26,000,000.

energy and developing solutions for the plasma-material interface. PPPL research also contributes to plasma science and applications generally, in areas such as plasma-based mass filters for nuclear waste remediation, plasma-based nanotechnology for improved production of nanomaterials, plasma rocket thrusters for fine positioning of satellites, and development of new techniques for short-pulse and intense lasers.

While the size of the PPPL site is adequate for current and anticipated future needs, the L-Wing and the Motor Generator buildings are both inadequate to support cost effective research operations. Researchers and engineers are housed in buildings that were originally built in the 1960s which include obsolete and inadequate enclosure, mechanical, electrical, and plumbing systems such as failed electrical circuits, leaking windows and walls, rotting wall structures, and lack of insulation. This project will rectify the most significant site, building, utility, and other infrastructure deficiencies as part of a comprehensive campus strategic facilities investment plan being developed for PPPL. Completion of this project will result in improved operational efficiency and modernized infrastructure that is essential necessary to support fusion energy sciences research.

Scope and Justification (15-SC-75, Infrastructure and Operational Improvements Project)

If these capability gaps are not closed in the near term, PPPL will continue to struggle with increased operating costs and reduced efficiency as a result of the serious infrastructure quality issues that have accrued over the years. If these gaps are not closed in the long term, PPPL cannot continue to operate as a safe, operationally sound national laboratory. Closing these capability gaps will decrease utility costs, increase energy efficiency, reduce greenhouse gas emissions and help achieve DOE sustainability goals. More efficient use of space will increase workflow efficiencies and collaboration between researchers and engineers, and as a result, will better support the research being conducted. The scope of the project may include selective modernization of the existing L-Wing or Motor Generator Building, or both. Obsolete and inadequate architectural, structural, mechanical, electrical, and/or plumbing systems will be replaced. Additional supporting functions such as utilities or site modifications may be included in the project, if they are deemed necessary.

This project has not yet received CD-1 approval; therefore key performance parameters (KPPs) are to be determined. The table below outlines preliminary KPPs.

Description	Threshold Value (Minimum)	Objective Value (Maximum)
Rehabilitation/Renovation	15,000 gross square feet	40,000 gross square feet

This mission need may be met with multiple project alternatives, such as renovations to improve the infrastructure and operations, which will be analyzed in the conceptual design phase to ensure the proposed strategy is the most cost-effective method of meeting the identified mission need.

Other Project Costs, funded through laboratory overhead, will be used to complete the conceptual design documents. FY 2015 funds will be used to complete the preliminary and final designs for all aspects of the project, to start and complete construction work, and for project management and support activities. Fully funding this project in FY 2015 is consistent with DOE project management policy and will mitigate procurement risks.

The project will be conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements will be met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2015	2,500	2,500	2,500
Construction			
FY 2015	22,500	22,500	6,000
FY 2016	0	0	11,500
FY 2017	0	0	3,500
FY 2018	0	0	1,500
Total, Construction	22,500	22,500	22,500
TEC			
FY 2015	25,000	25,000	8,500
FY 2016	0	0	11,500
FY 2017	0	0	3,500
FY 2018	0	0	1,500
Total, TEC[a]	25,000	25,000	25,000
Other Project Cost (OPC)[b]			
OPC except D&D			
FY 2014	800	800	800
FY 2015	200	200	200
Total, OPC	1,000	1,000	1,000

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $20,000,000 to $25,000,000. The preliminary TPC range for this project is $21,000,000 to $26,000,000.

[b] Other Project Costs are funded through laboratory overhead.

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 2014	800	800	800
FY 2015	25,200	25,200	8,700
FY 2016	0	0	11,500
FY 2017	0	0	3,500
FY 2018	0	0	1,500
Total, TPC[a]	26,000	26,000	26,000

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	2,000	N/A	N/A
Contingency	500	N/A	N/A
Total, Design	2,500	N/A	N/A
Construction			
Construction	18,000	N/A	N/A
Contingency	4,500	N/A	N/A
Total, Construction	22,500	N/A	N/A
Total, TEC[a]	25,000	N/A	N/A
Contingency, TEC	5,000	N/A	N/A

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $20,000,000 to $25,000,000. The preliminary TPC range for this project is $21,000,000 to $26,000,000.

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Other Project Cost (OPC)[a]			
OPC except D&D			
Other OPC	800	N/A	N/A
Contingency	200	N/A	N/A
Total, OPC	1,000	N/A	N/A
Contingency, OPC	200	N/A	N/A
Total, TPC[b]	26,000	N/A	N/A
Total, Contingency	5,200	N/A	N/A

7. Funding Profile History

(dollars in thousands)

Request Year		FY 2014	FY 2015	Total
FY 2015	TEC	0	25,000	25,000[b]
	OPC[a]	1,000	0	1,000
	TPC	1,000	25,000	26,000[b]

8. Related Operations and Maintenance Funding Requirements

Start of Construction or Beneficial Occupancy (fiscal quarter and year)	1Q FY 2019
Expected Useful Life (number of years)	40
Expected Future Start of D&D of this capital asset (fiscal quarter and year)	1Q FY 2059

[a] Other Project Costs (OPC) are funded through laboratory overhead.

