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Science Laboratories Infrastructure

Overview

The Science Laboratories Infrastructure (SLI) program's mission is to support scientific and technological innovation at the Office of Science (SC) National Laboratories by funding enabling infrastructure that fosters safe, efficient, reliable, and resilient operations to increase American competitive advantage. The SLI program's main priorities are to transform and modernize SC's enabling physical assets (including major utility systems), while providing new modern facilities that enable innovative scientific discoveries at velocity and scale. The SLI program funds line-item construction projects; General Plant Projects (GPP) (minor construction less than $34 million); Payments in Lieu of Taxes (PILT) to local communities around the Argonne, Brookhaven, and Oak Ridge National Laboratories (ANL, BNL, and ORNL); nuclear operations at ORNL; landlord responsibilities across the Oak Ridge Reservation; and the Laboratory Operations Apprenticeship program.

SC manages an infrastructure portfolio worth nearly $32 billion, across 10 national laboratories, with nearly 24 million gross square feet (gsf) within almost 1,600 government-owned buildings and trailers serviced by over 1,300 miles of utilities. SC assets at the national laboratories include major research and user facilities, laboratory and office buildings, support facilities, and a vast network of utilities and other support facilities that form the backbone of each site. Delivering the SC mission requires significant stewardship of research facilities and the renovation and replacement of enabling infrastructure, including buildings and support infrastructure.

SC laboratories conduct annual assessments of the condition, utilization, and mission readiness of their buildings and support infrastructure. In FY 2023, the assessments rated 42 percent of the general-purpose buildings substandard or inadequate to meet mission needs. In addition, 67 percent of the utility systems were rated as substandard or inadequate while 35 percent of the remaining support infrastructure was rated as substandard or inadequate. The substandard and inadequate condition of facilities results in operational inefficiencies, reduced resiliency and reliability, unplanned outages, costly repairs, and elevated safety risks. In collaboration with SC programs and the laboratories, the SLI program plans and executes modernization and revitalization projects to manage risks and reduce the impacts of these deficiencies on the SC mission.

SC and the laboratories integrate the assessment results with scientific mission needs through the development of comprehensive Campus Strategies during the bi-annual laboratory planning process. To support current and future capabilities and infrastructure, each laboratory's Campus Strategy[a] identifies activities and infrastructure investments, such as line-item construction and GPPs, as part of asset life-cycle management. SC leadership uses these Campus Strategies, and its own evaluation of infrastructure needs, to inform the SLI budget requests.

In FY 2024, SC invested nearly $832 million in maintenance, repair, and construction to sustain and enhance its general-purpose infrastructure. These investments stemmed from a variety of funding sources, including Federal appropriations for line-item construction, GPPs, laboratory overhead funding of Institutional GPPs (IGPPs), and maintenance and repair activities. The SLI investments in line-item construction and GPPs provide the critical backbone of laboratory operations and are key elements of this overall investment strategy.

Highlights of the FY 2026 Request

The SLI FY 2026 Request of $210.4 million is a decrease of $50.4 million below the FY 2025 Enacted level. The FY 2026 Request continues to focus on improving infrastructure across the SC national laboratory complex and supports ongoing construction projects:

1. Princeton Plasma Innovation Center at Princeton Plasma Physics Laboratory (PPPL);
2. Critical Infrastructure Recovery & Renewal at Princeton Plasma Physics Laboratory (PPPL);
3. CEBAF Renovation and Expansion project at Thomas Jefferson National Accelerator Facility (TJNAF);
4. Argonne Utilities Upgrade project at Argonne National Laboratory (ANL);
5. Linear Assets Modernization Project at Lawrence Berkeley National Laboratory (LBNL);
6. Critical Utilities Infrastructure Revitalization Project at SLAC National Accelerator Laboratory (SLAC); and

[a] https://science.osti.gov/-/media/lp/pdf/laboratory-planning-process/FY-2022-ALPs-for-Web.pdf

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7. Utilities Infrastructure Project at Fermi National Accelerator Laboratory (FNAL).

The FY 2026 Request will provide final funding for the Princeton Plasma Innovation Center at PPPL and the CEBAF Renovation and Expansion project at TJNAF.

These ongoing line-item projects modernize the enabling infrastructure that is in the poorest condition and present the highest risk and cost to operations. These projects will replace, upgrade, and improve utility systems and facilities to improve resilience and provide new laboratory space with the necessary performance capabilities to support SC's evolving mission.

SLI annually evaluates enabling infrastructure needs for all laboratories. The FY 2026 Request also includes funding for GPPs, which are an essential component of our infrastructure modernization portfolio. GPPs address urgent, targeted, and high risk enabling infrastructure and utility needs across SC laboratories and facilities such as building HVAC systems, chilled water plants, electrical systems components (switches/transformers), fire safety, emergency generators, site security improvements, office/laboratory modernization, etc. GPPs are the most expedient resource for avoiding unplanned and disruptive interruptions, costly emergency repairs, damage to our highly sophisticated science tools, as well as for increasing resilience, correcting inadequate/unsafe working conditions, and eliminating inefficient and costly operations that impede research activities. SLI evaluates GPP proposals using annual assessment results and multiple criteria including mission impact, readiness, cost savings (including energy and water), resilience, and reliability. The minor construction threshold of $34 million makes the use of GPPs the appropriate pathway for addressing more of the critical revitalization and emergency repair needs.

The FY 2026 Request will continue to support the Laboratory Operations Apprenticeship. Recognizing that the highly specialized skills and training needed to maintain and operate unique complex machines need a dedicated pipeline, SC is supporting the Laboratory Operatrions Apprenticeship program, which began in 2024. SC will rely on PPPL's experience running a United States Department of Labor (DOL)-registered apprenticeship program to meet the growing needs of fusion energy and engineering craft skills and will incorporate additional SC Labs to support a new generation of technicians, developing skills that apply to laboratory operations, as well as growing leading edge technology sectors critical to our national priorities.

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Science Laboratories Infrastructure
Funding

(dollars in thousands)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted
Science Laboratories Infrastructure				
Payment In Lieu of Taxes (PILT)	5,004	5,119	5,119	–
OR Landlord	6,910	7,032	7,032	–
Facilities and Infrastructure	18,530	42,692	42,692	–
KG12 - Laboratory Operations Apprenticeship	3,000	3,000	3,000	–
Oak Ridge Nuclear Operations	46,000	46,000	46,000	–
Subtotal, Science Laboratories Infrastructure	**79,444**	**103,843**	**103,843**	**–**
Construction				
21-SC-71 Princeton Plasma Innovation Center (PPIC), PPPL	15,000	30,000	34,600	+4,600
21-SC-72 Critical Infrastructure Recovery & Renewal (CIRR), PPPL	10,000	10,000	9,400	-600
21-SC-73 Ames Infrastructure Modernization (AIM)	8,000	–	–	–
20-SC-72 Seismic and Safety Modernization (SSM), LBNL	35,000	23,000	–	-23,000
20-SC-73 CEBAF Renovation and Expansion (CEBAF), TJNAF	11,000	11,000	26,000	+15,000
20-SC-77 Argonne Utilities Upgrade (AU2), ANL	8,007	3,000	1,500	-1,500
20-SC-78 Linear Assets Modernization Project (LAMP), LBNL	18,900	25,000	13,100	-11,900
20-SC-79 Critical Utilities Infrastructure Revitalization (CUIR), SLAC	30,000	20,000	10,000	-10,000
20-SC-80 Utilities Infrastructure Project (UIP), FNAL	35,000	35,000	12,000	-23,000
19-SC-74 - BioEPIC, LBNL	38,000	–	–	–
Subtotal, Construction	**208,907**	**157,000**	**106,600**	**-50,400**
Total, Science Laboratories Infrastructure	**288,351**	**260,843**	**210,443**	**-50,400**

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Science Laboratories Infrastructure
Explanation of Major Changes

	(dollars in thousands) FY 2026 Request vs FY 2025 Enacted
Construction	**-50,400**
Funding supports seven ongoing line-item projects at ANL, FNAL, LBNL, PPPL, SLAC, and TJNAF, including two in their final year of funding.	
Total, Science Laboratories Infrastructure	**-50,400**

Program Accomplishments

Line-Item Construction Projects

Since FY 2006, the SLI program invested $1.4 billion to successfully complete 20 mission-enabling line-item construction projects that provided state-of-the-art science user support facilities, renovated, and repurposed aged facilities, upgraded inadequate core infrastructure and systems, and removed excess facilities. These investments began nearly 20 years ago with an SC decision to modernize infrastructure across the SC-stewarded laboratory complex. With these investments, the SLI program constructed approximately 1.4 million gsf of new and modernized existing space. As a result, an estimated 3,200 laboratory users and researchers now occupy newly constructed and/or modernized buildings that better support scientific and technological innovation in a collaborative environment. SLI has been recognized with 14 DOE Secretary's Achievement Awards for its contributions to the SC mission.

GPP upgrades across SC Laboratories

From FY 2016 through FY 2025 SLI has funded nearly $341 million in 54 laboratory core infrastructure improvement projects including electrical and utility improvements, building renovations, safety upgrades, resilience and other site improvement projects. Examples of FY 2025 SLI GPP investments in core infrastructure include the 4000 Area 2.4kv to 13.8 kV Upgrade at ORNL, Reactive Power Compensation at SLAC, Building 680 Upgrade Entrance Portal at BNL, Substation 549 Transformer Upgrades at ANL, and Bldg. 450 Chillers Upgrade - Phase 2 at ANL.

Science Laboratories Infrastructure
Infrastructure Support

Description

The Infrastructure Support subprogram invests in enabling infrastructure and specific laboratory operations. The Facilities and Infrastructure activity is critical for upgrading and replacing enabling infrastructure systems (e.g., utility systems, site-wide services, and general-purpose facilities) to improve reliability, resilience, efficiency, and performance, as well as to address emerging needs or end-of-life requirements. This subprogram also supports nuclear operations at ORNL, stewardship-type needs (e.g., roads and grounds maintenance) across the Oak Ridge Reservation, the Laboratory Operations Apprenticeship program, and Payments In Lieu of Taxes (PILT).

Facilities and Infrastructure

This activity supports urgent and emerging core infrastructure needs that are most efficiently addressed through minor construction investments (general plant projects of less than $34 million). SC laboratories conduct annual condition assessments of their core infrastructure to determine the investment needs for these basic systems that form the backbone of their campuses. SLI uses these assessments to maintain and update an integrated list of critical core infrastructure investment priorities across all 10 laboratories. Projects are rigorously evaluated for mission criticality and readiness, cost savings (including energy and water cost savings), remediation of environmental, safety, and health issues, resilience, and reliability. The highest priority projects are selected for funding based on the totality of these criteria and availability of funds.

Oak Ridge Nuclear Operations

This activity supports critical DOE nuclear operations required to safely operate ORNL's non-reactor nuclear facilities (i.e., Buildings 7920, 7930, 3525, and 3025E) and associated support facilities. These facilities support a variety of users including SC programs, the National Nuclear Security Administration, the Office of Nuclear Energy (NE), and other federal agencies. This funding provides general operations support, maintenance and repair of hot cells and supporting systems and ensures compliance with safety standards and procedures.

OR Landlord

This activity supports landlord responsibilities, including infrastructure, for the 24,000-acre Oak Ridge Reservation and DOE facilities in the city of Oak Ridge, Tennessee. The funding supports maintenance of roads, grounds, other infrastructure, and support and improvement of environmental protection, safety, and health.

Payment In Lieu of Taxes (PILT)

This activity supports SC stewardship responsibilities for PILT. 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 Federal Government and operated by the Department. Under this authorization, PILT is provided to communities around ANL, BNL, and ORNL 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.

Laboratory Operations Apprenticeship

This activity continues to support the Laboratory Operations Apprenticeship program. The apprenticeship program is focused on preparing and training the next generation of diverse highly skilled trade and craft employees, to replace the critical aging and retiring workforce required to enable American energy and technological advantage.

Activities and Explanation of Changes

(dollars in thousands)

FY 2025 Enacted	FY 2026 Request	Explanation of Changes FY 2026 Request vs FY 2025 Enacted
Infrastructure Support **$103,843**	**$103,843**	**$ —**
Facilities and Infrastructure $42,692	$42,692	$ —
Funding continues to support the highest priority enabling infrastructure needs across the SC complex. Projects over $5 million being considered are: Substation 549 Transformer Upgrades at ANL, Building 680 Upgrade Entrance Portal at BNL, Bethel Valley Central Campus 4000 Area 2.4kv to 13.8 kV Upgrade at ORNL, and Reactive Power Compensation at SLAC.	The Request will continue to support the highest priority enabling infrastructure needs across the SC complex. Projects over $5 million being considered are: Building 510 Upgrade Electrical Substation - Phase I at BNL, Water Supply Tank 82 and Electrical Pump Upgrade at LBNL, 3410 Central Utility Plant (CUP) Cooling Tower Upgrade at PNNL, and Electrical Rehabilitation - 12kV Cable Replacement - Region 4 at SLAC.	The funding will support at least seven new GPPs at multiple laboratories, addressing some of the highest risks and needs for operations.
Oak Ridge Nuclear Operations $46,000	$46,000	$ —
Funding supports the general operations of ORNL's non-reactor nuclear facilities by the Office of Science.	The Request will support the general operations and maintenance of ORNL's non-reactor nuclear facilities by the Office of Science.	Funding will continue to support critical activities needed to operate and maintain the non-reactor nuclear facilities at ORNL.
OR Landlord $7,032	$7,032	$ —
Funding continues to support landlord responsibilities across the Oak Ridge Reservation and in Oak Ridge. Activities include maintenance of roads, grounds, other infrastructure, and support and improvement of environmental protection, safety, and health.	The Request will continue to support landlord responsibilities across the Oak Ridge Reservation and in Oak Ridge. Activities include maintenance of roads, grounds, other infrastructure, and support and improvement of environmental protection, safety, and health.	Funding will support OR landlord requirements.

