DOE/EIS-0547-S1

# Final Supplemental Environmental Impact Statement for Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory



May 2026

# COVER SHEET

**RESPONSIBLE FEDERAL AGENCY**: U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA)

**TITLE**: Final Supplemental Environmental Impact Statement (SEIS) for Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory (LLNL)

**LOCATION**: Livermore, California

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This document is available for viewing and downloading on the DOE NEPA website (https://www.energy.gov/nepa/doeeis-0547-s1-supplemental-eis-enhanced-plutonium-facility-utilization-livermore-california).

**Abstract**: The NNSA Nuclear Security Enterprise is currently performing the highest throughput of work in over 30 years, which includes plutonium research and development (R&D). As the nation's weapons continue to age beyond their original design lifetime, an increased amount of experimental data developed through plutonium R&D is necessary to continue NNSA's science-based stewardship of the nuclear weapons stockpile. Since publication of the 2023 LLNL Site-wide Environmental Impact Statement (SWEIS), NNSA identified a need for additional R&D capacity and capability due to new and evolving international security concerns. NNSA is constrained in plutonium R&D capacity and capability, and the Plutonium Facility R&D capabilities at LLNL could be better optimized in support of mission areas.

NNSA proposes an Enhanced Plutonium Facility Utilization project at LLNL. This project would increase the amount of fissile materials for R&D operations at the Plutonium Facility, which would require increasing the facility Security Category (CAT) from Security CAT III operations to Security CAT II. This Final LLNL SEIS tiers from and utilizes the 2023 LLNL SWEIS as the baseline data (for the No-Action Alternative for the SEIS) and analyzes the potential environmental impacts for the Proposed Action (Enhanced Plutonium Facility Utilization) and the No-Action Alternative.

In accordance with DOE's NEPA Implementing Procedures (June 30, 2025), the Draft LLNL SEIS was issued for a 30-day comment period to agencies with jurisdiction by law or special expertise with respect to any environmental impact involved. NNSA considered the comments from the agencies and provided responses, which are appended to this Final LLNL SEIS. This Final LLNL SEIS is compliant with Section 102(2)(C) of NEPA and DOE's NEPA Implementing Procedures. This SEIS is approximately 70 pages and was completed in less than two years.

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## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ADT | average daily traffic |
| BAWSCA | Bay Area Water Supply and Conservation Agency |
| BEA | Bureau of Economic Analysis |
| BMP | best management practices |
| CAT | (Security) Category (of Special Nuclear Materials) |
| CBFO | Carlsbad Field Office |
| CDC | Centers for Disease Control and Prevention |
| CEQ | Council on Environmental Quality |
| CEQA | *California Environmental Quality Act* |
| CERCLA | *Comprehensive Environmental Response, Compensation, and Liability Act* |
| CFR | Code of Federal Regulations |
| Ci | Curie (a unit of radioactivity) |
| CO | carbon monoxide |
| CRD | Comment Response Document |
| CSVA | Conceptual Security Vulnerability Assessment |
| DD&D | Decontamination, Decommissioning, and Demolition |
| DoD | United States Department of Defense |
| DOE | United States Department of Energy |
| DOF | Department of Finance (State of California) |
| DOT | United States Department of Transportation |
| DSA | documented safety analysis |
| EIR | Environmental Impact Report |
| EIS | Environmental Impact Statement |
| EPHA | Emergency Planning Hazard Assessment |
| FFA | Federal Facility Agreement |
| FR | *Federal Register* |
| GHG | greenhouse gas |
| GSA | General Service Area |
| kW | kilowatt |
| IDA | intentional destructive act |
| INL | Idaho National Laboratory |
| LANL | Los Alamos National Laboratory |
| LBNL | Lawrence Berkeley National Laboratory |
| LCF | Latent Cancer Fatality |
| LEPs | Life Extension Programs |
| LFO | Livermore Field Office |
| LLNL | Lawrence Livermore National Laboratory |
| LLNL SWEIS | *Site-Wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory* |
| LLW | low-level waste |
| LOS | level of service |
| LWA | *Land Withdrawal Act* |
| LWRP | Livermore Water Reclamation Plant |
| MAR | material-at-risk |
| MEI | maximally exposed individual |