[b] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $20,000,000 to $25,000,000. The preliminary TPC range for this project is $21,000,000 to $26,000,000.

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	$300	N/A	$12,000	N/A
Maintenance	$600	N/A	$24,000	N/A
Total, Operations & Maintenance[a]	$900	N/A	$36,000	N/A

9. Required D&D Information

Not Applicable

10. Acquisition Approach

Acquisition for this project will be performed by the PPPL Management and Operating (M&O) contractor, Princeton University. The M&O contractor is responsible for awarding and managing all subcontracts related to this project. The M&O contractor will evaluate various acquisition alternatives and project delivery methods prior to achieving CD-1. Potential acquisition and project delivery methods include, but are not limited to, firm fixed price contracts for design-bid-build and design-build. The M&O contractor will also evaluate potential benefits of using a single or multiple contracts to procure materials, equipment, construction, commissioning, and other project scope elements. Project performance metrics for PPPL will be included in the M&O contractor's annual performance and evaluation measurement plan.

[a] This project does not have CD-2 approval; the O&M funding requirements have been based on parametric comparison of similar PPPL buildings.

15-SC-76 Materials Design Laboratory
Argonne National Laboratory (ANL), Argonne, IL
Project is for Design and Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-0, *Approve Mission Need*, which was approved on August 27, 2010. The preliminary Total Estimated Cost (TEC) range for this project is $84,500,000 to $95,000,000. The estimated preliminary Total Project Cost (TPC) range for this project is $85,500,000 to $96,000,000.

A Federal Project Director with the appropriate certification level will be assigned to this project.

This Project Data Sheet (PDS) does include a new start for the budget year.

This PDS is new.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	Design Complete	CD-2	CD-3	CD-4
FY 2015	08/27/2010	4Q FY 2014	4Q FY 2016	4Q FY 2015[a]	3Q FY 2016[a]	2Q FY 2020[a]

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout

3. Baseline and Validation Status

(dollars in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC[b] Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	7,000	88,000[c]	95,000[c]	1,000	N/A	1,000	96,000[c]

4. Project Description, Scope, and Justification

Mission Need

Office of Science (SC) research at Argonne National Laboratory (ANL) supports the development of revolutionary materials and novel molecular processes to transform global energy production and storage. The Materials Design Laboratory will provide the modern collaborative scientific environment critical for this initiative to thrive and will focus on four themes central to implementing the Materials for Energy strategy:

- Frontiers of materials and molecular synthesis, and fabrication of devices;
- Interfacial engineering for energy applications;

[a] This project is pre-CD-2 and schedule estimates are preliminary.
[b] Other Project Costs (OPC) are funded through laboratory overhead.
[c] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $84,500,000 to $95,000,000. The preliminary TPC range for this project is $85,500,000 to $96,000,000.

- Materials under extreme conditions; and
- In situ characterization and modeling.

Ongoing SC research at ANL requires flexible and sustainable laboratory and office space needed to support scientific theory/simulation, materials discovery, characterization, and application of new energy-related materials and processes. Efficient, high-accuracy heating, ventilation, and air conditioning (HVAC) systems will be installed to support cutting edge research and the operation of sensitive instrumentation. Comparable space is not available at ANL.

Scope and Justification (15-SC-76, Material Design Laboratory at ANL)

The Materials Design Laboratory is proposed to enable Materials for Energy research capability by constructing a 90,000 to 150,000 square foot high performance laboratory building. The existing research buildings at Argonne dedicated to the SC energy research mission are all greater than 40 years old, some as much as 55 years old. They require constant repair, frequently compromising scientific research and are unable to meet modern standards for high-resolution scientific apparatus requiring vibration, electromagnetic and thermal stability. Additional supporting functions such as utilities or site modifications may be included in the project, if they are deemed necessary. Alternatives will be evaluated prior to CD-1 during acquisition strategy development. Project Key Performance parameters are as follows:

Description	Threshold Value (Minimum)	Objective Value (Maximum)
Multistory Laboratory Building	90,000 gross square feet	150,000 gross square feet

FY 2015 funds will be used for preliminary and final design, project management, and support activities.