(dollars in thousands)

FY 2025 Enacted	FY 2026 Request	Explanation of Changes FY 2026 Request vs FY 2025 Enacted
Payment In Lieu of Taxes (PILT) $5,119	$5,119	$ —
Funding supports PILT payments to communities around ANL, BNL, and ORNL.	The Request will provide funding for PILT payments to communities around ANL, BNL, and ORNL.	Funding will support the anticipated PILT requirements.
Laboratory Operations Apprenticeship $3,000	$3,000	$ —
Funding supports a program for technician- and craft-level apprenticeships in the SC complex.	The Request will support a program for technician- and craft-level apprenticeships in the SC complex.	Funding will continue development of the Laboratory Operations Apprenticeship program.

Science Laboratories Infrastructure
Construction

Description

The Science Laboratories Infrastructure (SLI) Line-Item program mission is to support scientific and technological innovation at the Office of Science (SC) laboratories by modernizing enabling infrastructure and fostering effective operations at required velocity and scale. SLI's construction projects are focused on infrastructure necessary to execute priority operations. The SLI program's main objectives are to modernize SC's physical assets and facilities through new construction, replacements, upgrades, and renovations that increase operational effectiveness and enable cutting edge scientific discovery and application.

The FY 2026 Request includes funding for seven ongoing line-item construction projects:

1. Princeton Plasma Innovation Center at PPPL;
2. Critical Infrastructure Recovery & Renewal at PPPL;
3. CEBAF Renovation and Expansion at TJNAF;
4. Argonne Utilities Upgrade at ANL;
5. Linear Assets Modernization Project at LBNL;
6. Critical Utilities Infrastructure Revitalization at SLAC; and
7. Utilities Infrastructure Project at FNAL.

This Request includes no new line-item construction projects.

21-SC-71, Princeton Plasma Innovation Center, PPPL

The Princeton Plasma Innovation Center (PPIC) will provide a multi-purpose facility to PPPL to provide medium bay research labs for diagnostics and fabrication, office space, and remote collaboration capabilities in support of Fusion Energy Sciences (FES), Advanced Scientific Computing Research (ASCR), and Basic Energy Sciences (BES) programs.

Per direction from SC on April 29, 2025, PPIC is to be delegated to the Laboratory Director. Prior to the delegation, PPIC received DOE Order 413.3B Critical Decision (CD)-2/3, Approve Performance Baseline and Start of Construction, on October 17, 2024. The project anticipates project completion in 4th quarter FY2029 subject to the M&O contractor's plan for project execution. The current TEC for this project is $107,500,000 and the Total Project Cost (TPC) is $109,700,000.

21-SC-72, Critical Infrastructure Recovery & Renewal, PPPL

The Critical Infrastructure Recovery & Renewal (CIRR) project at PPPL will revitalize critical infrastructure that supports the PPPL campus. Upgrades that may be completed as part of the CIRR project include: the electrical distribution system; standby power; chilled water generation and distribution; underground distribution networks; HVAC systems; and communication systems.

CIRR was delegated to the Laboratory Director on April 29, 2025. Prior to the delegation, CIRR received DOE Order 413.3B CD-3A approval, Approve Long-Lead Procurements and Site Preparation Activities, on April 24, 2025. Future project milestones will be finalized in accordance with PPPL's plan for project execution. The current preliminary TEC range for this project is $80,100,000 to $96,000,000. The preliminary TPC range for this project is $81,800,000 to $97,700,000. The preliminary TEC point estimate is $87,300,000 and the TPC point estimate for this project is $89,000,000.

20-SC-73, CEBAF Renovation and Expansion, TJNAF

The CEBAF Renovation and Expansion (CRE) project will renovate existing space and provide new research, administrative, and support service space to enable mission execution. The CEBAF center at TJNAF is currently experiencing frequent failures in their utility systems; with the completion of the ARC facility transfer to SC, renovation of the ARC and CEBAF facilities to consolidate and accommodate operational as well as visitor/educational functions effectively will enhance mission execution.

CRE was delegated to the Laboratory Director on April 29, 2025. Prior to the delegation, CRE received DOE Order 413.3B CD-1 approval, Approve Alternative Selection and Cost Range, on March 18, 2020. Future project milestones will be finalized in accordance with the M&O contractor's plan for project execution. This project has a preliminary TEC range of $46,600,000 to $99,500,000 and a preliminary TPC range of $69,300,000 to $102,800,000. The preliminary TEC point estimate for this project is $87,000,000 and the preliminary TPC point estimate for this project is $90,300,000.

20-SC-77, Argonne Utilities Upgrade, ANL

The Argonne Utilities Upgrade (AU2) project at ANL will revitalize and selectively upgrade ANL's existing major utility systems to increase the reliability, capability, and safety of ANL's infrastructure to meet the DOE's mission. The project will focus on systems such as steam, water, sanitary sewer, chilled water, and electrical systems.

AU2 was delegated to the Laboratory Director on April 29, 2025. Prior to the delegation, AU2 received DOE Order 413.3B CD-3A approval, Approve Site Preparation Activities, on September 14, 2023. Future project milestones will be finalized in accordance with the M&O contractor's plan for project execution. The preliminary TEC range for this project is $172,000,000 to $290,250,000. The preliminary TPC range for this project is $173,000,000 to $291,250,000. The preliminary TEC point estimate is $215,000,000 and the TPC point estimate for this project is $216,000,000.

20-SC-78, Linear Assets Modernization Project, LBNL

The Linear Assets Modernization Project (LAMP) at LBNL will upgrade high priority utility systems to increase the reliability, capability, resiliency, and safety of LBNL's infrastructure to meet the DOE's mission. The project will upgrade utility systems including, but not limited to, domestic water, natural gas, storm drain, sanitary sewer, electrical, and communications.

LAMP was delegated to the Laboratory Director on April 29, 2025. Prior to the delegation, LAMP received DOE Order 413.3B CD-1 approval, Approve Alternative Selection and Cost Range, on April 13, 2022. Future project milestones will be finalized in accordance with the M&O contractor's plan for project execution. The preliminary TEC range for this project is $164,000,000 to $376,000,000. The preliminary TPC range for this project is $170,000,000 to $386,000,000. The preliminary TEC is $236,000,000 and the preliminary TPC estimate for this project is $242,000,000.

20-SC-79, Critical Utilities Infrastructure Revitalization, SLAC

The Critical Utilities Infrastructure Revitalization (CUIR) project's primary objective is to close enabling infrastructure gaps to support multi-program science enablers by increasing reliability, resiliency, and service capacity in electrical, mechanical, and civil systems site-wide. The CUIR project will address the critical campus-wide utility and infrastructure deficiencies by replacing, repairing, and modernizing the highest risk water/fire protection, sanitary sewer, storm drain, electrical, and cooling water system deficiencies.

CUIR was delegated to the Laboratory Director on April 29, 2025. Prior to the delegation, CUIR received DOE Order 413.3B CD-3A approval, Approve Long-Lead Procurement and Early Site Preparation, on May 8, 2023. Future project milestones will be finalized in accordance with the M&O contractor's plan for project execution. The preliminary TEC range for this project is $160,000,000 to $306,000,000. The preliminary TPC range for this project is $165,000,000 to $311,000,000. The preliminary TEC estimate is $204,000,000 and the preliminary TPC estimate for this project is $208,500,000.

20-SC-80, Utilities Infrastructure Project, FNAL

The Utilities Infrastructure Project (UIP) at FNAL will modernize the highest risk to major utility systems across the FNAL campus. Specifically, this project will upgrade the industrial cooling water system, potable water distribution system, sanitary sewer and storm collection systems, natural gas distribution system, electrical distribution system, and the Central Utility Building. Selected portions of the systems at highest risk of failure. In addition, component upgrades will also increase capacity, reliability, and personnel safety across critical services.

UIP received its most recent DOE Order 413.3B Critical Decision (CD) approval, CD-3, Approve Long Lead Procurement, on December 6, 2024. The last of three subprojects anticipates approval of CD-2, Approve Performance Baseline, in the third quarter of FY 2029. This project is pre-CD-2; therefore, schedule estimates are subject to change. The preliminary TEC range for this project is $248,000,000 to $403,000,000 and the preliminary TPC range of $252,000,000 to $411,000,000. These cost ranges encompass the most feasible preliminary alternatives at this time. The preliminary TEC estimate is $310,000,000 and the preliminary TPC estimate for this project $314,000,000.

Activities and Explanation of Changes

(dollars in thousands)

FY 2025 Enacted	FY 2026 Request	Explanation of Changes FY 2026 Request vs FY 2025 Enacted
Construction $157,000	**$106,600**	**-$50,400**
21-SC-71, Princeton Plasma Innovation Center, PPPL $30,000	$34,600	+$4,600
Funding supports the continuation of construction activities.	The Request will provide final funding for this project and support construction activities.	Final funding in FY 2026 will support construction activities.
21-SC-72, Critical Infrastructure Recovery & Renewal, PPPL $10,000	$9,400	-$600
Funding supports the continuation of construction activities.	The Request will support construction activities.	Funding will support construction activities.
20-SC-72, Seismic and Safety Modernization, LBNL $23,000	$ —	-$23,000
The Enacted budget provides final funding for this project and supports construction activities.	No Funding is requested.	No funding is requested.
20-SC-73, CEBAF Renovation and Expansion, TJNAF $11,000	$26,000	+$15,000
Funding supports construction activities.	The Request will support construction activities.	Final funding in FY 2026 will support construction activities.
20-SC-77, Argonne Utilities Upgrade, ANL $3,000	$1,500	-$1,500
Funding supports construction activities.	The Request will support construction activities.	Funding will support construction activities.
20-SC-78, Linear Assets Modernization Project, LBNL $25,000	$13,100	-$11,900
Funding supports construction activities.	The Request will support construction activities.	Funding will support construction activities.
20-SC-79, Critical Utilities Infrastructure Revitalization, SLAC $20,000	$10,000	-$10,000
Funding supports construction activities.	The Request will support construction activities.	Funding will support construction activities.

(dollars in thousands)

FY 2025 Enacted	FY 2026 Request	Explanation of Changes FY 2026 Request vs FY 2025 Enacted
20-SC-80, Utilities Infrastructure Project, FNAL $35,000	$12,000	-$23,000
Funding supports construction activities.	The Request will support construction activities.	Funding will support construction activities.

Note:

– *Other Project Costs (OPC) are funded through laboratory overhead.*

Science Laboratories Infrastructure
Capital Summary

(dollars in thousands)

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted
Capital Operating Expenses						
Minor Construction Activities						
General Plant Projects	N/A	N/A	18,530	42,692	42,692	–
Total, Capital Operating Expenses	**N/A**	**N/A**	**18,530**	**42,692**	**42,692**	**–**

Minor Construction Activities

(dollars in thousands)

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted
General Plant Projects (GPP)						
GPPs (greater than $5M and $34M or less)						
Substation 549 Transformer Upgrades	9,791	–	–	9,791	–	-9,791
Building 680, Upgrade Entrance Portal at BNL	11,200	–	–	11,200	–	-11,200
Bethel Valley Central Campus 4000 Area 2.4kv to 13.8 kV Upgrade at ORNL	9,690	–	–	9,690	–	-9,690
Reactive Power Compensation at SLAC	7,765	–	–	7,765	–	-7,765
B/510 Upgrade Electrical Substation - Phase I	7,000	–	–	–	7,000	+7,000
Water Supply Tank 82 and Electric Pump Upgrade	8,000	–	–	–	8,000	+8,000
3410 Central Utility Plant (CUP) Cooling Tower Upgrade at PNNL	8,100	–	–	–	8,100	+8,100
Electrical Rehabilitation - 12kV Cable Replacement - Region 4 at SLAC	5,194	–	–	–	5,194	+5,194
Chiller Replacement (Building. 450) at ANL	6,530	–	6,530	–	–	–
HVAC Upgrade Life Sciences Laboratory (Bldg.331) at PNNL	6,000	–	6,000	–	–	–
Electrical Component Replacement 88 Inch Cyclotron User (Bldg B88) at LBNL	5,815	–	5,815	–	–	–
Total GPPs (greater than $5M and $34M or less)	N/A	N/A	18,345	38,446	28,294	-10,152

(dollars in thousands)

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted
Total GPPs $5M or less	N/A	N/A	185	4,246	14,398	+10,152
Total, General Plant Projects (GPP)	**N/A**	**N/A**	**18,530**	**42,692**	**42,692**	**–**
Total, Minor Construction Activities	**N/A**	**N/A**	**18,530**	**42,692**	**42,692**	**–**

Note:

- *GPP activities $5M and less include design and construction for additions and/or improvements to land, buildings, replacements or addition to roads, and general area improvements. AIP activities $5M and less include minor construction at an existing accelerator facility.*