| | |
|---|---|
| MLLW | mixed low-level waste |
| MW | megawatt |
| MODs | Modifications |
| NA | No-Action Alternative |
| NAP | NNSA Policy |
| NEPA | *National Environmental Policy Act* |
| NIF | National Ignition Facility |
| NNSA | National Nuclear Security Administration |
| NNSS | Nevada National Security Site |
| NRC | U.S. Nuclear Regulatory Commission |
| NRHP | National Register of Historic Places |
| NOA | Notice of Availability |
| NOI | Notice of Intent |
| NPDES | National Pollutant Discharge Elimination System |
| OSHA | Occupational Safety and Health Administration |
| PEIS | Programmatic Environmental Impact Statement |
| PG&E | Pacific Gas and Electric Company |
| PIDAS | perimeter intrusion detection and assessment system |
| Pu | plutonium |
| R&D | research and development |
| RADTRAN | Radioactive Material Transport computer code |
| ROD | Record of Decision |
| ROI | Region of Influence |
| SA | Supplement Analysis |
| SBD | safety basis document |
| SFPUC | San Francisco Public Utilities Commission |
| SEIS | Supplemental Environmental Impact Statement |
| SLAC | Stanford Linear Accelerator Center |
| SNM | Special Nuclear Material |
| SRA | Security Risk Assessment |
| SRNS | Savannah River Nuclear Solutions |
| SRS | Savannah River Site |
| SSP | Stockpile Stewardship Program |
| SWEIS | Site-Wide Environmental Impact Statement |
| SWPPP | Stormwater Pollution Prevention Plan |
| TRU | transuranic (waste) |
| TSD | treatment, storage, and disposal |
| U.S. | United States |
| USEPA | United States Environmental Protection Agency |
| WCI | Weapons and Complex Integration |
| WIPP | Waste Isolation Pilot Plant |

# CONVERSION CHART

| TO CONVERT FROM U.S. CUSTOMARY INTO METRIC | | | TO CONVERT FROM METRIC INTO U.S. CUSTOMARY | | |
|---|---|---|---|---|---|
| **If you know** | **Multiply by** | **To get** | **If you know** | **Multiply by** | **To get** |
| | | **Length** | | | |
| inches | 2.540 | centimeters | centimeters | 0.3937 | inches |
| feet | 30.48 | centimeters | centimeters | 0.03281 | feet |
| feet | 0.3048 | meters | meters | 3.281 | feet |
| yards | 0.9144 | meters | meters | 1.094 | yards |
| miles | 1.609 | kilometers | kilometers | 0.6214 | miles |
| | | **Area** | | | |
| square inches | 6.452 | square centimeters | square centimeters | 0.1550 | square inches |
| square feet | 0.09290 | square meters | square meters | 10.76 | square feet |
| square yards | 0.8361 | square meters | square meters | 1.196 | square yards |
| acres | 0.4047 | hectares | hectares | 2.471 | acres |
| square miles | 2.590 | square kilometers | square kilometers | 0.3861 | square miles |
| | | **Volume** | | | |
| fluid ounces | 29.57 | milliliters | milliliters | 0.03381 | fluid ounces |
| gallons | 3.785 | liters | liters | 0.2642 | gallons |
| cubic feet | 0.02832 | cubic meters | cubic meters | 35.31 | cubic feet |
| cubic yards | 0.7646 | cubic meters | cubic meters | 1.308 | cubic yards |
| | | **Weight** | | | |
| ounces | 28.35 | grams | grams | 0.03527 | ounces |
| pounds | 0.4536 | kilograms | kilograms | 2.205 | pounds |
| short tons | 0.9072 | metric tons | metric tons | 1.102 | short tons |
| | | **Temperature** | | | |
| Fahrenheit (ºF) | subtract 32, then multiply by 5/9 | Celsius (ºC) | Celsius (ºC) | multiply by 9/5, then add 32 | Fahrenheit (ºF) |
| Kelvin (K) | subtract 273.15 | Celsius (ºC) | Celsius (ºC) | add 273.15 | Kelvin (K) |

*Note: 1 sievert = 100 rem*

# CHAPTER 1

# Introduction and Purpose and Need for Action

# 1.0 INTRODUCTION AND PURPOSE AND NEED FOR ACTION

## 1.1 INTRODUCTION

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the United States (U.S.) Department of Energy (DOE), is responsible for meeting the national security requirements established by the President and Congress to maintain and enhance the safety, reliability, and performance of the U.S. nuclear weapons stockpile. The continued operation of Lawrence Livermore National Laboratory (LLNL or Laboratory) is critical to NNSA's Stockpile Stewardship Program (SSP), to prevent the spread and use of nuclear weapons worldwide, and to many other areas that may impact national security and global stability (50 U.S.C. §2521).