The project will be conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015	7,000	7,000	6,000
FY 2016	0	0	1,000
Total, Design	7,000	7,000	7,000
Construction			
FY 2016	24,003	24,003	19,000
FY 2017	36,466	36,466	25,000
FY 2018	27,531	27,531	36,000
FY 2019	0	0	8,000
Total, Construction	88,000	88,000	88,000

(dollars in thousands)

	Appropriations	Obligations	Costs
TEC			
FY 2015	7,000	7,000	6,000
FY 2016	24,003	24,003	20,000
FY 2017	36,466	36,466	25,000
FY 2018	27,531	27,531	36,000
FY 2019	0	0	8,000
Total, TEC[a]	95,000	95,000	95,000
Other Project Cost (OPC)[b]			
OPC except D&D			
FY 2010	412	412	412
FY 2011	-30[c]	-30[c]	-30[c]
FY 2014	500	500	500
FY 2018	118	118	118
Total, OPC except D&D	1,000	1,000	1,000
Total Project Cost (TPC)			
FY 2010	412	412	412
FY 2011	-30	-30	-30
FY 2014	500	500	500
FY 2015	7,000	7,000	6,000
FY 2016	24,003	24,003	20,000
FY 2017	36,466	36,466	25,000
FY 2018	27,649	27,649	36,118
FY 2019	0	0	8,000
Total, TPC[a]	96,000	96,000	96,000

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $84,500,000 to $95,000,000. The preliminary TPC range for this project is $85,500,000 to $96,000,000.
[b] Other Project Costs (OPC) are funded through laboratory overhead.
[c] OPC Funding was adjusted in FY 2011 to reflect FY 2010 actuals ($382,000 for OPC funding in FY 2010).

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	5,900	N/A	N/A
Contingency	1,100	N/A	N/A
Total, Design	7,000	N/A	N/A
Construction			
Construction	72,000	N/A	N/A
Contingency	16,000	N/A	N/A
Total, Construction	88,000	N/A	N/A
Total, TEC[a]	95,000	N/A	N/A
Contingency, TEC	17,100	N/A	N/A
Other Project Cost (OPC)[b]			
OPC except D&D			
Conceptual Planning	382	N/A	N/A
Conceptual Design	400	N/A	N/A
Contingency	218	N/A	N/A
Total, OPC	1,000	N/A	N/A
Contingency, OPC	218	N/A	N/A
Total, TPC[a]	96,000	N/A	N/A
Total, Contingency	17,318	N/A	N/A

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $84,500,000 to $95,000,000. The preliminary TPC range for this project is $85,500,000 to $96,000,000.

[b] Other Project Costs (OPC) are funded through laboratory overhead.

7. Schedule of Appropriation Requests

Request Year		(dollars in thousands) Prior Years	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	Total
FY 2015	TEC	0	0	7,000	24,003	36,466	27,531	95,000[a]
	OPC[b]	382	500	0	0	0	118	1,000
	TPC	382	500	7,000	24,003	36,466	27,649	96,000[a]

8. Related Operations and Maintenance Funding Requirements

Not Applicable

9. Required D&D Information

The square footage of the new proposed construction will be offset with banked area from another DOE facility prior to CD-1. This replacement facility must be constructed prior to any demolition. The new facility will be designed to support integration of multiple science disciplines and programs that will be relocated from various buildings on site, and will not simply replace a single facility. Once all moves into the new facility are complete, open spaces will be consolidated to allow demolition of an outdated, energy-inefficient facility. This project does not involve any decommissioning, decontamination or demolition.

10. Acquisition Approach

The M&O Contractor, Argonne University of Chicago, LLC, will have prime responsibility for oversight of both the design and construction subcontracts. The M&O Contractor has extensive experience in the management and oversight of contracts of equal or greater complexity than the proposed Material Design Laboratory. The M&O Contractor's project management, construction management, and ES&H management systems have all proven to be effective in the execution and control of projects of similar scale and magnitude.

Various acquisition alternatives will be considered for this project. After considering all alternatives in relation to the schedule, size, and risk, the use of a tailored Design-Bid-Build approach with design by an Architectural/Engineering firm, construction management (CM) services through the industrial partnership, and construction by a General Contractor (GC), all led by the M&O Contractor integrated project team, may provide the best construction delivery method and the lowest risk. In addition, the M&O Contractor's standard procurement practice is to use firm fixed-priced contracts and the M&O Contractor has extensive experience in project management, construction management, and environmental, safety, and health (ES&H) management systems in the acquisition of scientific facilities.

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $84,500,000 to $95,000,000. The preliminary TPC range for this project is $85,500,000 to $96,000,000.

[b] Other Project Costs (OPC) are funded through laboratory overhead.

15-SC-77 Photon Science Laboratory Building
SLAC National Accelerator Laboratory, Menlo Park, California
Project is for Design and Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-0, *Approve Mission Need*, which was approved April 18, 2011. The preliminary Total Estimated Cost (TEC) range for this project is $47,500,000 to $55,000,000. The estimated preliminary Total Project Cost (TPC) range for this project is $49,500,000 to $57,000,000.