	Total	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs. FY 2025 Enacted ($ Change)
Institutional General Plant Projects (IGPP)					
IGPPs (greater than or equal to $5M and less than $30M)					
B725 SDCC 1.2 MW Power & Cooling Upgrades, BNL	12,900	12,900			-
B77 CNC Machine Replacement, LBNL	6,600	6,600			-
Sitewide Retaining Wall Improvements, LBNL	9,500	9,500			-
B62 High Bay Renovation, LBNL	9,500	9,500			-
Modular HPC Data Center, LBNL	31,500	31,500			-
Vehicle Charging Stations Installation, ORNL	6,500	6,500			-
Improve Melton Valley Campus South Access and Parking , ORNL	7,400	7,400			-
Renovate B4500N Library, ORNL	9,200	9,200			-
Replace 4521 Cooling Tower, ORNL	9,600	9,600			-
Improve Bethel Valley Campus Parking, ORNL	7,000	7,000			-
Modernize B7600 (EGCR) Campus Utility, ORNL	9,200	9,200			-
Replace Bethel Valley Campus Vehicle Bridge, ORNL	6,000	6,000			-
Secure Physical Sciences, PNNL	28,000	28,000			-
General Purpose Lab, PNNL	24,000	24,000			-
B86 HVAC Modernization, LBNL	16,000		16,000		(16,000)
B66 4th Floor Lab Upgrades, LBNL	30,000		30,000		(30,000)
B84 Heating Electrification, LBNL	15,000		15,000		(15,000)
Shuttle Shelter Modernization, LBNL	5,000		5,000		(5,000)
Fire Alarm Panel Replacements, LBNL	10,000		10,000		(10,000)
B80 HVAC Modernization, LBNL	15,000		15,000		(15,000)
SW-A8 Power Resiliency, LBNL	25,000		25,000		(25,000)
B62 Lab Renovation, LBNL	6,000		6,000		(6,000)
B55 Lab Renovation, LBNL	10,000		10,000		(10,000)
Modernize Bldg., 4508 , ORNL	11,900		11,900		(11,900)
Improve 7667 Low level Waste Site, ORNL	11,000		11,000		(11,000)
Improve 7603 Basement and 7608 Vault, ORNL	11,000		11,000		(11,000)
Construct Bethel Valley Support Facility, ORNL	12,000		12,000		(12,000)
Construct Melton Valley Campus Support Facility, ORNL	11,000		11,000		(11,000)
Secure Computational and Data Sciences, PNNL	32,000		32,000		(32,000)
Shipping and Receiving Replacement, PNNL	15,000		15,000		(15,000)
PSL Lab Renovation, PNNL	14,000		14,000		(14,000)
Physical Access Control System Upgrade, PNNL	10,000		10,000		(10,000)
318 HVAC Upgrade, PNNL	8,500		8,500		(8,500)
Richland North Central Infrastructure, PNNL	7,000		7,000		(7,000)
Canal Water Improvements, ANL	7,300			7,300	7,300
Site-Wide Power Upgrade, BNL	34,000			34,000	34,000
Install Fire Pump Houses at 13J and 68 Water Tanks, LBNL	12,000			12,000	12,000
B2 Chiller Upgrade and Chilled Water Piping Improvements, LBNL	20,000			20,000	20,000
B77 Boiler Electrification, LBNL	30,000			30,000	30,000

Construct Multiprogram Office Building , ORNL	11,000			11,000	11,000
Modernize 4500N Wing 1, ORNL	12,000			12,000	12,000
Modernize 2000/3000 Area Utilities, ORNL	9,600			9,600	9,600
Modernize Mechanical Utilities in East Campus, ORNL	12,000			12,000	12,000
Material Science and Laboratory Analysis, PNNL	29,750			29,750	29,750
Richland South Campus Shop, PNNL	20,000			20,000	20,000
331 Research Support Office, PNNL	12,500			12,500	12,500
325WSPAD Upgrade, PNNL	8,000			8,000	8,000
Replacement of 50S 12kV Switchgear, SLAC	6,600			6,600	6,600
Total IGPPs (greater than or equal to $5M and less than $30M)	677,050	176,900	275,400	224,750	(50,650)
Total IGPPs less than $5M	86,575	29,694	32,813	24,068	(8,745)
Total, Institutional General Plant Projects (IGPP)	**763,625**	**206,594**	**308,213**	**248,818**	**(59,395)**

Note:

- *Institutional General Plant Projects (IGPPs) are indirect funded minor construction activities that are general institutional in nature and address general purpose, site-wide needs.*

Science Laboratories Infrastructure
Construction Projects Summary

(dollars in thousands)

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted
21-SC-71, Princeton Plasma Innovation Center (PPIC), PPPL						
Total Estimated Cost (TEC)	107,500	27,900	15,000	30,000	34,600	+4,600
Other Project Cost (OPC)	2,200	1,923	–	–	–	–
Total Project Cost (TPC)	**109,700**	**29,823**	**15,000**	**30,000**	**34,600**	**+4,600**
21-SC-72, Critical Infrastructure Recovery & Renewal (CIRR), PPPL						
Total Estimated Cost (TEC)	87,300	6,150	10,000	10,000	9,400	-600
Other Project Cost (OPC)	1,700	1,392	–	–	–	–
Total Project Cost (TPC)	**89,000**	**7,542**	**10,000**	**10,000**	**9,400**	**-600**
21-SC-73, Ames Infrastructure Modernization (AIM)						
Total Estimated Cost (TEC)	30,000	22,000	8,000	–	–	–
Other Project Cost (OPC)	1,000	507	–	–	–	–
Total Project Cost (TPC)	**31,000**	**22,507**	**8,000**	**–**	**–**	**–**
20-SC-72, Seismic and Safety Modernization (SSM), LBNL						
Total Estimated Cost (TEC)	136,000	83,000	35,000	18,000	–	-18,000
Other Project Cost (OPC)	4,000	3,561	–	–	–	–
Total Project Cost (TPC)	**140,000**	**86,561**	**35,000**	**18,000**	**–**	**-18,000**
20-SC-73, CEBAF Renovation and Expansion (CEBAF), TJNAF						
Total Estimated Cost (TEC)	87,000	39,000	11,000	11,000	26,000	+15,000
Other Project Cost (OPC)	3,300	1,492	–	–	–	–
Total Project Cost (TPC)	**90,300**	**40,492**	**11,000**	**11,000**	**26,000**	**+15,000**
20-SC-77, Argonne Utilities Upgrade (AU2), ANL						
Total Estimated Cost (TEC)	215,000	19,000	8,007	3,000	1,500	-1,500
Other Project Cost (OPC)	1,000	1,000	–	–	–	–
Total Project Cost (TPC)	**216,000**	**20,000**	**8,007**	**3,000**	**1,500**	**-1,500**
20-SC-78, Linear Assets Modernization Project (LAMP), LBNL						
Total Estimated Cost (TEC)	236,000	34,825	18,900	25,000	13,100	-11,900
Other Project Cost (OPC)	6,000	3,263	–	–	–	–
Total Project Cost (TPC)	**242,000**	**38,088**	**18,900**	**25,000**	**13,100**	**-11,900**
20-SC-79, Critical Utilities Infrastructure Revitalization (CUIR), SLAC						

(dollars in thousands)

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted
Total Estimated Cost (TEC)	204,000	34,925	30,000	20,000	10,000	-10,000
Other Project Cost (OPC)	4,500	2,683	100	250	250	–
Total Project Cost (TPC)	**208,500**	**37,608**	**30,100**	**20,250**	**10,250**	**-10,000**
20-SC-80, Utilities Infrastructure Project (UIP), FNAL						
Total Estimated Cost (TEC)	310,000	31,500	35,000	35,000	12,000	-23,000
Other Project Cost (OPC)	4,000	2,050	–	–	–	–
Total Project Cost (TPC)	**314,000**	**33,550**	**35,000**	**35,000**	**12,000**	**-23,000**
19-SC-74, BioEPIC, LBNL						
Total Estimated Cost (TEC)	165,000	127,000	38,000	–	–	–
Other Project Cost (OPC)	1,536	1,536	–	–	–	–
Total Project Cost (TPC)	**166,536**	**128,536**	**38,000**	**–**	**–**	**–**
Total, Construction						
Total Estimated Cost (TEC)	**N/A**	**N/A**	**208,907**	**152,000**	**106,600**	**-45,400**
Other Project Cost (OPC)	**N/A**	**N/A**	**100**	**250**	**250**	**–**
Total Project Cost (TPC)	**N/A**	**N/A**	**209,007**	**152,250**	**106,850**	**-45,400**

21-SC-71, Princeton Plasma Innovation Center, PPPL
Princeton Plasma Physics Laboratory, PPPL
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2026 Request for the Princeton Plasma Innovation Center (PPIC) project is$34,600,000 of Total Estimated Cost (TEC) funding. The TEC for this project is $107,500,000 and the Total Project Cost (TPC) for this project is $109,700,000.

On April 29, 2025, PPIC was delegated to Laboratory Director. Prior to that delegation, the project received DOE Order 413.3B Critical Decision (CD)-2/3, Approve Performance Baseline and Start of Construction, on October 17, 2024.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update to the FY 2025 CPDS and is not a new start for FY 2026. FY 2026 funds will support construction activities after the appropriate CD approvals.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2026	9/9/19	8/25/20	1/22/21	10/17/24	5/16/24	10/17/24	8/30/29

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range; **Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable); **CD-1** – Approve Alternative Selection and Cost Range; **CD-2** – Approve Performance Baseline; **Final Design Complete** – Estimated/Actual date the project design will be/was complete(d); **CD-3** – Approve Start of Construction; **D&D Complete** – Completion of D&D work; **CD-4** – Approve Start of Operations or Project Closeout.

Fiscal Year	Performance Baseline Validation	CD-3A
FY 2026	10/17/24	6/26/24

CD-3A – Long Lead Procurements and Site Preparation Activities

Project Cost History

(dollars in thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2025	12,000	95,500	107,500	2,200	2,200	109,700
FY 2026	13,500	94,000	107,500	2,200	2,200	109,700

Notes:
- *Other Project Costs (OPC) are funded through laboratory overhead.*

2. Project Scope and Justification

Scope

The Princeton Plasma Innovation Center (PPIC) is envisioned as an approximately 71,000 gross square feet (gsf) multi-story office, reflecting office space based on future of work changes, and laboratory building at Princeton Plasma Physics Laboratory (PPPL) to serve as a single new multi-use facility that will house space for offices, medium bay research labs for diagnostics and fabrication, remote experiment participation and collaboration, and research support. Having procured long-lead equipment (e.g., mechanical equipment, electrical equipment, structural steel, etc.) and performing site preparation (e.g., installation of geothermal wells) approved via CD-3A, should improve the schedule and reduce the impacts of cost escalation.

Justification

To advance the plasma science and fusion frontier in support of the DOE mission, PPPL requires new or enhanced facilities and infrastructure to foster innovation to make fusion energy a practical reality and further U.S. economic competitiveness. The primary SC program relevant to the PPIC project is FES, and the primary core capability is Plasma and Fusion Energy Sciences. The missions of SC's ASCR and BES programs are also relevant mission needs for the PPIC with second order effect to Large Scale User Facilities/Advanced Instrumentation and Systems Engineering and Integration.

PPPL plays a key role in assisting FES achieve its strategic goals. PPPL carries out experiments and computer simulations of the behavior of plasma, with sufficient temperature to generate fusion reactions. PPPL's aims to be a leading center for future fusion concepts through industry collaborations that develop new modeling and measurement techniques to improve understanding of plasma processes and that develop innovations for the next generation microelectronics.

PPIC will enhance the configuration of the PPPL campus to accommodate future scientific efforts and address the lack of adequate laboratory infrastructure, modern collaboration space, and modern office infrastructure.

Key Performance Parameters (KPPs)

The Threshold KPP represent the minimum acceptable performance that the project must achieve. The Objective KPPs represent the desired project performance. Achievement of the Threshold KPP will be a prerequisite for project completion.

Performance Measure	Threshold	Objective
Multi-Story Building	50,000 gsf	75,000 gsf

3. Financial Schedule

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs	IRA Supp. Costs
Total Estimated Cost (TEC)				
Design (TEC)				
Prior Years	12,500	12,500	3,200	1,000
Prior Years - IRA Supp.	1,000	1,000	—	—
FY 2024	—	—	5,300	—
FY 2025	—	—	800	—
FY 2026	—	—	3,200	—
Total, Design (TEC)	**13,500**	**13,500**	**12,500**	**1,000**
Construction (TEC)				
Prior Years	5,400	5,400	—	—
Prior Years - IRA Supp.	9,000	9,000	—	—
FY 2024	15,000	15,000	—	3,900
FY 2025	30,000	30,000	9,900	5,100
FY 2026	34,600	34,600	35,000	—
Outyears	—	—	40,100	—
Total, Construction (TEC)	**94,000**	**94,000**	**85,000**	**9,000**
Total Estimated Cost (TEC)				
Prior Years	17,900	17,900	3,200	1,000
Prior Years - IRA Supp.	10,000	10,000	—	—
FY 2024	15,000	15,000	5,300	3,900
FY 2025	30,000	30,000	10,700	5,100
FY 2026	34,600	34,600	38,200	—
Outyears	—	—	40,100	—
Total, Total Estimated Cost (TEC)	**107,500**	**107,500**	**97,500**	**10,000**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs	IRA Supp. Costs
Other Project Cost (OPC)				
Prior Years	1,923	1,923	1,923	–
Outyears	277	277	277	–
Total, Other Project Cost (OPC)	**2,200**	**2,200**	**2,200**	**–**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs	IRA Supp. Costs
Total Project Cost (TPC)				
Prior Years	19,823	19,823	5,123	1,000
Prior Years - IRA Supp.	10,000	10,000	–	–
FY 2024	15,000	15,000	5,300	3,900
FY 2025	30,000	30,000	10,700	5,100
FY 2026	34,600	34,600	38,200	–
Outyears	277	277	40,377	–
Total, TPC	**109,700**	**109,700**	**99,700**	**10,000**

4. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	12,300	9,500	N/A
Design - Contingency	1,200	2,500	N/A
Total, Design (TEC)	**13,500**	**12,000**	N/A
Construction	77,810	75,600	N/A
Construction - Contingency	16,190	19,900	N/A
Total, Construction (TEC)	**94,000**	**95,500**	N/A
Total, TEC	**107,500**	**107,500**	N/A
Contingency, TEC	*17,390*	*22,400*	*N/A*
Other Project Cost (OPC)			
Conceptual Planning	300	300	N/A
Conceptual Design	1,700	1,700	N/A
OPC - Contingency	200	200	N/A
Total, Except D&D (OPC)	**2,200**	**2,200**	N/A
Total, OPC	**2,200**	**2,200**	N/A
Contingency, OPC	*200*	*200*	*N/A*
Total, TPC	**109,700**	**109,700**	N/A
Total, Contingency (TEC+OPC)	***17,590***	***22,600***	***N/A***

5. Schedule of Appropriations Requests

(dollars in thousands)

Fiscal Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2025	TEC	27,900	15,000	35,000	—	29,600	107,500
	OPC	1,923	—	—	—	277	2,200
	TPC	29,823	15,000	35,000	—	29,877	109,700
FY 2026	TEC	27,900	15,000	30,000	34,600	—	107,500
	OPC	1,923	—	—	—	277	2,200
	TPC	29,823	15,000	30,000	34,600	277	109,700

Notes:
- *Other Project Costs (OPC) are funded through laboratory overhead.*

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	8/30/29
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	4Q FY 2079

Related Funding Requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations	1,336	1,336	46,774	46,774
Utilities	198	198	6,936	6,936
Maintenance and Repair	1,518	1,518	53,154	53,154
Total, Operations and Maintenance	3,052	3,052	106,864	106,864

7. D&D Information

The new area being constructed in this project is not replacing existing facilities.