**Stockpile Stewardship Program (SSP)**

The SSP enables NNSA to extend the lifespan and ensure the continued safety, reliability, and performance of nuclear weapons that have reached the end of their original design life through life extension and modification programs.

In 2023 NNSA completed a *Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory* (DOE/EIS-0547; 2023 LLNL SWEIS) that analyzed the potential environmental impacts of the reasonable alternatives for continuing LLNL operations for approximately the next 15 years (NNSA 2023). The Record of Decision (ROD) for the 2023 LLNL Site-Wide Environmental Impact Statement (SWEIS) was issued on February 20, 2024 (89 *Federal Register* [FR]12831).

NNSA proposes an Enhanced Plutonium Facility Utilization project in Livermore, California. This project would increase the amount of fissile materials for research and development (R&D) operations at the Plutonium Facility, which would require increasing the facility Security Category (CAT)[1] from Security CAT III operations to Security CAT II. NNSA originally identified the need for this project late in the 2023 LLNL SWEIS process, after the public comment period in May 2023, but did not have enough information to analyze the potential environmental impacts to incorporate it into the 2023 LLNL SWEIS (NNSA 2023a). Since then, more studies were done on the project, and NNSA now has the information needed to perform a full, comprehensive, and robust environmental analysis by preparing this Supplemental Environmental Impact Statement (SEIS).

On June 30, 2025, DOE published its new *National Environmental Policy Act* (NEPA) Implementing Procedures (DOE 2026). NNSA has prepared this SEIS in accordance with these recently issued DOE NEPA implementing procedures. The new procedures state that DOE shall prepare a supplemental EIS only if a major federal action remains to occur and 1) DOE makes substantial changes to the proposed action that are relevant to environmental concerns; or 2) DOE decides, in its discretion, that there are substantial new circumstances or information about the

[1] Determination of security category involves grouping materials by type, attractiveness level, and quantity that can be used within a nuclear facility. The security category sets the security force levels and infrastructure needed to protect the material. DOE Order 474.2A, Nuclear Material Control and Accountability, defines four designated security categories (Security Category I, II, III, and IV). The greatest quantities are included under Security Category I, and lesser quantities are included in descending order under Security Category II, III, and IV (DOE 2023a).

significance of the adverse effects that have bearing on the proposed action or its effects (DOE 2026).

NNSA determined that implementing this project will require a separate NNSA decision through a SEIS. This SEIS tiers from and utilizes the 2023 LLNL SWEIS as the baseline data (for the No-Action Alternative for the SEIS) and analyzes the potential environmental impacts for the Proposed Action (Enhanced Plutonium Facility Utilization), which would involve R&D activities with increased amounts of fissile materials being used within a work area and would increase material shipments and waste generation/shipments during operations. These proposed activities would necessitate upgrading the security category of the LLNL Plutonium Facility from Security CAT III to Security CAT II operations. This upgrade would require conducting security and infrastructure construction activities and adding operational and security personnel for Security CAT II operations. Although NNSA is proposing a change to the security category of the facility, NNSA is not proposing changes to the hazard categorization[2] of the facility, nor changes to the administrative limit in the Plutonium Facility[3] as described in the 2023 LLNL SWEIS.

## 1.2 BACKGROUND

The Plutonium Facility is part of the LLNL Superblock[4] which includes several supporting R&D facilities within the 770-acre site in Livermore, California (Livermore Site). The Livermore Site is located about 50 miles east of San Francisco in southeastern Alameda County.

The Plutonium Facility was built in 1961 and was operated as a Security CAT I facility for more than 50 years. Its mission is to support the nuclear weapons program through research in the physical, metallurgical, and chemical properties of plutonium, including aging, dismantlement, and disposition in support of stockpile stewardship, as well as fabrication, testing, and assembly of plutonium device parts in support of those experimental activities. By the end of 2012, NNSA removed excess plutonium inventories, resulting in the LLNL Plutonium Facility operating at Security CAT III operational levels, which was an effective level of support for that time. As discussed in Section 1.4 of this SEIS, going forward, NNSA needs additional plutonium R&D capacity and capability due to new and evolving international security concerns. This additional capacity and capability is critical to executing the DOE/NNSA national security requirements.