A Federal Project Director with the appropriate certification level will be assigned to this project.

This Project Data Sheet (PDS) does include a new start for the budget year.

This PDS is new.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	Design Complete	CD-2/3A	CD-3B	CD-4
FY 2015	4/18/2011	1Q FY 2015	1Q FY 2017	4Q FY 2015[a]	3Q FY 2016[a]	1Q FY 2019[a]

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2/3A – Approve Performance Baseline and Early Construction Activities
CD-3B – Approve Start of Balance of Construction Activities
CD-4 – Approve Start of Operations or Project Closeout

3. Baseline and Validation Status

(dollars in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC[b] Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	4,000	51,000[c]	55,000	2,000	0	2,000[c]	57,000[c]

4. Project Description, Justification, and Scope

Mission Need

SLAC is an Office of Science (SC) laboratory that supports a large national and international community of scientific users performing cutting-edge research in support of the Department of Energy mission. SLAC was built in 1962 to perform research in accelerator-based particle physics. Expansion and upgrade of the Stanford Synchrotron Radiation Lightsource (SSRL) and the Linac Coherent Light Source (LCLS) located at SLAC are producing rapid increases to photon science facility use, thereby increasing the need for space to accommodate the new and expanded research program.

[a] This project is pre-CD-2 and schedule estimates are preliminary.
[b] Other Project Costs (OPC) are funded through laboratory overhead.
[c] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC cost range for this project is $47,500,000 to $55,000,000. The preliminary TPC cost range for this project is $49,500,000 to $57,000,000.

Scope and Justification (Photon Science Laboratory Building at SLAC)

Construction of the Photon Science Laboratory Building is needed to provide centralized modern laboratory and/or office space with the necessary performance capabilities and accommodate growth in the existing photon science program. The Photon Science Laboratory Building would leverage the capabilities of two of the country's world-class light sources, Linac Coherent Light Source (LCLS) and Stanford Synchrotron Radiation Laboratory (SSRL), as well as the Photon Ultrafast Laser Science and Engineering (PULSE) and Stanford Institute for Materials and Energy Sciences (SIMES) photon institutes. Without modern facilities suitable for collocated and coordinated functionality, the laboratory's ability to successfully address and deliver on the long term strategic mission of the laboratory will be limited.

To close the mission capability gap and ensure that the world-class research conducted by SLAC scientific staff and users is supported by modern, mission-ready facilities, an additional 50,000 to 75,000 gross square feet (gsf) of modern laboratory space is needed above and beyond existing space to accommodate a range of simulation, theory and modeling, synthetic and characterization capabilities, while also supporting research collaborations with outside scientists engaged with SLAC's LCLS and SSRL user facilities. Additional supporting functions such as utilities or site modifications may be included in the project, if they are deemed necessary.

Description	Threshold Value (Minimum)	Objective Value (Maximum)
Multistory Office Building	50,000 gross square feet	75,000 gross square feet

FY 2015 funds will be used for preliminary and final design, and project management and support activities.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015	4,000	4,000	1,000
FY 2016	0	0	2,500
FY 2017	0	0	500
Total, Design	4,000	4,000	4,000
Construction			
FY 2015	8,890	8,890	5,500
FY 2016	25,770	25,770	16,000
FY 2017	16,340	16,340	21,500
FY 2018	0	0	8,000
Total, Construction	51,000	51,000	51,000

(dollars in thousands)

	Appropriations	Obligations	Costs
TEC			
FY 2015	12,890	12,890	6,500
FY 2016	25,770	25,770	18,500
FY 2017	16,340	16,340	22,000
FY 2018	0	0	8,000
Total, TEC[a]	55,000	55,000	55,000
Other Project Cost (OPC)[b]			
OPC except D&D			
FY 2014	1,341	1,341	1,341
FY 2015	0	0	0
FY 2016	200	200	200
FY 2017	459	459	459
Total, OPC except D&D	2,000	2,000	2,000
Total Project Cost (TPC)			
FY 2014	1,341	1,341	1,341
FY 2015	12,890	12,890	6,500
FY 2016	25,970	25,970	18,700
FY 2017	16,799	16,799	22,459
FY 2018	0	0	8,000
Total, TPC[a]	57,000	57,000	57,000

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC cost range for this project is $47,500,000 to $55,000,000. The preliminary TPC cost range for this project is $49,500,000 to $57,000,000.