	Square Feet
New area being constructed by this project at PPPL	~71,000
Area of D&D in this project at PPPL	None
Area at PPPL to be transferred, sold, and/or D&D outside the project, including area previously "banked"	13,400[b]
Area of D&D in this project at other sites	None
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Total area eliminated	13,400

[b] With the implementation of OMB's Reduce the Footprint initiative, DOE no longer maintains the space bank. Footprint is managed using the Facility Information Management System, with decisions on additions and offsets made in accordance with the DOE Real Property Efficiency Plan.

8. Acquisition Approach

The PPPL Management and Operating (M&O) Contractor, Princeton University, is performing the acquisition for this project, overseen by the Princeton Site Office. The M&O contractor is responsible for awarding and managing all subcontracts related to this project.

The Office of Science delegated Project Management Executive responsibilities to the National Laboratory Director. The project will be managed and delivered by the M&O Contractor. SC will evaluate the M&O contractor's performance through the annual laboratory performance appraisal process.

21-SC-72, Critical Infrastructure Recovery & Renewal, PPPL
Princeton Plasma Physics Laboratory, PPPL
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2026 Request for the Critical Infrastructure Recovery & Renewal (CIRR) project is $9,400,000 of Total Estimated Cost (TEC) funding. The preliminary TEC range for this project is $80,100,000 to $96,000,000. The preliminary Total Project Cost (TPC) range for this project is $81,800,000 to $97,700,000. Currently, these cost ranges encompass the most feasible preliminary alternatives. The preliminary TPC estimate for this project is $89,000,000.

Princeton Plasma Physics Laboratory's (PPPL's) increasingly unreliable and antiquated utility infrastructure is negatively impacting laboratory operations. Scientific productivity is dependent on a capable, available, flexible, maintainable, reliable, and resilient support infrastructure. This project will provide critical infrastructure needed to operate the laboratory missions safely and efficiently. These systems will be modern and energy efficient, reducing the operating cost and improving the resilience of the facilities.

On April 29, 2025, CIRR was delegated to Laboratory Director. Prior to that delegation, the project received DOE Order 413.3B Critical Decision (CD)-3, Approve Long-Lead Procurements and Site Preparation Activities, on April 24, 2025.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update to the FY 2025 CPDS and is not a new start for FY 2026. FY 2026 funds will continue to fund construction.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2026	9/16/19	2/23/21	2/23/21	TBD	3Q FY 2025	TBD	TBD

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range; **Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable); **CD-1** – Approve Alternative Selection and Cost Range; **CD-2** – Approve Performance Baseline; **Final Design Complete** – Estimated/Actual date the project design will be/was complete(d); **CD-3** – Approve Start of Construction; **D&D Complete** – Completion of D&D work; **CD-4** – Approve Start of Operations or Project Closeout.

Fiscal Year	Performance Baseline Validation	CD-3A
FY 2026	TBD	4/24/25

CD-3A – Approve Long-Lead Procurements and Site Preparation Activities

Project Cost History

(dollars in thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2025	9,950	77,350	87,300	1,700	1,700	89,000
FY 2026	9,680	77,620	87,300	1,700	1,700	89,000

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

2. Project Scope and Justification

Scope

The CIRR project at PPPL will revitalize critical infrastructure that supports the PPPL campus to ensure reliability and resilience. Upgrades that are completed as part of the CIRR project include: the electrical distribution system; standby power; chilled water generation and distribution; HVAC systems; and communication systems. The scientific activities that require reliable and resilient utilities include National Spherical Torus Experiment-Upgrade (NSTX-U), Facility for Laboratory Reconnection Experiments (FLARE), and Lithium Tokamak Experiment-Beta (LTX-β).

The long-lead equipment procurement was approved on April 24, 2025.

Justification

PPPL is a key DOE contributor to plasma science and directly supports the DOE mission to make fusion energy a practical reality and further U.S. economic competitiveness. To maintain system operability, it is essential to have reliable infrastructure in place. The current systems are past their useful life, obsolete, unreliable, and inefficient. Portions of the current system are part of the original infrastructure built in 1958. To maintain current missions and enable future ones, the infrastructure must be upgraded with modern, efficient, and reliable systems.

CIRR will deliver modern and resilient general-purpose infrastructure which will be more reliable, efficient, and sustainable and meet current industry standards. For example, replacing the obsolete hot deck/cold deck HVAC system will not only result in repair savings, but will generate energy savings as well. This project is being designed to consider the best available and most efficient technology to enhance operations and maintenance of new systems and equipment.

Key Performance Parameters (KPPs)

The KPPs are preliminary and may change as the project matures. The KPPs will be finalized in accordance with M&O contractor's plan for project execution. The Threshold KPPs represent the minimum acceptable performance that the project must achieve. The Objective KPPs represent the desired project performance. Achievement of the Threshold KPPs will be a prerequisite for approval of project completion.

Performance Measure	Threshold	Objective
Chilled Water Generation	▪ Install new Central Chilled Water Plant equipment and cooling tower cells to ensure distribution of 2,000 tons of cooling capacity to the site.	▪ Install new MV Cable between Q4 Switchgear and Substation 10 and Substation 61A to improve resiliency of Central Chilled Water Plant equipment.
Communications Distribution Network	▪ Complete redundant fiber optic connection between Princeton University's High-Performance Computing Research Center and the PPPL Computer Center (PPLCC). ▪ Replace 10,000 linear feet of legacy fiber optic cable between PPLCC and network distribution closets across site.	▪ Provide 1,000 linear feet of redundant fiber optic connections between redundant PPLCC network core and critical network distribution closets. ▪ Provide fully divergent pathway for new service provider connection to the PPLCC.
Electrical Distribution & Standby Power	▪ Improve mission readiness of the primary electrical distribution system in the 138 kV Yard by replacing XQT-2, XVT-1 transformers. ▪ Provide 2600kW generator for C-Site. ▪ Replace Q1 Switchgear and shift Q6 switchgear loads to Q1. ▪ Upgrade 4 Substations for priority buildings and facilities.	▪ Replace existing 26 kV OCB VB-1 to improve resilience of back-up power source. ▪ Replace 5 substations for priority buildings and facilities.
HVAC Systems	▪ Upgrade 2 HVAC system equipment for priority buildings on C-Site.	▪ Upgrade up to 4 HVAC system equipment priority buildings on C-Site.
Underground Distribution Network	▪ Replace 800 L.F. of chilled water main piping that has exceeded its useful life expectancy and is prone to failure.	▪ Replace 250 L.F. of existing underground 5kV electrical feeders that have exceeded their useful life expectancy. ▪ Replace 1700 L.F. of existing underground 26kV electrical feeders that have exceeded their useful life expectancy.

3. Financial Schedule

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design (TEC)			
Prior Years	6,150	6,150	355
FY 2024	3,530	3,530	3,600
FY 2025	—	—	5,725
Total, Design (TEC)	**9,680**	**9,680**	**9,680**
Construction (TEC)			
FY 2024	6,470	6,470	—
FY 2025	10,000	10,000	16,000
FY 2026	9,400	9,400	8,400
Outyears	51,750	51,750	53,220
Total, Construction (TEC)	**77,620**	**77,620**	**77,620**
Total Estimated Cost (TEC)			
Prior Years	6,150	6,150	355
FY 2024	10,000	10,000	3,600
FY 2025	10,000	10,000	21,725
FY 2026	9,400	9,400	8,400
Outyears	51,750	51,750	53,220
Total, Total Estimated Cost (TEC)	**87,300**	**87,300**	**87,300**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Cost (OPC)			
Prior Years	1,392	1,392	1,392
Outyears	308	308	308
Total, Other Project Cost (OPC)	**1,700**	**1,700**	**1,700**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Project Cost (TPC)			
Prior Years	7,542	7,542	1,747
FY 2024	10,000	10,000	3,600
FY 2025	10,000	10,000	21,725
FY 2026	9,400	9,400	8,400
Outyears	52,058	52,058	53,528
Total, TPC	**89,000**	**89,000**	**89,000**

4. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	7,510	7,600	N/A
Design - Contingency	2,170	2,350	N/A
Total, Design (TEC)	**9,680**	**9,950**	N/A
Construction	60,230	59,500	N/A
Construction - Contingency	17,390	17,850	N/A
Total, Construction (TEC)	**77,620**	**77,350**	N/A
Total, TEC	**87,300**	**87,300**	N/A
Contingency, TEC	*19,560*	*20,200*	*N/A*
Other Project Cost (OPC)			
Conceptual Planning	200	200	N/A
Conceptual Design	1,300	1,300	N/A
OPC - Contingency	200	200	N/A
Total, Except D&D (OPC)	**1,700**	**1,700**	N/A
Total, OPC	**1,700**	**1,700**	N/A
Contingency, OPC	*200*	*200*	*N/A*
Total, TPC	**89,000**	**89,000**	N/A
Total, Contingency (TEC+OPC)	***19,760***	***20,400***	***N/A***

5. Schedule of Appropriations Requests

(dollars in thousands)

Fiscal Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2025	TEC	6,150	10,000	20,000	—	51,150	87,300
	OPC	1,392	—	—	—	308	1,700
	TPC	7,542	10,000	20,000	—	51,458	89,000
FY 2026	TEC	6,150	10,000	10,000	9,400	51,750	87,300
	OPC	1,392	—	—	—	308	1,700
	TPC	7,542	10,000	10,000	9,400	52,058	89,000

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	TBD
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	N/A

Related Funding Requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations	1,100	1,100	55,000	55,000
Utilities	N/A	N/A	N/A	N/A
Maintenance and Repair	1,000	1,000	50,000	50,000
Total, Operations and Maintenance	2,100	2,100	105,000	105,000

7. D&D Information

This project replaces critical infrastructure components; no new construction area is anticipated to be constructed in this project, and it will not replace existing facilities.

	Square Feet
New area being constructed by this project at PPPL	None
Area of D&D in this project at PPPL	None
Area at PPPL to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Area of D&D in this project at other sites	None
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Total area eliminated	None

8. Acquisition Approach

The PPPL Management and Operating (M&O) Contractor, Princeton University, is performing the acquisition for this project, overseen by the Princeton Site Office. The M&O contractor is responsible for awarding and managing all subcontracts related to this project.

The Office of Science delegated Project Management Executive responsibilities to the National Laboratory Director. The project will be managed and delivered by the M&O Contractor. SC will evaluate the M&O contractor's performance through the annual laboratory performance appraisal process.

20-SC-73, CEBAF Renovation and Expansion, TJNAF
Thomas Jefferson National Accelerator Facility, TJNAF
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2026 Request for the Continuous Electron Beam Accelerator Facility (CEBAF) Renovation and Expansion (CRE) project is $26,000,000. The preliminary Total Estimated Cost (TEC) range for this project is $46,600,000 to $99,500,000. The preliminary Total Project Cost (TPC) range for this project is $69,300,000 to $102,800,000. Currently, these cost ranges encompass the most feasible preliminary alternatives. The preliminary TPC estimate for this project is$90,300,000.

The CEBAF center at TJNAF has inadequate utility systems that are experiencing frequent failures. This project will renovate 95,000 to 247,000 gross square feet (gsf) of existing space in the CEBAF center and the Applied Research Center (ARC) space for visitors, users, research, education, and support and upgrade utility systems that are at the end of their useful life. To accommodate ongoing operations during the project, the renovation of the newly acquired ARC building will be executed prior to the CEBAF renovation.

On April 29, 2025, CEBAF was delegated to the Laboratory Director. Prior to that delegation, the project received DOE Order 413.3B Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range, which was approved on March 18, 2020.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update to the FY 2025 CPDS and is not a new start for FY 2026. The FY 2026 Request is the final year of funding and will support construction activities.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2026	7/20/18	10/16/19	3/18/20	TBD	TBD	TBD	TBD

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range; **Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable); **CD-1** – Approve Alternative Selection and Cost Range; **CD-2** – Approve Performance Baseline; **Final Design Complete** – Estimated/Actual date the project design will be/was complete(d); **CD-3** – Approve Start of Construction; **D&D Complete** – Completion of D&D work; **CD-4** – Approve Start of Operations or Project Closeout.