The 21st Century presents a growing set of challenges that are the focus of the Laboratory's mission as a DOE/NNSA national security laboratory. LLNL's defining responsibility is to ensure the safety, security, and reliability of the nation's nuclear deterrent, but its mission is broader than stockpile stewardship. The Laboratory's science and engineering capabilities are used to respond to national security and global security concerns that range from nuclear proliferation and terrorism

[2] Under 10 CFR Part 830, DOE assigns hazard categories to nuclear and radiological facilities in accordance with the potential consequences of a radiological accident. The hazard category is based on the quantities of hazardous radiological materials, per DOE-STD-1027. The LLNL Plutonium facility is a Hazard Category 2 nuclear facility, which means it would have the potential for significant onsite consequences.

[3] Administrative limits are defined as the maximum amount of the referenced material allowed at the Plutonium Facility.

[4] The Superblock is comprised of facilities that conduct nuclear R&D and is approximately 8 acres centrally located within the LLNL site. A detailed description of the Superblock facilities is contained in Appendix A of the 2023 LLNL SWEIS. The Plutonium Facility is described in Appendix A, Section A.1.2.28.

to energy security. Programs at LLNL support DOE, NNSA, Department of Defense (DoD), Department of Homeland Security, and other mission sponsors.

Operations at LLNL help to ensure that the nation's nuclear deterrent remains safe, secure, and reliable. LLNL participates in the formal annual assessment process of the nuclear weapons stockpile which thus far has allowed NNSA and DoD to certify the safety, reliability, and performance of the U.S. nuclear weapons stockpile to the President without the use of underground nuclear explosive testing. Operations at the Plutonium Facility are critical to the success of the SSP at LLNL.

## 1.3 RELEVANT NEPA ANALYSES AND RELATIONSHIPS TO THIS SEIS

This LLNL SEIS has been prepared in accordance with the *National Environmental Policy Act of 1969*, as amended (42 U.S.C. 4331, et seq.) and DOE's NEPA Implementing Procedures (DOE 2026). In addition to compliance with NEPA, this LLNL SEIS addresses requirements in the *California Environmental Quality Act* (CEQA), Public Resources Code Section 21000, et seq. Because requirements for NEPA and CEQA are different, the document has been prepared to comply with whichever requirements are more stringent. Appendix A provides a crosswalk of the NEPA and CEQA requirements and identifies/categorizes the potential CEQA impacts based on the analysis in this SEIS.

The following references identify previous NEPA documents/analyses related to plutonium operations and de-inventory of special nuclear material (SNM) at LLNL. NNSA notes that the 2023 LLNL SWEIS and corresponding ROD are the most relevant and important as related to this SEIS.

- The 2023 LLNL SWEIS and its corresponding ROD (89 FR 12831) analyzed the impacts of continued operations at LLNL. This was the conclusion of a process involving detailed analysis, public involvement, and document preparation. In particular, the 2023 LLNL SWEIS analyzed proposed Plutonium Facility operations at Security CAT III levels.
- In 2011, NNSA prepared a Supplement Analysis (SA) (DOE/EIS-0348-SA-03) to the 2005 LLNL SWEIS (DOE/EIS-0348; DOE/EIS-0236-S3) which stated the ongoing De-Inventory Project would decrease the amount of SNM in long-term storage onsite and continue the transfer of Security CAT I/II SNM from LLNL to receiver sites through the end of 2012 (NNSA 2011).
- In 2008, NNSA completed the Complex Transformation Supplemental Programmatic EIS (DOE/EIS-0236-S4; NNSA 2008) which stated that NNSA would continue on-going activities to transfer Security CAT I/II SNM from LLNL to NNSA receiver sites (i.e., Los Alamos National Laboratory [LANL] and Savannah River Site [SRS]) under the No-Action Alternative and phase out Security CAT I/II operations at LLNL by the end of 2012.
- In 2007, NNSA completed a Supplement Analysis (DOE/EIS-0229-SA-04) and an amended ROD (72 FR 51807) on the Storage and Disposition of Weapons-Usable Fissile Materials EIS (DOE 1996, NNSA 2007), which analyzed consolidating storage of surplus, non-pit weapons usable plutonium from LLNL, LANL, and the Hanford Site to SRS.

- The 2005 LLNL SWEIS (DOE/EIS-0348) and its corresponding ROD (70 FR 71491) analyzed the impacts of continued operations at LLNL, including Superblock operations at Security CAT I (NNSA 2005).
- In 2024, NNSA completed an SA (DOE/EIS-0426-SA-01) and an amended ROD (89 FR 61104) on the SWEIS for the Continued Operation of the DOE/NNSA National Nevada Security Site (NNSS) and Offsite Locations in the State of Nevada. NNSS provides plutonium target material shipments to and from the LLNL Superblock for R&D experiments.