[b] Other Project Costs are funded through laboratory overhead.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	3,300	N/A	N/A
Contingency	700	N/A	N/A
Total, Design	4,000	N/A	N/A
Construction			
Construction	42,500	N/A	N/A
Contingency	8,500	N/A	N/A
Total, Construction	51,000	N/A	N/A
Total, TEC[a]	55,000	N/A	N/A
Contingency, TEC	9,200	N/A	N/A
Other Project Cost (OPC)[b]			
OPC except D&D			
Other OPC	1,200	N/A	N/A
Start-Up	450	N/A	N/A
Contingency	350	N/A	N/A
Total, OPC	2,000	N/A	N/A
Contingency, OPC	350	N/A	N/A
Total, TPC[a]	57,000	N/A	N/A
Total, Contingency	9,550	N/A	N/A

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC cost range for this project is $47,500,000 to $55,000,000. The preliminary TPC cost range for this project is $49,500,000 to $57,000,000.
[b] Other Project Costs (OPC) are funded through laboratory overhead.

7. Funding Profile History

Request Year		(dollars in thousands) FY 2014	FY 2015	FY 2016	FY 2017	Total
FY 2015	TEC	0	12,890	25,770	16,340	55,000[a]
	OPC[b]	1,341	0	200	459	2,000
	TPC	1,341	12,890	25,970	16,799	57,000[a]

8. Related Operations and Maintenance Funding Requirements

Start of Construction or Beneficial Occupancy (fiscal quarter and year)	4Q FY 2018
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter and year)	4Q FY 2068

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	$240	N/A	$12,000	N/A
Maintenance	$460	N/A	$23,000	N/A
Total, Operations & Maintenance[c]	$700	N/A	$35,000	N/A

9. Required D&D Information

In order to meet the congressional mandates for one-for-one replacement, the project plans to use SC's banked excess space at SLAC to offset the full area of new construction.

	Square Feet
Area of new construction	Approximately 25,000
Area of existing facility(ies) being replaced and D&D'd by this project	0
Area of other D&D outside the project	0
Area of any additional D&D space to meet the "one-for-one" requirement taken from the banked area.	Approximately 25,000

[a] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC cost range for this project is $47,500,000 to $55,000,000. The preliminary TPC cost range for this project is $49,500,000 to $57,000,000.

[b] Other Project Costs (OPC) are funded through laboratory overhead.

[c] This project does not have CD-2 approval; the O&M funding requirements have been based on parametric comparison of similar Argonne new building construction.

10. Acquisition Approach

Acquisition for this project will be performed by the SLAC Management and Operating (M&O) contractor, Stanford University. The M&O contractor is responsible for awarding and managing all subcontracts related to this project. The M&O contractor will evaluate various acquisition alternatives and project delivery methods prior to achieving CD-1. Potential acquisition and project delivery methods include, but are not limited to, firm fixed price contracts for design-bid-build and design-build. The M&O contractor will also evaluate potential benefits of using a single or multiple contracts to procure materials, equipment, construction, commissioning and other project scope elements. Project performance metrics for SLAC will be included in the M&O contractor's annual performance and evaluation measurement plan.

15-SC-78, Integrative Genomics Building
Lawrence Berkeley National Laboratory (LBNL), Berkeley, California
Project is for Design and Construction

1. Significant Changes

The first DOE O 413.3B Critical Decision (CD) is CD-0, *Approve Mission Need,* was approved on September 17, 2013. The preliminary Total Estimated Cost (TEC) range for this project is $70,000,000 to $90,000,000. The preliminary Total Project Cost (TPC) range for this project is $71,500,000 to $91,500,000.

A Federal Project Director with a certification level 2 has been assigned to this project.

This Project Data Sheet (PDS) does include a new start for the budget year.

This PDS is new.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	Design Complete	CD-2	CD-3A	CD-3B	CD-4
FY 2015	9/17/2013	1Q FY2015[a]	4Q FY 2016[a]	3Q FY 2016[a]	3Q FY 2016[a]	1Q FY 2017[a]	1Q FY 2021[a]

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3A – Approve Start of Phase A Construction
CD-3B – Approve Start of Phase B Construction
CD-4 – Approve Project Completion

3. Baseline and Validation Status

(dollars in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC[b] Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	12,090	77,910[c]	90,000[c]	1,500	0	1,500	91,500[c]

4. Project Description, Justification, and Scope

Mission Need

The mission need of this project is to increase the synergy and efficiency of biosciences and other research at Lawrence Berkeley National Laboratory (LBNL). LBNL has grown from a pioneering particle and nuclear physics laboratory into a multidisciplinary research facility with broad capabilities in physical, chemical, computational, biological, and environmental systems research in support of the Department of Energy (DOE) mission. Portions of the biosciences program at LBNL are

[a] This project is pre-CD-2, and the schedule is preliminary. Construction funds will not be executed without appropriate CD approvals.
[b] Other project costs (OPC) are funded through laboratory overhead.
[c] This project has not received CD-2 approval; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range for this project is $70,000,000 to $90,000,000. The preliminary TPC range for this project is $71,500,000 to $91,500,000.

located off-site, away from the main laboratory, and dispersed across several locations approximately twenty miles apart. This arrangement has produced research and operational capability gaps that limit scientific progress, in genomics-based biology related to energy and the environment.