Fiscal Year	Performance Baseline Validation	CD-3A	CD-3B
FY 2026	TBD	TBD	2Q FY 2026

CD-3A – Approve start of construction activities in ARC.
CD-3B – Approve Start of Remaining Construction Activities in CEBAF

Project Cost History

(dollars in thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2025	9,500	77,500	87,000	3,300	3,300	90,300
FY 2026	9,500	77,500	87,000	3,300	3,300	90,300

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

2. Project Scope and Justification

Scope

The scope of the CRE project will include renovating 95,000 to 247,000 gsf of office and laboratory space (including the renovation of the newly acquired ARC building) for 120 to 200 research, education, and support staff. The renovation will include reconfiguration to provide more functional, flexible, and efficient spaces that meet current code standards. CRE will replace the mechanical systems in the ARC and existing CEBAF Center, which have exceeded their service life and experienced multiple failures, with geothermal heat pump systems. The CRE project will be designed to account for projected changes in temperature and precipitation, energy and water efficiency, and enhanced monitoring of assets to reduce the risk of failure and outages. The renovated building will meet modern building performance standards. Upon completion, TJNAF will relocate administrative and support staff from the Service Support Center (SSC) (leased space) and CEBAF into the ARC, and will dedicate the CEBAF Center to scientific staff which will collectively and efficiently address functional workspace needs for TJNAF staff and users.

Justification

With nearly 1,600 users, TJNAF supports one of the largest nuclear physics user communities in the world. The expanded scientific scope associated with the 12 GeV upgrade (e.g., double the energy with simultaneous delivery to four experimental halls) is creating more and larger collaborations, requiring more technical workshops, and resulting in more visitors to the Laboratory. The Laboratory expects staff and the user population to increase by two percent per year for the next ten years and will soon exceed available space, which is already near capacity. Further, TJNAF is actively pursuing several large multi-program transfer projects such as the cryomodules and cryogenics plants for Linac Coherent Light Source (LCLS)-I, LCLS-II-High Energy, Facility for Rare Isotope Beams (FRIB), and the Utilities Upgrade Project (UUP) that will require additional staffing. TJNAF will continue to play a key role in the design and development of emerging SC initiatives.

Currently, TJNAF lacks technically equipped and functional space to accommodate advanced scientific research and major missions on the immediate horizon. The existing CEBAF Center is well beyond full capacity. The current occupant density of this building is 110 gsf per occupant which is significantly below the DOE standard of 180 gsf per occupant. In addition, utility systems at the CEBAF center are inadequate, failing, and inefficient for the existing usage.

As part of TJNAF's strategic campus plan, CRE will deliver more efficient, collaborative, and functional workspaces that consolidates the Laboratory workforce scattered over several leased buildings into a single center. The project consolidates workers currently housed in the ARC and SSC leased spaces to efficiently address functional workspace needs, allows leases to be discontinued, and reduces the cost to sustain existing buildings and infrastructure. This project will provide upgraded laboratories and additional space for visitors, users, research, education, and support especially for new science capabilities such as 12 GeV and upcoming Electron Ion Collider (EIC) at BNL.

Key Performance Parameters (KPPs)

The KPPs are preliminary and may change as the project matures. The KPPs will be finalized in accordance with TJNAF's plan for project execution. The Threshold KPPs represent the minimum acceptable performance that the project must achieve. The Objective KPPs represent the desired project performance. Achievement of the Threshold KPPs will be a prerequisite for approval of project completion.

Performance Measure	Threshold	Objective
CEBAF Center/ARC Renovation	95,000 gsf	247,000 gsf

3. Financial Schedule

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs	IRA Supp. Costs
Total Estimated Cost (TEC)				
Design (TEC)				
Prior Years	8,000	8,000	5,359	—
FY 2024	1,000	1,000	1,794	—
FY 2025	500	500	1,700	—
FY 2026	—	—	647	—
Total, Design (TEC)	**9,500**	**9,500**	**9,500**	**—**
Construction (TEC)				
Prior Years	21,000	21,000	—	—
Prior Years - IRA Supp.	10,000	10,000	—	—
FY 2024	10,000	10,000	—	—
FY 2025	10,500	10,500	—	—
FY 2026	26,000	26,000	10,000	10,000
Outyears	—	—	57,500	—
Total, Construction (TEC)	**77,500**	**77,500**	**67,500**	**10,000**
Total Estimated Cost (TEC)				
Prior Years	29,000	29,000	5,359	—
Prior Years - IRA Supp.	10,000	10,000	—	—
FY 2024	11,000	11,000	1,794	—
FY 2025	11,000	11,000	1,700	—
FY 2026	26,000	26,000	10,647	10,000
Outyears	—	—	57,500	—
Total, Total Estimated Cost (TEC)	**87,000**	**87,000**	**77,000**	**10,000**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs	IRA Supp. Costs
Other Project Cost (OPC)				
Prior Years	1,492	1,492	1,492	–

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs	IRA Supp. Costs
Other Project Cost (OPC)				
Outyears	1,808	1,808	1,808	–
Total, Other Project Cost (OPC)	**3,300**	**3,300**	**3,300**	**–**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs	IRA Supp. Costs
Total Project Cost (TPC)				
Prior Years	30,492	30,492	6,851	–
Prior Years - IRA Supp.	10,000	10,000	–	–
FY 2024	11,000	11,000	1,794	–
FY 2025	11,000	11,000	1,700	–
FY 2026	26,000	26,000	10,647	10,000
Outyears	1,808	1,808	59,308	–
Total, TPC	**90,300**	**90,300**	**80,300**	**10,000**

4. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	8,500	8,500	N/A
Design - Contingency	1,000	1,000	N/A
Total, Design (TEC)	**9,500**	**9,500**	N/A
Construction	62,000	62,000	N/A
Construction - Contingency	15,500	15,500	N/A
Total, Construction (TEC)	**77,500**	**77,500**	N/A
Total, TEC	**87,000**	**87,000**	N/A
Contingency, TEC	*16,500*	*16,500*	*N/A*
Other Project Cost (OPC)			
Conceptual Planning	2,700	2,700	N/A
Conceptual Design	600	600	N/A
Total, Except D&D (OPC)	**3,300**	**3,300**	N/A
Total, OPC	**3,300**	**3,300**	N/A
Contingency, OPC	*N/A*	*N/A*	*N/A*
Total, TPC	**90,300**	**90,300**	N/A

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, Contingency (TEC+OPC)	*16,500*	*16,500*	*N/A*

5. Schedule of Appropriations Requests

(dollars in thousands)

Fiscal Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2025	TEC	39,000	11,000	11,000	—	26,000	87,000
	OPC	1,492	—	—	—	1,808	3,300
	TPC	40,492	11,000	11,000	—	27,808	90,300
FY 2026	TEC	39,000	11,000	11,000	26,000	—	87,000
	OPC	1,492	—	—	—	1,808	3,300
	TPC	40,492	11,000	11,000	26,000	1,808	90,300

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	TBD
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	N/A

Related Funding Requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations	288	288	14,400	14,400
Utilities	432	432	21,600	21,600
Maintenance and Repair	1,008	1,008	50,400	50,400
Total, Operations and Maintenance	1,728	1,728	86,400	86,400

7. D&D Information

The new area being constructed in this project is not replacing existing facilities.

	Square Feet
New area being constructed by this project at TJNAF	up to 47,000
Area of D&D in this project at TJNAF	None
Area at TJNAF to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None[c]
Area of D&D in this project at other sites	None
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Total area eliminated	None

8. Acquisition Approach

The TJNAF Management and Operating (M&O) Contractor, Jefferson Sciences Associates, LLC, is performing the acquisition for this project, overseen by the Thomas Jefferson Site Office. The M&O contractor is responsible for awarding and managing all subcontracts related to this project.

The Office of Science delegated Project Management Executive responsibilities to the National Laboratory Director. The project will be managed and delivered by the M&O Contractor. SC will evaluate the M&O contractor's performance through the annual laboratory performance appraisal process.

[c] With the implementation of OMB's Reduce the Footprint initiative, DOE no longer maintains the space bank. Footprint is managed using the Facility Information Management System, with decisions on additions and offsets made in accordance with the DOE Real Property Efficiency Plan.

20-SC-77, Argonne Utilities Upgrade, ANL
Argonne National Laboratory, ANL
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2026 Request for the Argonne Utilities Upgrade (AU2) project is$1,500,000 of Total Estimated Cost (TEC) funding. The preliminary TEC range for this project is $172,000,000 to $290,250,000. The preliminary Total Project Cost (TPC) range for this project is $173,000,000 to $291,250,000. Currently, these cost ranges encompass the most feasible preliminary alternatives. The preliminary TPC estimate for this project is $216,000,000.

AU2 will revitalize and selectively upgrade ANL's existing major utility systems including steam, water, sanitary sewer, chilled water, and electrical systems.

On April 29, 2025, AU2 was delegated to the Laboratory Director. Prior to the delegation, the project received DOE Order 413.3B Critical Decision (CD)-3A, Approve Site Preparation, on September 14, 2023.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update to the FY 2025 CPDS and does not include a new start for FY 2026. FY 2026 funds will support construction activities.

Critical Milestone History

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
AU2 - Overall, ANL	5/17/19	10/30/20	7/1/21	4Q FY 2029	1Q FY 2030	4Q FY 2029	3Q FY 2035
AU2 - Chilled Water Plant , ANL	–	–	–	3Q FY 2030	3/15/24	3Q FY 2030	2Q FY 2034
AU2 - Steam Plant and Utility Piping, ANL	–	–	–	4Q FY 2032	4Q FY 2029	4Q FY 2032	3Q FY 2035

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range; **Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable); **CD-1** – Approve Alternative Selection and Cost Range; **CD-2** – Approve Performance Baseline; **Final Design Complete** – Estimated/Actual date the project design will be/was complete(d); **CD-3** – Approve Start of Construction; **D&D Complete** – Completion of D&D work; **CD-4** – Approve Start of Operations or Project Closeout.

	Performance Baseline Validation	CD-3A
AU2 - Overall, ANL	4Q FY 2029	9/14/23
AU2 - Chilled Water Plant , ANL	3Q FY 2026	9/14/23
AU2 - Steam Plant and Utility Piping, ANL	4Q FY 2029	1Q FY 2032

CD-3A – Long Lead Procurements and Site Preparation Activities.

Project Cost History

(dollars in thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2025	45,500	169,500	215,000	1,000	1,000	216,000
FY 2026	15,000	200,000	215,000	1,000	1,000	216,000

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

2. Project Scope and Justification

Scope

The preliminary scope of the AU2 project includes upgrading failing 1940s-era utilities across the ANL campus. These utilities include steam, water, sanitary sewer, chilled water, and electrical systems. To facilitate its execution, the AU2 project is comprised of two subprojects consisting of scope needed to achieve complete and usable assets. Subproject 1 is the Chilled Water and Utility Piping Upgrades and consists of site preparation and demolition, which was approved via CD-3A and will be followed by construction of a new chilled water plant when construction is authorized. Subproject 2 is the Steam and Utility Piping Upgrades and consists of modernization of an existing boiler, replacement and modernization of several major utility systems, including steam and condensate, domestic water, canal water, and sewer systems.

Justification

An efficient, maintainable, and reliable infrastructure is critical to the success and mission capability of ANL's research facilities. Revitalizing and upgrading the near century old major utility systems—including steam, water, sanitary sewer, chilled water, and electrical systems—is a mission need for ANL to overcome current limitations in meeting modern demands. For example, steam is a critical infrastructure for Argonne facilities; the Advanced Photon Source (APS) is dependent on the steam utility for holding extremely tight temperature and humidity ranges required for beam line operations and stability.

Improving the performance and resilience of utilities would not only allow major pieces of scientific equipment to operate more efficiently and effectively with modern engineered controls but also prevent catastrophic climate related damage to both buildings and equipment.

AU2 will reduce operational risks in critical infrastructure and utility support systems and provide more resilient, efficient, and sustainable general-purpose infrastructure. The project will include installation of a combination of data collection and monitoring systems that enable predicting failures and making adjustments that minimize impacts to mission critical scientific operations.

Key Performance Parameters (KPPs)

The KPPs are preliminary and may change as the project matures. The KPPs will be finalized in accordance with the M&O contractor's plan for project execution. The Threshold KPPs represent the minimum acceptable performance that the project must achieve. The Objective KPPs represent the desired project performance. Achievement of the Threshold KPPs will be a prerequisite for project completion.

Performance Measure	Threshold	Objective
Chilled Water and Utility Piping Upgrades (Cooling Systems).	▪ Construct a new 6,300 ton chilled water plant with N+1 reliability.	▪ Upgrade equipment and controls at the 371, and 528 chilled water plants.

Performance Measure	Threshold	Objective
	▪ Modernize, replace, or construct new distribution piping for 5,000 linear feet of utility piping.	▪ Modernize fire domestic water tanks. ▪ Potential capacity upgrades, new equipment, equipment replacements, and various other utility system reliability projects to increase reliability of laboratory internal utilities.
Steam and Utility Piping Upgrades (Steam & Condensate, Water Supply, Sewer).	▪ Recapitalize one (1) existing boiler in Building 108. ▪ Modernize, replace or construct new distribution piping for 2,500 linear feet of utility piping.	▪ Recapitalize one additional boilers in Building 108. ▪ Modernize, replace or construct new distribution piping for up to 15,000 linear feet of utility piping and support structures (e.g., vaults, pipe supports, valves, culverts, etc.). ▪ Install between 50 and 250 new smart meters.