On May 9, 2025, NNSA published a Notice of Intent (NOI) in the *Federal Register* (90 FR 19706) announcing that it would prepare a Programmatic Environmental Impact Statement (PEIS) to evaluate the environmental impacts of pit production at single and multiple DOE sites. It should be noted that LLNL is only involved in plutonium R&D and design and certification activities and not in the production of plutonium pits. Therefore, the activities at LLNL are not included in the scope of that PEIS.

## 1.4 PURPOSE AND NEED

The NNSA Nuclear Security Enterprise is currently performing the highest throughput of work in over 30 years, which includes plutonium R&D. As the nation's weapons continue to age beyond their original design lifetime, an increased amount of experimental data developed through plutonium R&D is necessary to continue NNSA's science-based stewardship of the nuclear weapons stockpile. NNSA has a need for additional R&D capacity and capability due to new and evolving international security concerns (NNSA 2023a). NNSA is constrained in plutonium R&D capacity and capability, and the Plutonium Facility R&D capabilities at LLNL could be better optimized in support of mission areas including sustainment and assessment of the active stockpile and design and certification of nuclear explosive packages for modernization programs.

The LLNL Superblock, which includes the Plutonium Facility, remains an essential part of the nation's plutonium R&D infrastructure. As mentioned above, prior to 2012, the Superblock conducted plutonium R&D operations at Security CAT I operational levels, and by the end of 2012, NNSA recategorized the LLNL Superblock to Security CAT III operations as this appeared to be an effective level of support for that time. However, the limitations of Security CAT III operations at LLNL are now insufficient for NNSA's plutonium R&D requirements. Sufficient plutonium R&D capacity and capability at the Security CAT II operational level does not exist within the NNSA complex (NNSA 2024).

To satisfy this need, NNSA is proposing to enhance the utilization of the existing Plutonium Facility. The LLNL Plutonium Facility was originally built and operated as a Security CAT I facility and is the only immediately available facility with the capacity and capability to conduct this required Security CAT II work. Increasing plutonium R&D capacity and capability through construction of a new Security CAT I or II facility (at LLNL or at another site) could take decades, while re-establishment of Security CAT II operations at LLNL may take approximately five years. Therefore, constructing a new Security CAT I or CAT II facility at LLNL or elsewhere within the

NNSA Complex was not considered a reasonable alternative to be evaluated in this SEIS (see Section 3.4).

On June 3, 2024, the NNSA Administrator approved a memorandum request to prepare a supplemental EIS to the 2023 LLNL SWEIS. In this request, the Office of Defense Programs communicated a mission need to evaluate enhanced use of the Plutonium Facility at LLNL for the expansion of plutonium R&D capability to meet vital stockpile stewardship mission requirements, including recategorizing it from a Security CAT III to a Security CAT II facility (NNSA 2024).

## 1.5 PROPOSED ACTION AND ALTERNATIVES

### 1.5.1 Proposed Action: Enhanced Plutonium Facility Utilization

Under the SEIS, LLNL would continue ongoing operations and enhance the utilization of the LLNL Plutonium Facility, Building 332, in the Superblock to support increased mission need. This entails: (1) enhancing utilization of Building 332 to allow an increase in R&D activities and a corresponding increase in the amount of fissile materials used; (2) upgrading the security categorization of the Plutonium Facility from Security CAT III to Security CAT II: (3) conducting security and other infrastructure construction activities at the Superblock to support Security CAT II operations in the Plutonium Facility; (4) increasing materials shipments and waste generation/shipments; (5) adding operational and security personnel to support Security CAT II operations; and (6) constructing a new office building to support additional personnel.

### 1.5.2 No-Action Alternative: Continuing Present Operations

The No-Action Alternative for this SEIS is the implementation of the ROD for the 2023 LLNL SWEIS, which would continue current Plutonium Facility (Security CAT III) operations as described in the 2023 LLNL SWEIS. The work area limits would remain at Security Category III limits within a designated work area and Building 332 would continue to operate as a Hazard Category 2 facility.