Scope and Justification

Collocation of mutually supportive capabilities in close proximity to key LBNL facilities and programs will better facilitate research in genomics-based biology related to energy and the environment. The Integrative Genomics Building project will increase the synergy and efficiency of biosciences and other research at LBNL by consolidating some research operations into a single on-campus location. This project will relocate ongoing research operations currently located in commercially leased space onto the main LBNL campus and is key to realizing the potential of the genomics revolution for energy and environment research. This project will fill the present capability gaps by providing a state-of-the-art facility for biosciences research and other programs in a collaborative environment in close proximity to key LBNL facilities and programs while simultaneously increasing the operational efficiency of LBNL. Additional supporting functions such as utilities or site modifications may be included in the project, if they are deemed necessary.

This project has not yet received CD-1 approval; therefore Key Performance Parameters (KPPs) are to be determined. The table below outlines preliminary KPPs.

Key Performance Parameters (Preliminary)

Description	Threshold Value (Minimum)	Objective Value (Maximum)
Biosciences and other research space	75,000 gross square feet	95,000 gross square feet

FY 2015 funds will be used for preliminary and final design and project management and support activities.

The project will be conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements will be met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015	12,090	12,090	9,000
FY 2016	0	0	3,090
Total, Design	12,090	12,090	12,090
Construction			
FY 2016	17,299	17,299	9,910
FY 2017	30,148	30,148	30,000
FY 2018	30,463	30,463	29,000
FY 2019	0	0	7,000
FY 2020	0	0	2,000
Total, Construction	77,910	77,910	77,910

(dollars in thousands)

	Appropriations	Obligations	Costs
TEC			
FY 2015	12,090	12,090	9,000
FY 2016	17,299	17,299	13,000
FY 2017	30,148	30,148	30,000
FY 2018	30,463	30,463	29,000
FY 2019	0	0	7,000
FY 2020	0	0	2,000
Total, TEC[a]	90,000	90,000	90,000
Other Project Cost (OPC)[b]			
OPC except D&D			
FY 2014	1,300	1,300	1,300
FY 2015–2018	0	0	0
FY 2019	200	200	200
Total, OPC	1,500	1,500	1,500
Total Project Cost (TPC)			
FY 2014	1,300	1,300	1,300
FY 2015	12,090	12,090	9,000
FY 2016	17,299	17,299	13,000
FY 2017	30,148	30,148	30,000
FY 2018	30,463	30,463	29,000
FY 2019	200	200	7,200
FY 2020	0	0	2,000
Total, TPC[c]	91,500	91,500	91,500

[a] This project has not received approval of CD-2; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range is $70,000,000 to $90,000,000. The preliminary TPC range is $71,500,000 to $91,500,000.
[b] Other Project Costs (OPC) are funded through laboratory overhead.
[c] This project has not received approval of CD-2; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range is $70,000,000 to $90,000,000. The preliminary TPC range is $71,500,000 to $91,500,000.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	10,590	N/A	N/A
Contingency	1,500	N/A	N/A
Total, Design	12,090	N/A	N/A
Construction			
Construction	61,410	N/A	N/A
Contingency	16,500	N/A	N/A
Total, Construction	77,910	N/A	N/A
Total, TEC[a]	90,000	N/A	N/A
Contingency, TEC	18,000	N/A	N/A
Other Project Cost (OPC)[a]			
OPC except D&D			
Conceptual Planning	400	N/A	N/A
Conceptual Design	500	N/A	N/A
Start-Up	200	N/A	N/A
Contingency	400	N/A	N/A
Total, OPC	1,500	N/A	N/A
Contingency, OPC	400	N/A	N/A
Total, TPC[b]	91,500	N/A	N/A
Total, Contingency	18,400	N/A	N/A

[a] Other Project Costs (OPC) are funded through laboratory overhead.

[b] This project has not received approval of CD-2; funding estimates are consistent with the high end of the preliminary cost ranges. The preliminary TEC range is $70,000,000 to $90,000,000. The preliminary TPC range is $71,500,000 to $91,500,000.