3. Financial Schedule

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design (TEC)			
Prior Years	11,000	11,000	5,200
FY 2024	—	—	1,427
FY 2025	—	—	2,000
Outyears	4,000	4,000	6,373
Total, Design (TEC)	**15,000**	**15,000**	**15,000**
Construction (TEC)			
Prior Years	8,000	8,000	—
FY 2024	8,007	8,007	2,250
FY 2025	3,000	3,000	—
FY 2026	1,500	1,500	—
Outyears	179,493	179,493	197,750
Total, Construction (TEC)	**200,000**	**200,000**	**200,000**
Total Estimated Cost (TEC)			
Prior Years	19,000	19,000	5,200
FY 2024	8,007	8,007	3,677
FY 2025	3,000	3,000	2,000
FY 2026	1,500	1,500	—

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Outyears	183,493	183,493	204,123
Total, Total Estimated Cost (TEC)	**215,000**	**215,000**	**215,000**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Cost (OPC)			
Prior Years	1,000	1,000	1,000
Total, Other Project Cost (OPC)	**1,000**	**1,000**	**1,000**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Project Cost (TPC)			
Prior Years	20,000	20,000	6,200
FY 2024	8,007	8,007	3,677
FY 2025	3,000	3,000	2,000
FY 2026	1,500	1,500	–
Outyears	183,493	183,493	204,123
Total, TPC	**216,000**	**216,000**	**216,000**

4. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	13,400	36,400	N/A
Design - Contingency	1,600	9,100	N/A
Total, Design (TEC)	**15,000**	**45,500**	N/A
Construction	162,600	135,600	N/A
Construction - Contingency	37,400	33,900	N/A
Total, Construction (TEC)	**200,000**	**169,500**	N/A
Total, TEC	**215,000**	**215,000**	N/A

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Contingency, TEC	*39,000*	*43,000*	*N/A*
Other Project Cost (OPC)			
Conceptual Planning	1,000	1,000	N/A
Total, Except D&D (OPC)	**1,000**	**1,000**	N/A
Total, OPC	**1,000**	**1,000**	N/A
Contingency, OPC	*N/A*	*N/A*	*N/A*
Total, TPC	**216,000**	**216,000**	N/A
Total, Contingency (TEC+OPC)	***39,000***	***43,000***	***N/A***

5. Schedule of Appropriations Requests

(dollars in thousands)

Fiscal Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2025	TEC	19,000	8,007	3,000	—	184,993	215,000
	OPC	1,000	—	—	—	—	1,000
	TPC	20,000	8,007	3,000	—	184,993	216,000
FY 2026	TEC	19,000	8,007	3,000	1,500	183,493	215,000
	OPC	1,000	—	—	—	—	1,000
	TPC	20,000	8,007	3,000	1,500	183,493	216,000

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	SP-1: 2Q FY 2034 SP2: 3Q FY 2035
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	SP-1: 2Q FY 2084 SP-2: 3Q FY 2085

Related Funding Requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations	2,955	2,955	147,750	147,750
Utilities	4,423	4,423	221,150	221,150
Maintenance and Repair	739	739	36,950	36,950
Total, Operations and Maintenance	8,117	8,117	405,850	405,850

7. D&D Information

The new area being constructed in this project is not replacing existing facilities.

	Square Feet
New area being constructed by this project at ANL	20,221
Area of D&D in this project at ANL	10,473
Area at ANL to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None[d]
Area of D&D in this project at other sites	None
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Total area eliminated	None

8. Acquisition Approach

The ANL Management and Operating (M&O) Contractor, UChicago Argonne, LLC, is performing the acquisition for this project, overseen by the Argonne Site Office. The M&O contractor is responsible for awarding and managing all subcontracts related to this project.

The Office of Science delegated Project Management Executive responsibilities to the National Laboratory Director. The project will be managed and delivered by the M&O Contractor. SC will evaluate the M&O contractor's performance through the annual laboratory performance appraisal process.

[d] With the implementation of OMB's Reduce the Footprint initiative, DOE no longer maintains the space bank. Footprint is managed using the Facility Information Management System, with the decisions on additions and offsets made in accordance with the DOE Real Property Efficiency Plan.

20-SC-78, Linear Assets Modernization Project, LBNL
Lawrence Berkeley National Laboratory, LBNL
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2026 Request for the Linear Assets Modernization Project is $13,100,000 of Total Estimated Cost (TEC) funding. The preliminary TEC range for this project is $164,000,000 to $376,000,000. The preliminary Total Project Cost (TPC) range for this project is $170,000,000 to $386,000,000. Currently, these cost ranges encompass the most feasible preliminary alternatives. The preliminary TPC estimate for this project is $242,000,000.

LAMP will upgrade high priority utility systems to increase the reliability, capability, resilience, and safety of LBNL's infrastructure to meet DOE's mission. The project will upgrade utility systems, including, but not limited to, domestic water, natural gas, electrical, and communication.

On April 29, 2025, LAMP was delegated to the Laboratory Director. Prior to that delegation, the project received DOE Order 413.3B Critical Decision (CD) for LAMP, CD-1, Approve Alternative Selection and Cost Range, was approved on April 13, 2022.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update to the FY 2025 CPDS and is not a new start for FY 2026. The FY 2026 Request will support the activities of the design-build contractor. The M&O Contractor is in the process of executing the major subcontract to perform the work.

Due to the evolution of project execution, subprojects are no longer required to efficiently carry out the project.

Critical Milestone History

20-SC-78 Linear Assets Modernization Project, LBNL

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2026	5/17/19	4/13/22	4/13/22	TBD	TBD	TBD	TBD

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range; **Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable); **CD-1** – Approve Alternative Selection and Cost Range; **CD-2** – Approve Performance Baseline; **Final Design Complete** – Estimated/Actual date the project design will be/was complete(d); **CD-3** – Approve Start of Construction; **D&D Complete** – Completion of D&D work; **CD-4** – Approve Start of Operations or Project Closeout.

20-SC-78 Linear Assets Modernization Project, LBNL

Fiscal Year	Performance Baseline Validation	CD-3A
FY 2026	TBD	TBD

CD-3A – Approve Long-Lead Procurements and Site Preparation Activities.

Project Cost History

(dollars in thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2025	50,000	186,000	236,000	6,000	6,000	242,000
FY 2026	43,800	192,200	236,000	6,000	6,000	242,000

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

2. Project Scope and Justification

Scope

LAMP will upgrade the highest priority utility systems to increase the reliability, capability, and safety of LBNL's infrastructure to meet the DOE's mission. The utility systems include, but are not limited to, domestic water, natural gas, storm drain, sanitary sewer, electrical, and communication.

The project will aim to upgrade the most critical utility components considering operational risk and efficiencies, redundancy, utility bundling, and capacity needed for strategic growth, including expanding the primary electrical substation capacity at Grizzly Peak to power advanced supercomputing capability (NERSC-10) to full capacity and meet future lab power needs. LAMP will also implement a multi-system approach for the renewal and improvement of LBNL's utility assets, considering geographical limitations as well as potential synergies with nearby sustainment and improvement projects, that provide opportunities for enhancement. In addition to electrical expansion, the LAMP scope will upgrade multiple utility systems providing for overall increased reliability and ease of maintenance.

Justification

SC uses the capabilities of LBNL to execute 23 of the 24 core capabilities and the mission of multiple SC program offices, including ASCR, BER, BES, and HEP. The SC mission and multiple scientific programs require increased reliability, capability, and safety of LBNL's utility infrastructure. Utility infrastructure represents almost half of LBNL's large, deferred maintenance backlog and represents a significant capability gap in LBNL's ability to provide reliable and safe services to meet DOE's mission needs. Existing infrastructure is insufficient to support planned facility modernization and growth. Without a modern utility infrastructure backbone, future growth of the science mission at LBNL may not be achievable. For these reasons, direct infrastructure investment is necessary to address deferred maintenance reduction, restore operational reliability, increase resiliency, and provide the backbone necessary for scientific advancements.

LBNL has begun measures to strengthen the laboratory's resilience to outages due to planned safety outages or natural phenomena such as earthquakes, wildfires, and extreme weather.

LAMP will deliver modern and resilient general-purpose infrastructure which will be more efficient and sustainable. It will be designed to consider the best available and most efficient technology to enhance operations and maintenance of new systems and equipment and includes installation of a combination of data collection and monitoring systems that enable predicting failures and extreme weather events and adjusting in real time to minimize impacts to mission critical scientific operations. The initial stages of the project will enable an optimized NERSC-10 upgrade, which will play a central role in breakthrough science.

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.*

Key Performance Parameters (KPPs)

The KPPs are preliminary and may change as the project matures. The KPPs will be finalized in accordance with the M&O contractor's plan for project execution. The Threshold KPPs represent the minimum acceptable performance that the project must achieve. The Objective KPPs represent the desired project performance. Achievement of the baselined Threshold KPPs will be a prerequisite for project completion.

Performance Measure	Threshold	Objective
Storm Drainage System, Hydrauger/ Slope Stability	Install 1,000 Linear Feet of hydraugers.	Install up to 5,500 Linear Feet of hydraugers.
Sanitary Sewer	Install 150 Linear Feet of pipe.	Install up to 7,000 Linear Feet of pipe.
High Pressure City Water	Install new 12" ductile iron pipe (DIP) water main and remove existing main in the East Canyon Corridor.	Install new 12" DIP water main and remove existing main in the McMillan Corridor.
Communications & Data	Install 2,600 Linear Feet of ductbank.	Install up to 14,500 Linear Feet of ductbank with manholes and cables. (Lawrence Corridor).
Electrical Distribution/Grizzly Substation	Expand the Grizzly Substation to 70 MW capacity.	Expand the Grizzly Substation up to 150 MW capacity with two redundant lines with SCADA for new equipment.
		Provide a new SCADA Control Building.
		Provide two remote SCADA Control Rooms.
		Provide SCADA remote control and monitoring of existing and new circuit breakers.
		Install up to 400 Linear Feet of electrical feeders segregating lines 1 and 2 for SW-A1.
		Install SCADA for existing 115kV equipment.
	Install 2,700 Linear Feet of electrical feeders segregating lines 1 and 2.	Install up to 8,300 Linear Feet of electrical feeders segregating lines 1 and 2.
		Feed B59 (NERSC-10) with up to 80 MW of electrical power with 3,500 Linear Feet of redundant and segregated lines.

Performance Measure	Threshold	Objective
		Install up to 14,000 Linear Feet of electrical feeders and Pad Mounted Switches for electrical distribution loops, segregating lines 1 and 2.
		Provide up to 3 SCADA remote controls and monitoring of existing and new circuit breakers.
Natural Gas	Install 200 Linear Feet of pipe.	Install up to 5,500 Linear Feet of pipe. (Lawrence Corridor).
Compressed Air	Not Applicable	Install up to 7,500 Linear Feet of pipe.
Controls	Not Applicable	Install up to 150 Smart Meters for new wet utility construction.
		Provide integration with SCADA.
		Provide integration with Microgrid enhancement.

3. Financial Schedule

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design (TEC)			
Prior Years	29,400	29,400	5,832
FY 2024	1,000	1,000	3,158
FY 2025	13,400	13,400	3,500
FY 2026	—	—	16,000
Outyears	—	—	15,310
Total, Design (TEC)	**43,800**	**43,800**	**43,800**
Construction (TEC)			
Prior Years	5,425	5,425	—
FY 2024	17,900	17,900	—
FY 2025	11,600	11,600	—
FY 2026	13,100	13,100	25,000
Outyears	144,175	144,175	167,200
Total, Construction (TEC)	**192,200**	**192,200**	**192,200**
Total Estimated Cost (TEC)			
Prior Years	34,825	34,825	5,832
FY 2024	18,900	18,900	3,158
FY 2025	25,000	25,000	3,500
FY 2026	13,100	13,100	41,000
Outyears	144,175	144,175	182,510

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Total, Total Estimated Cost (TEC)	236,000	236,000	236,000

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Cost (OPC)			
Prior Years	3,263	3,263	3,263
Outyears	2,737	2,737	2,737
Total, Other Project Cost (OPC)	6,000	6,000	6,000

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Project Cost (TPC)			
Prior Years	38,088	38,088	9,095
FY 2024	18,900	18,900	3,158
FY 2025	25,000	25,000	3,500
FY 2026	13,100	13,100	41,000
Outyears	146,912	146,912	185,247
Total, TPC	242,000	242,000	242,000

4. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	37,250	38,500	N/A
Design - Contingency	6,550	11,500	N/A
Total, Design (TEC)	43,800	50,000	N/A
Construction	165,135	144,000	N/A
Construction - Contingency	27,065	42,000	N/A
Total, Construction (TEC)	192,200	186,000	N/A
Total, TEC	236,000	236,000	N/A

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Contingency, TEC	*33,615*	*53,500*	***N/A***
Other Project Cost (OPC)			
Conceptual Planning	2,610	N/A	**N/A**
Conceptual Design	2,190	2,610	**N/A**
Start-up	N/A	2,190	**N/A**
OPC - Contingency	1,200	1,200	**N/A**
Total, Except D&D (OPC)	**6,000**	**6,000**	**N/A**
Total, OPC	**6,000**	**6,000**	**N/A**
Contingency, OPC	*1,200*	*1,200*	***N/A***
Total, TPC	**242,000**	**242,000**	**N/A**
Total, Contingency (TEC+OPC)	***34,815***	***54,700***	***N/A***

5. Schedule of Appropriations Requests

(dollars in thousands)

Fiscal Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2025	TEC	34,825	18,900	30,000	—	152,275	236,000
	OPC	3,263	—	—	—	2,737	6,000
	TPC	38,088	18,900	30,000	—	155,012	242,000
FY 2026	TEC	34,825	18,900	25,000	13,100	144,175	236,000
	OPC	3,263	—	—	—	2,737	6,000
	TPC	38,088	18,900	25,000	13,100	146,912	242,000

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	4Q FY 2031
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	N/A

Related Funding Requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations	1,200	1,200	60,000	60,000
Utilities	12	12	600	600
Maintenance and Repair	3,000	3,000	150,000	150,000
Total, Operations and Maintenance	4,212	4,212	210,600	210,600

7. D&D Information

This project replaces critical infrastructure components; no new construction area is anticipated to be constructed in this project and it will not replace existing facilities.

	Square Feet
New area being constructed by this project at LBNL	None
Area of D&D in this project at LBNL	None
Area at LBNL to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None[e]
Area of D&D in this project at other sites	None
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Total area eliminated	None

8. Acquisition Approach

The LBNL Management and Operating (M&O) Contractor, University of California, is performing the acquisition for this project, overseen by the Berkeley Site Office. The M&O contractor is responsible for awarding and managing all subcontracts related to this project.

The Office of Science delegated Project Management Executive responsibilities to the National Laboratory Director. The project will be managed and delivered by the M&O Contractor. SC will evaluate the M&O contractor's performance through the annual laboratory performance appraisal process.

[e] With the implementation of OMB's Reduce the Footprint initiative, DOE no longer maintains the space bank. Footprint is managed using the Facility Information Management System, with the decisions on additions and offsets made in accordance with the DOE Real Property Efficiency Plan.

20-SC-79, Critical Utilities Infrastructure Revitalization, SLAC
SLAC National Accelerator Laboratory, SLAC
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2026 Request for the Critical Utilities Infrastructure Revitalization (CUIR) project is$10,000,000 of Total Estimated Cost (TEC) funding. The preliminary Total Estimated Cost (TEC) range for this project is $160,000,000 to $306,000,000. The preliminary Total Project Cost (TPC) range for this project is $165,000,000 to $311,000,000. Currently, these cost ranges encompass the most feasible preliminary alternatives. The preliminary TPC estimate for this project is $208,500,000.

The primary objective of this project is to close utilities infrastructure gaps, such as utility piping breaks, power fluctuations, faults, and cooling water interruptions, to support multi-program science missions at SLAC. Evolving technologies, instruments, experimental parameters, sensitivities, and complexity require increased reliability, resiliency, and service levels in electrical, mechanical, and civil systems site wide. The CUIR project will address the critical campus-wide utility and infrastructure issues by replacing, repairing, and modernizing the highest risk water/fire protection, sanitary sewer, storm drain, electrical, and cooling water system deficiencies. These needs have been identified through condition assessments, inspections, and recommendations from subject matter experts responsible for stewardship of the systems.

On April 29, 2025, CUIR was delegated to the Laboratory Director. Prior to that delegation, the project received DOE Order 413.3B approved Critical Decision (CD) is CD-3A, Approve Long-Lead Procurement and Early Site Preparation, which was approved on May 8, 2023.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update to the FY 2024 CPDS and does not include a new start for FY 2025.
FY 2025 funds will support construction activities in accordance with SLAC's plan for project execution.

Critical Milestone History

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
CUIR - Overall, SLAC	5/17/19	4/15/21	1/21/22	3Q FY 2029	1Q FY 2029	3Q FY 2029	1Q FY 2035
CUIR - Critical Electrical Work, SLAC	–	–	–	3Q FY 2025	2Q FY 2025	3Q FY 2025	4Q FY 2029
CUIR - Linac Utilities and Equipment, SLAC	–	–	–	1Q FY 2029	4Q FY 2028	1Q FY 2029	4Q FY 2032
CUIR - Sitewide Utilities, SLAC	–	–	–	3Q FY 2029	1Q FY 2029	3Q FY 2029	1Q FY 2035

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range; **Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable); **CD-1** – Approve Alternative Selection and Cost Range; **CD-2** – Approve Performance Baseline; **Final Design Complete** – Estimated/Actual date the project design will be/was complete(d); **CD-3** – Approve Start of Construction; **D&D Complete** – Completion of D&D work; **CD-4** – Approve Start of Operations or Project Closeout.

	Performance Baseline Validation	CD-3A
CUIR - Overall, SLAC	3Q FY 2029	5/8/23
CUIR - Critical Electrical Work, SLAC	–	5/8/23

CD-3A – Approve Long-Lead Procurements and Site Preparation Activities.

Project Cost History

(dollars in thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2025	13,000	191,000	204,000	4,500	4,500	208,500
FY 2026	27,706	176,294	204,000	4,500	4,500	208,500

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

2. Project Scope and Justification

Scope

CUIR's preliminary scope is to update major electrical gear, instrumentation, and cooling water systems for the two-mile long klystron gallery and accelerator housing constructed in 1962. Additionally, it will upgrade underground domestic water/fire protection, sanitary sewer, and storm drain systems site-wide. To facilitate its execution, CUIR is comprised of 3 subprojects to achieve complete and usable assets:

- Critical Electrical System Improvements: Subproject to replace and upgrade electrical components that present the greatest risk of failure or substandard performance of the Linac and associated Science projects.
- Critical Civil Utilities Replacement and Upgrade Subproject: Subproject to upgrade the storm drain, sanitary sewer and domestic/fire water piping along the Linac.
- Critical Mechanical Utilities Upgrade: Subproject will replace waveguide water heat exchangers, controls and pumps.

Justification

SLAC is currently implementing a Campus Strategy designed to support the DOE Science Mission, increase reliability, and minimize costs through safe, effective, resilient, and efficient operations.

Disruptions caused by power fluctuations, faults, and cooling water interruptions, and utility piping breaks have frequently impacted science research site wide. Electrical systems, pumps, and motors fail, valves on piping systems freeze, and there are inoperable or unsafe electrical components that require broad outages to respond and repair. Workarounds and administrative controls have been placed on existing equipment and systems because they are underrated, not operating as intended, or not designed/operational for today's science needs, which results in create tremendous inefficiencies and safety concerns, and sub-optimized operations.

The objective of the CUIR project is to reduce risks and close the capability gaps identified in SLAC's infrastructure assessments and surveys as they relate to storm water, sanitary sewer, domestic water/fire

protection, electrical, and cooling water systems. The CUIR project will reduce operational risks in critical infrastructure and utility support systems for all science programs and will retire $18,000,000 in deferred maintenance. These existing reliability gaps will continue to impede operational efficiency, resilience, reliability, productivity, and competitive viability in science programs and other related science research breakthroughs until they are filled. The project will include installation of a combination of data collection and monitoring systems that enable predicting failures and other events affecting operations, to make adjustments that minimize impacts to mission critical scientific operations.

Key Performance Parameters (KPPs)

The KPPs are preliminary and may change as the project matures. The KPPs will be finalized in accordance with the M&O contractor's plan for project execution. The Threshold KPPs represent the minimum acceptable performance that the project must achieve. The Objective KPPs represent the desired project performance. Achievement of the Threshold KPPs will be a prerequisite for project completion.

Performance Measure	Threshold	Objective
Subproject 1: Critical Electrical System Improvements		
	Install four (4) 12kV feeder cables and connect two feeders to final loads.*	Install eight (8) 12kV feeder cables and connect eight feeders to final loads.
	Install two (2) medium voltage switchgear at the MSS to allow feeder cable selection. *	None
	Install one (1) 230kV 60MVA (or larger) transformer. *	Install two (2) 230kV 65MVA transformers and four (4) fault current limitation equipment.**
	Install one (1) substation to provide 3.5MVA power*	None
	Install one (1) medium voltage switchgear at Sector 4 to allow feeder cable selection. *	None
	Replace monitoring equipment to provide monitoring and supervisory control input at eight (8) cubicles with one (1) integration hub, and one (1) Circuit Breaker Operating Remote Panel.	Replace monitoring equipment to provide monitoring and supervisory control input at fourteen (14) cubicles with one (1) integration hub, and one (1) Circuit Breaker Operating Remote Panel.
** Electrical equipment required to deliver noted threshold scope will be acquired upon approval of CD-3A.* *** Electrical equipment necessary to deliver noted objective scope, which may be acquired after approval of CD-3A to provide project team adequate time to integrate objective scope into Subproject 1 outage planning and construction schedule development.*		
Subproject 2: Critical Civil Utilities Replacement and Upgrades		
	Replace 12,000 linear feet of domestic/fire water piping. Install submeters, flow and pressure sensors at two (2) domestic water main branches.	Replace 18,000 linear feet of domestic/fire water piping. Install submeters, flow and pressure sensors at four (4) domestic water main branches.

Performance Measure	Threshold	Objective
	Replace 2,700 linear feet of water main, laterals, and valves. Install five (5) backflow preventors and five (5) fire hydrants. Install submeter flow and pressure sensors at one (1) domestic water key node.	None
	Replace 1,000 linear feet of sanitary sewer piping. Install sensors to measure sewage flow, Total Dissolved Solids (TDS) at two (2) effluent stations.	Install sensors to measure sewage flow, Total Dissolved Solids (TDS) at five (5) existing effluent stations.
	Replace or re-line 5,000 linear feet of storm drain piping.	Replace or re-line 10,000 linear feet of storm drain piping.
	Data Analytics Plan to enhance monitoring and operation performance for utility systems.	Data Analytics Plan to integrate substation and water-cooling system monitor output into recommended data-analytics platform.
	None	Replace and reconfigure medium-voltage equipment for four (4) Variable Voltage Substations (VVS) and replace low voltage gear at five (5) substations.
	None	Replace 4,500LF of 12kV cables in PEP region.
	None	Replace low voltage sections for ten (10) K-subs, ten (10) VVS and sixteen (16) Motor Control Centers (MCC).
Subproject 3: Subproject 3: Critical Mechanical Utilities Upgrades		
	Replace eleven (11) Waveguide water heat exchangers, controls, and pumps.	None
	Replace four (4) Klystron water heat exchangers, four (4) controls, and four (4) pumps.	Replace 1,000 KF of Klystron piping system.
	Replace eleven (11) Accelerator, Klystron, and Waveguide monitoring devices.	None
	Install two (2) natural gas main meters, replace six (6) existing BTU energy meter, and integrate each into data analytics platform.	Install four (4) main meters and eight (8) submeters for natural gas, replace twelve (12) energy BTU meters and integrate each into the data analytics platform.

Performance Measure	Threshold	Objective
	None	Replace ten (10) programmable logic controller (PLC) to provide Data Analytics input.
	None	Integrate substation and water-cooling system monitor output into data-analytics platform.

3. Financial Schedule

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design (TEC)			
Prior Years	12,856	12,856	5,150
FY 2024	6,000	6,000	1,906
FY 2025	—	—	3,000
FY 2026	—	—	5,000
Outyears	8,850	8,850	12,650
Total, Design (TEC)	**27,706**	**27,706**	**27,706**
Construction (TEC)			
Prior Years	22,069	22,069	2,821
FY 2024	24,000	24,000	4,827
FY 2025	20,000	20,000	15,000
FY 2026	10,000	10,000	35,000
Outyears	100,225	100,225	118,646
Total, Construction (TEC)	**176,294**	**176,294**	**176,294**
Total Estimated Cost (TEC)			
Prior Years	34,925	34,925	7,971
FY 2024	30,000	30,000	6,733
FY 2025	20,000	20,000	18,000
FY 2026	10,000	10,000	40,000
Outyears	109,075	109,075	131,296
Total, Total Estimated Cost (TEC)	**204,000**	**204,000**	**204,000**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Cost (OPC)			
Prior Years	2,683	2,683	2,683
FY 2024	100	100	100
FY 2025	250	250	250
FY 2026	250	250	250
Outyears	1,217	1,217	1,217
Total, Other Project Cost (OPC)	**4,500**	**4,500**	**4,500**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Project Cost (TPC)			
Prior Years	37,608	37,608	10,654
FY 2024	30,100	30,100	6,833
FY 2025	20,250	20,250	18,250
FY 2026	10,250	10,250	40,250
Outyears	110,292	110,292	132,513
Total, TPC	**208,500**	**208,500**	**208,500**

4. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	24,600	11,300	N/A
Design - Contingency	3,106	1,700	N/A
Total, Design (TEC)	**27,706**	**13,000**	N/A
Construction	139,144	151,000	N/A
Construction - Contingency	37,150	40,000	N/A
Total, Construction (TEC)	**176,294**	**191,000**	N/A
Total, TEC	**204,000**	**204,000**	N/A
Contingency, TEC	*40,256*	*41,700*	*N/A*
Other Project Cost (OPC)			
Conceptual Planning	4,500	4,500	N/A
Total, Except D&D (OPC)	**4,500**	**4,500**	N/A

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, OPC	4,500	4,500	N/A
Contingency, OPC	*N/A*	*N/A*	*N/A*
Total, TPC	208,500	208,500	N/A
Total, Contingency (TEC+OPC)	*40,256*	*41,700*	*N/A*

5. Schedule of Appropriations Requests

(dollars in thousands)

Fiscal Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2025	TEC	34,925	35,075	20,000	—	114,000	204,000
	OPC	2,683	100	250	—	1,467	4,500
	TPC	37,608	35,175	20,250	—	115,467	208,500
FY 2026	TEC	34,925	30,000	20,000	10,000	109,075	204,000
	OPC	2,683	100	250	250	1,217	4,500
	TPC	37,608	30,100	20,250	10,250	110,292	208,500

Notes:
- *Funding estimates are preliminary as a formal baseline has not been established.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	1Q FY 2035
Expected Useful Life	Average 30 years (based system)
Expected Future Start of D&D of this capital asset	N/A

Related Funding Requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations	8,673	8,673	260,176	260,176
Utilities	10,487	10,487	314,624	314,624
Maintenance and Repair	8,461	8,461	253,833	253,833
Total, Operations and Maintenance	27,621	27,621	828,632	828,632

7. D&D Information

The new area being constructed in this project is not replacing existing facilities.