7. Funding Profile History

Request Year		(dollars in thousands) FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total
FY 2015	TEC	0	12,090	17,299	30,148	30,463	0	90,000[a]
	OPC[a]	1,300	0	0	0	0	200	1,500
	TPC	1,300	12,090	17,299	30,148	30,463	200	91,500[a]

8. Related Operations and Maintenance Funding Requirements

Not Applicable

9. Required D&D Information

Not Applicable

10. Acquisition Approach

Acquisition for this project will be performed by the LBNL Management and Operating (M&O) contractor, University of California. The M&O contractor is responsible for awarding and managing all subcontracts related to this project. The M&O contractor will evaluate various acquisition alternatives and project delivery methods prior to achieving CD-1. Potential acquisition and project delivery methods include, but are not limited to, firm fixed price contracts for design-bid-build and design-build. The M&O contractor will also evaluate potential benefits of using a single or multiple contracts to procure materials, equipment, construction, commissioning and other project scope elements. Project performance metrics for LBNL will be included in the M&O contractor's annual performance and evaluation measurement plan.

[a] Other Project Costs (OPC) are funded through laboratory overhead.

12-SC-70, Science and User Support Building
SLAC National Accelerator Laboratory (SLAC), Menlo Park, California
Project is for Design and Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-2/3, *Approve Performance Baseline; Approve Start of Construction*, which was approved June 18, 2013. The Total Estimated Cost (TEC) for this project is $64,000,000. The Total Project Cost (TPC) this project is $65,000,000.

A Federal Project Director with a certification level 3 has been assigned to this project.

This Project Data Sheet (PDS) does not include a new start for the budget year.

This PDS is an update of the FY 2014 PDS. Since that submittal, the design cost has been revised downward from $5,000,000 to $1,815,000. The construction estimate has been revised upward by an equal amount such that there is no net increase to TEC.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	Design Complete	CD-2/3	CD-4	D&D Start	D&D Complete
FY 2012	8/26/2010	2Q FY 2012	4Q FY 2013	TBD	TBD	TBD	TBD
FY 2013	8/26/2010	3Q FY 2012	2Q FY 2013	2Q FY 2013	4Q FY 2016	3Q FY 2012	4Q FY 2016
FY 2014	8/26/2010	5/11/2012	2Q FY 2014	3Q FY 2013	3Q FY 2017	3Q FY 2012	4Q FY 2016
FY 2015	8/26/2010	5/11/2012	2Q FY 2014	6/18/2013	3Q FY 2017	8/30/2013	4Q FY 2016

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2/3 – Approve Performance Baseline; Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, Design	TEC Construction	TEC, Total	OPC[a] Except D&D	OPC, D&D	OPC, Total	TPC
FY 2012	5,000	59,000	64,000	1,000	TBD	1,000	65,000
FY 2013	5,000	59,000	64,000	1,000	0	1,000	65,000
FY 2014	5,000	59,000	64,000	1,000	0	1,000	65,000
FY 2015	1,815	62,185	64,000	1,000	0	1,000	65,000

[a] Other Project Costs are funded through laboratory overhead.

4. Project Description, Justification, and Scope

Mission Need

SLAC is an Office of Science laboratory that supports a large national and international community of scientific users performing cutting edge research in support of the Department of Energy mission. SLAC is home to research activities in materials and chemical sciences that build on ultrafast and advanced synchrotron techniques. SLAC also operates beamlines for structural biology and supports efforts in particle physics and particle astrophysics. SLAC operates and is strongly positioned by the Linac Coherent Light Source (LCLS) and the Stanford Synchrotron Radiation Light Source (SSRL).

The demand to use SLAC's unique research facilities is rapidly increasing. This has resulted in a critical gap in SLAC's mission capability due to inadequate centralized support for its user community and lack of modern, collaborative infrastructure to support a world-class research program.

The SLAC Science and User Support building will close the mission capability gap and ensure that the world-class research conducted by SLAC scientific staff and users is supported by modern, mission-ready facilities. Located at the entrance to the Laboratory, this building will be the first stop for all users and visitors to SLAC, and will bring together many of the Laboratory's user, visitor, and administrative services. This will enhance scientific productivity and collaboration that better supports the laboratory's cutting-edge discoveries and exceptional user research program.

Scope and Justification (12-SC-70, Science and User Support Building at SLAC)

This project will construct a 62,400 square foot building that will house a centrally located user support hub; the visitor's center; a new cafeteria; office space needed to centralize SLAC communications, security, and laboratory administration; and a state-of-the-art auditorium and conference space. The Science and User Support Building will replace the aging structure that currently holds Panofsky Auditorium and the cafeteria built in 1962, the same year SLAC was founded. In order to meet the congressional mandates for replacement, the project plans to demolish the Panofsky Auditorium building (approximately 13,200 gsf) and use banked excess for the balance.