	Square Feet
New area being constructed by this project at SLAC	3000 gsf
Area of D&D in this project at SLAC	None
Area at SLAC to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None[f]
Area of D&D in this project at other sites	None
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Total area eliminated	None

8. Acquisition Approach

The SLAC Management and Operating (M&O) contractor, Stanford University, is performing the acquisition for this project, overseen by the Stanford Site Office. The M&O contractor is responsible for awarding and managing all subcontracts related to this project.

The Office of Science delegated Project Management Executive responsibilities to the National Laboratory Director. The project will be managed and delivered by the M&O Contractor. SC will evaluate the M&O contractor's performance through the annual laboratory performance appraisal process.

[f] With the implementation of OMB's Reduce the Footprint initiative, DOE no longer maintains the space bank. Footprint is managed using the Facility Information Management System, with decisions on additions and offsets made in accordance with the DOE Real Property Efficiency Plan.

20-SC-80, Utilities Infrastructure Project, FNAL
Fermi National Accelerator Laboratory, FNAL
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2026 Request for the Utilities Infrastructure Project (UIP) is$12,000,000 of Total Estimated Cost (TEC) funding. The preliminary Total TEC range for this project is $248,000,000 to $403,000,000. The preliminary Total Project Cost (TPC) range for this project is $252,000,000 to $411,000,000. Currently, these cost ranges encompass the most feasible preliminary alternatives. The preliminary TPC estimate for this project is $314,000,000.

This project will modernize and upgrade obsolete and deteriorated utilities infrastructure at Fermi National Accelerator Laboratory (FNAL) and provide resiliency, reliability, and increased safety of operations to ensure the infrastructure can continue supporting the Laboratory's scientific missions. Major elements include modernization of the existing central utility building including an expansion to provide a new chilled water capacity to support current and future chilled water capacity, hot water, and low conductivity water systems. Additionally, the Kautz Road substation will be modernized to enhance its reliability and reduce safety risks. Both the modernization of the central utility building and the electrical substation are scheduled for construction during FNAL's FY 2028–2030 Long Accelerator Shutdown. The balance of the project will revitalize aging linear utilities across the FNAL site including sanitary sewers, domestic water, industrial cooling water, natural gas, and electrical feeders and equipment is in the early planning stages.

The most recent DOE Order 413.3B approved Critical Decision (CD) is CD-3A, Approve Long-Lead Procurements and Site Preparation Activities, which was approved for subprojects 1 and 2 on December 6, 2024.

A Federal Project Director with the appropriate certification level has been assigned to this project.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update to the FY 2025 CPDS and is not a new start for FY2026. The
FY 2026 Request will support construction activities after the appropriate CD approvals.

Critical Milestone History

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
UIP - Overall, FNAL	5/17/19	–	2/23/22	3Q FY 2029	4Q FY 2030	3Q FY 2029	3Q FY 2034
UIP - New Chill Water Plant, Cent Utility Build Upgrades, FNAL	–	–	–	3Q FY 2026	2Q FY 2025	3Q FY 2026	2Q FY 2031
UIP - Kautz Road Substation Replacement, FNAL	–	–	–	3Q FY 2026	2Q FY 2025	3Q FY 2026	1Q FY 2031
UIP - Linear Utilities, FNAL	–	–	–	3Q FY 2031	2Q FY 2031	3Q FY 2031	3Q FY 2034

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range; **Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable); **CD-1** – Approve Alternative Selection and Cost Range; **CD-2** – Approve Performance Baseline; **Final Design Complete** – Estimated/Actual date the project design will be/was complete(d); **CD-3** – Approve Start of Construction; **D&D Complete** – Completion of D&D work; **CD-4** – Approve Start of Operations or Project Closeout.

	Performance Baseline Validation	CD-3A
UIP - Overall, FNAL	3Q FY 2029	1Q FY 2025
UIP - New Chill Water Plant, Cent Utility Build Upgrades, FNAL	3Q FY 2026	12/6/24
UIP - Kautz Road Substation Replacement, FNAL	3Q FY 2026	12/6/24
UIP - Linear Utilities, FNAL	3Q FY 2031	4Q FY 2029

CD-3A – Approve Long-Lead Procurements and Site Preparation Activities.

Project Cost History

(dollars in thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, Total	TPC
FY 2025	40,750	269,250	310,000	4,000	4,000	314,000
FY 2026	48,950	261,050	310,000	4,000	4,000	314,000

Notes:
- *This project has not received CD-2 approval; therefore, funding estimates are preliminary.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

2. Project Scope and Justification

Scope

UIP's preliminary scope includes upgrading the highest risk major utility systems across the FNAL campus. Specifically, this project will first evaluate and identify the condition and risks of failure and inadequate performance of the industrial cooling water system, potable water distribution system, sanitary sewer and storm collection systems, natural gas distribution system, electrical distribution system, Kautz Road Substation, and the Central Utility Building. Selected portions of the systems with the highest risk of impact to operations will then be replaced or upgraded to assure safe, reliable, and efficient service to mission critical facilities. As such, the project will perform upgrades to obsolete, end-of-life components, which will increase capacity, reliability, and personnel safety for critical utilities. Long-lead procurements (e.g., mechanical, and electrical equipment) and site preparation was approved via a CD-3A, on 12/6/2024..

To facilitate its execution, UIP is comprised of three subprojects consisting of scope needed to achieve complete and usable assets. Subproject 1: the New Chilled Water Plant and Central Utility Plant Upgrades Subproject plans to 1) expand the existing Central Utility Building to provide chilled water capacity to support current and future loads, and 2) modernize the existing section of the Central Utility Building systems such as hot water and low conductivity water systems. Subproject 2: the Kautz Road Substation Replacement

Subproject plans to enhance the reliability of the Kautz Road Substation and reduce safety risks to personnel by replacing aging infrastructure, facilitating energy control, and reducing arc-flash incident energies. The primary construction phase of Subprojects 1 and 2 need to occur during FNAL's FY 2028–2030 Long Accelerator Shutdown to minimize disruption to the accelerator complex. Subproject 3: the Linear Utilities Replacement Subproject preliminary plans to revitalize aging linear utilities across the FNAL site including sanitary sewers, domestic water, industrial cooling water, natural gas, and electrical feeders and equipment. These improvements plan to enhance system reliability and reduce deferred maintenance.

Justification

DOE's Office of Science (SC) advances new experiments, international partnerships, and research programs to transform the understanding of nature and to advance U.S. energy, economic and national security interests. This mission requires the modernization and upgrades of obsolete and severely deteriorated utilities infrastructure at FNAL. SC has identified recapitalization of FNAL's Central Utilities Building and distributed site utility infrastructure to as a priority need ensure the stewardship of SC's investments and to provide modern, world-class facilities for scientific experiments and research.

Although there has been substantial investment in recent years to modernize and construct new research facilities at FNAL, much of FNAL's utility infrastructure serving these facilities is over 50 years old, is beyond useful life and suffering from failures, decreased reliability, lack of redundancy, and limitations in capacity. As such, there is an urgent need to revitalize and selectively upgrade FNAL's existing major utility systems to ensure reliable service, meet capacity requirements, and enable readiness of facilities critical to the research mission.

The UIP will reduce operational risks in critical enabling infrastructure and utility support systems and increase resilience, efficiency, reliability, productivity, and competitive viability in science programs. The project includes installation of a combination of data collection and monitoring systems that enable predicting failures and other events affecting operations and making adjustments to minimize impacts to mission critical scientific operations.

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*.

Key Performance Parameters (KPPs)

The KPPs are preliminary and may change as the project continues towards CD-2. At CD-2 approval, the KPPs will be baselined. The Threshold KPPs represent the minimum acceptable performance that the project must achieve. The Objective KPPs represent the desired project performance. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion.

Performance Measure	Threshold	Objective
Chilled Water Plant and CUB Upgrades	• Construct an addition to CUB for chilled water production (5,000 tons cooling capacity) • Install chillers • Install arc-resistant switchgear • Install boilers to cover historical heating load of 11.4 MMBH, with natural gas boilers for emergency backup • Provide vibration monitoring of chillers, cooling towers, and pumps integrated with AI/ML predictive analytics	▪ Increase chilled water production to 6,000 tons cooling capacity. ▪ Upgrade chillers to magnetic bearing chillers ▪ Install heat recovery chillers to provide heating to Wilson Hall with electric boiler backup

Performance Measure	Threshold	Objective
Kautz Road Substation	▪ Replace the KRS Control House to improve arc flash safety requirements ▪ Replace bus duct ▪ Replace T-85 Transformer ▪ Replace 345kV Circuit Breaker	• Replace Harmonic Filter Components • Replace CCVTs, metering transformers
Linear Utilities Replacement	▪ Revitalize 5 miles of the Industrial Cooling Water system.	▪ Revitalize 16 miles of the Industrial Cooling Water system.
	▪ Revitalize 5 miles of the Domestic Water System (DWS).	▪ Revitalize 19 miles of the Domestic Water System (DWS).
	▪ Revitalize 3.5 miles of the Sanitary Sewer systems.	▪ Revitalize 11 miles of the Sanitary Sewer System.
	▪ Revitalize 2 miles of underground Natural Gas lines.	▪ Revitalize 22 miles of underground Natural Gas lines.
	▪ Revitalize 2 miles of electrical distribution feeders and associated unit substations, transformers, etc.	▪ Revitalize 65 miles of electrical distribution feeders and associated unit substations, transformers, etc. ▪ Provide Electrical Code upgrades to Master Substation ▪ Revitalize 100 percent of the High-Pressure Sodium exterior lights along sidewalks, roads, and parking lots with LED.

3. Financial Schedule

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design (TEC)			
Prior Years	31,500	31,500	4,174
FY 2024	3,500	3,500	7,800
FY 2025	—	—	6,000
FY 2026	—	—	15,525
Outyears	13,950	13,950	15,451
Total, Design (TEC)	**48,950**	**48,950**	**48,950**
Construction (TEC)			
FY 2024	31,500	31,500	—
FY 2025	35,000	35,000	27,500
FY 2026	12,000	12,000	18,000

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Outyears	182,550	182,550	215,550
Total, Construction (TEC)	**261,050**	**261,050**	**261,050**
Total Estimated Cost (TEC)			
Prior Years	31,500	31,500	4,174
FY 2024	35,000	35,000	7,800
FY 2025	35,000	35,000	33,500
FY 2026	12,000	12,000	33,525
Outyears	196,500	196,500	231,001
Total, Total Estimated Cost (TEC)	**310,000**	**310,000**	**310,000**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Cost (OPC)			
Prior Years	2,050	2,050	2,050
Outyears	1,950	1,950	1,950
Total, Other Project Cost (OPC)	**4,000**	**4,000**	**4,000**

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Project Cost (TPC)			
Prior Years	33,550	33,550	6,224
FY 2024	35,000	35,000	7,800
FY 2025	35,000	35,000	33,500
FY 2026	12,000	12,000	33,525
Outyears	198,450	198,450	232,951
Total, TPC	**314,000**	**314,000**	**314,000**

4. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	42,750	33,500	N/A
Design - Contingency	6,200	7,250	N/A
Total, Design (TEC)	**48,950**	**40,750**	N/A
Construction	215,700	225,000	N/A
Construction - Contingency	45,350	44,250	N/A
Total, Construction (TEC)	**261,050**	**269,250**	N/A
Total, TEC	**310,000**	**310,000**	N/A
Contingency, TEC	*51,550*	*51,500*	*N/A*
Other Project Cost (OPC)			
Conceptual Planning	880	880	N/A
Conceptual Design	1,170	1,170	N/A
OPC - Contingency	1,950	1,950	N/A
Total, Except D&D (OPC)	**4,000**	**4,000**	N/A
Total, OPC	**4,000**	**4,000**	N/A
Contingency, OPC	*1,950*	*1,950*	*N/A*
Total, TPC	**314,000**	**314,000**	N/A
Total, Contingency (TEC+OPC)	***53,500***	***53,450***	*N/A*

5. Schedule of Appropriations Requests

(dollars in thousands)

Fiscal Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2025	TEC	31,500	45,000	45,000	—	188,500	310,000
	OPC	2,050	—	—	—	1,950	4,000
	TPC	33,550	45,000	45,000	—	190,450	314,000
FY 2026	TEC	31,500	35,000	35,000	12,000	196,500	310,000
	OPC	2,050	—	—	—	1,950	4,000
	TPC	33,550	35,000	35,000	12,000	198,450	314,000

Notes:
- *This project has not received CD-2 approval; therefore, funding estimates are preliminary.*
- *Other Project Costs (OPC) are funded through laboratory overhead.*

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	3Q FY 2034
Expected Useful Life	30 years
Expected Future Start of D&D of this capital asset	N/A

Related Funding Requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations	287	287	8,610	8,610
Utilities	577	577	17,310	17,310
Maintenance and Repair	287	287	8,610	8,610
Total, Operations and Maintenance	1,151	1,151	34,530	34,530

7. D&D Information

The new area being constructed in this project is not replacing existing facilities.

	Square Feet
New area being constructed by this project at FNAL	10,000 – 30,000
Area of D&D in this project at FNAL	None
Area at FNAL to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None[g]
Area of D&D in this project at other sites	None
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	None
Total area eliminated	None

8. Acquisition Approach

The FNAL Management and Operating (M&O) contractor, FNAL Research Alliance LLC, will perform the acquisition for this project, overseen by the FNAL Site Office. The M&O contractor is responsible for awarding and managing all subcontracts related to this project. Project performance metrics will be performed by in-house management and Project Controls. SC will evaluate the M&O contractor's performance through the annual laboratory performance appraisal process

SC and the M&O will draw from lessons learned from other SC projects and other similar facilities in planning and executing the project.

[g] With the implementation of OMB's Reduce the Footprint initiative, DOE no longer maintains the space bank. Footprint is managed using the Facility Information Management System, with decisions on additions and offsets made in accordance with the DOE Real Property Efficiency Plan.