Key Performance Parameters

Description	Threshold Value (Minimum)	Objective Value (Maximum)
Multistory Office Building	58,000 gross square feet	72,000 gross square feet

FY 2015 construction funding will support construction activities on this project, including project management and all associated support functions. FY 2015 is the final year of funding for this project and includes $9.8M for contingency.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2012	1,815	1,815	1,150
FY 2013	0	0	590
FY 2014	0	0	75
Total, Design	1,815	1,815	1,815

(dollars in thousands)

	Appropriations	Obligations	Costs
Construction			
FY 2012	10,271	10,271	0
FY 2013	14,512	14,512	4,242
FY 2014	25,482	25,482	25,000
FY 2015	11,920	11,920	32,643
FY 2016	0	0	300
Total, Construction	62,185	62,185	62,185
TEC			
FY 2012	12,086	12,086	1,150
FY 2013	14,512	14,512	4,832
FY 2014	25,482	25,482	25,075
FY 2015	11,920	11,920	32,643
FY 2016	0	0	300
Total, TEC	64,000	64,000	64,000
Other Project Cost (OPC)[a]			
OPC except D&D			
FY 2011	562	562	562
FY 2014	238	238	238
FY 2015	200	200	200
Total, OPC except D&D	1,000	1,000	1,000
Total Project Cost (TPC)			
FY 2011	562	562	562
FY 2012	12,086	12,086	1,150
FY 2013	14,512	14,512	4,832
FY 2014	25,720	25,720	25,313
FY 2015	12,120	12,120	32,843
FY 2016	0	0	300
Total, TPC	65,000	65,000	65,000

[a] Other Project Costs are funded through laboratory overhead.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	1,815	4,150	5,000
Contingency	0	850	0
Total, Design	1,815	5,000	5,000
Construction			
Construction	51,185	46,000	48,000
D&D	1,200	1,200	1,200
Contingency	9,800	11,800	9,800
Total, Construction	62,185	59,000	59,000
Total, TEC	64,000	64,000	64,000
Contingency, TEC	9,800	12,650	9,800
OPC[a]			
Other OPC	500	500	500
Start-Up	300	300	300
Contingency	200	200	200
Total, OPC	1,000	1,000	1,000
Total, TPC	65,000	65,000	65,000
Total, Contingency	10,000	12,850	10,000

7. Funding Profile History

(dollars in thousands)

Request Year		FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
FY 2012	TEC	0	12,086	TBD	TBD	TBD	TBD
	OPC	500	300	200	0	0	1,000
	TPC	500	12,386	TBD	TBD	TBD	TBD
FY 2013	TEC	0	12,086	21,629	30,285	0	64,000
	OPC	500	0	0	300	200	1,000
	TPC	500	12,086	21,629	30,585	200	65,000

[a] Other Project Costs are funded through laboratory overhead.

Request Year		(dollars in thousands) FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
FY 2014	TEC	0	12,086	12,160[a]	25,482	4,803	64,000
	OPC	500	0	0	300	200	1,000
	TPC	500	12,086	12,160	25,782	5,003	65,000
FY 2015	TEC	0	12,086	14,512	25,482	11,920	64,000
	OPC	562	0	0	238	200	1,000
	TPC	562	12,086	14,512	25,720	12,120	65,000

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	3Q FY2017
Expected Useful Life	50
Expected Future Start of D&D of this capital asset	3Q FY2067

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	135	N/A	6,750	N/A
Maintenance	405	N/A	20,400	N/A
Total, Operations & Maintenance	540	N/A	27,150	N/A

9. Required D&D Information

	Square Feet
Area of new construction	62,400
Area of existing facility(ies) being replaced and D&D'd by this project	13,200
Area of other D&D outside the project	0
Area of any additional D&D space to meet the "one-for-one" requirement taken from the banked area.	49,200

The Science and User Support Building will replace the aging 13,200 gross square foot structure that currently holds the Panofsky Auditorium and the cafeteria, built in 1962, the same year SLAC was founded. In order to meet the congressional mandates for one-for-one replacement, the project plans to demolish the Panofsky Auditorium building and cafeteria; and use SC's banked excess space at SLAC for the balance.

[a] The FY 2013 amount shown reflects the P.L. 112-175 continuing resolution level annualized to a full year. The TEC, OPC, and TPC totals and outyear appropriation assumptions have not been adjusted to reflect the final FY 2013 funding level; the FY 2013 Request level of $21,629,000 is assumed instead.

10. Acquisition Approach

SLAC as the Management and Operating (M&O) contractor will have the primary responsibility for oversight of design and construction subcontracts, LEED, commissioning, and estimating services necessary to execute this project scope. Design will be performed by an architect-engineer (A-E) with the subcontract managed by the SLAC operating contractor. Final design and construction will occur concurrently using the design-build project delivery method. SLAC Site Office provides contract oversight for SLAC's plans and performance. Project performance metrics for SLAC are included in the M&O contractor's annual performance evaluation and measurement plan.