### 1.5.3 Other Alternatives Considered

NNSA considered public input and comments received during the scoping process in determining the alternatives analyzed in detail in this SEIS. NNSA only considered reasonable alternatives that would meet the purpose and need described in Section 1.4 of this SEIS. Section 3.4 of this SEIS discusses other alternatives that NNSA considered in developing this Draft SEIS. As discussed in that section, those alternatives were eliminated from detailed analysis because they would not meet the purpose and need described in Section 1.4 of this SEIS.

## 1.6 PUBLIC PARTICIPATION PROCESS

Although scoping, which is a process in which the public and stakeholders provide comments directly to the federal agency on the scope of an EIS, is not required for a SEIS, NNSA chose to have a scoping process for this SEIS. The NEPA process for this SEIS began with the publication of the NOI in the Federal Register. On January 13, 2025, NNSA published the NOI to prepare this

SEIS (90 FR 2678), and invited other Federal agencies, Native American Tribes, State and local governments, industry, other organizations, and members of the public to review and submit comments on the scope and alternatives of the LLNL SEIS. In the NOI, NNSA announced a 30-day SEIS scoping period that was scheduled to end on February 12, 2025. NNSA held a virtual scoping meeting on January 29, 2025, to provide information on the SEIS and to receive public comments. In response to initial public comments, NNSA announced at the scoping meeting that it was extending the SEIS scoping period until March 3, 2025.

Approximately 81 people attended the virtual scoping meeting and 25 provided comments (some spoke multiple times). A court reporter provided a transcript of the comments given at the scoping meeting. In addition to the verbal comments made at the scoping meeting, NNSA received 59 comment documents (including two that were submitted via telephone and transcribed). All comments were reviewed by NNSA. Comments on similar or related topics were grouped under common issue categories as a means of summarizing them. Table 1-1 provides a summary of the comments received and identifies where these comments are addressed in this SEIS (and/or, as appropriate, in sections of the 2023 LLNL SWEIS). NNSA considered all comments in preparing this SEIS. The transcripts from the scoping meetings and all comment documents received are included in the Administrative Record for this SEIS.

In accordance with DOE's NEPA Implementing Procedures (DOE 2026), NNSA will publish the Final SEIS and the amended Record of Decision at the same time (see the Notice of Change in the *Federal Register* [90 FR 51732] and Appendix B of this SEIS, which announced and described the revised NEPA process for this LLNL SEIS). Consistent with DOE's NEPA Implementing Procedures, after preparation of the Draft LLNL SEIS, NNSA sought the comments of any Federal agency that has jurisdiction by law or special expertise with respect to any environmental impact involved. Accordingly, the Draft LLNL SEIS was issued in mid-January 2026 to the U.S. Environmental Protection Agency (USEPA) Region 9 and California's State Clearinghouse for a 30-day review and comment period. The comment period ended on February 18, 2026. Appendix C of this Final LLNL SEIS contains comments that were received from the USEPA Region 9, as well as NNSA's responses. NNSA considered the comments received and made changes to the LLNL SEIS based on these comments. No comments were received from the California State Clearinghouse.

## Table 1-1. Summary of Scoping Comments

| Scoping Comment Issue | Section(s) of 2023 LLNL SWEIS where addressed | Section(s) of SEIS where addressed |
|---|---|---|
| **Purpose and Need** | | |
| Is the need for the SEIS Proposed Action related to expansion of National Ignition Facility (NIF) experiments? | Not applicable | 1.4 |
| This rushed and unnecessary program is counter to US security needs and contributes to a nuclear arms race. | Not applicable | 1.4 |
| **National Security Policies** | | |
| The production of radioactive materials for use in human conflict is immoral, illegal under international law, and inconsistent with the stated goals of the current Administration. | 1.3 | 1.4 |
| Support for dismantling warheads. Funding for plutonium pits for new nuclear weapons threatens peace. | 1.3 | 1.4 |
| The US should reduce the push for an arms race by declaring it does not need new nuclear weapons or new pits. | 1.3 | 1.4 |
| **Proposed Action and SWEIS Alternatives** | | |
| Provide a more detailed description of the project and why it warrants the need for a change in the security category. | Not applicable | 3.2 |
| The SEIS should address whether having more plutonium and doing more types of experiments with plutonium is related to the W87-1. | Not applicable | 1.3 |
| Explain the SEIS No-Action Alternative in language the public can understand. | Not applicable | 3.3 |
| The SEIS No-Action Alternative should include a detailed explanation of the extent of the plutonium activities that can occur while maintaining Security CAT III and staying within the current administrative limit of plutonium. | Appendix A, Section A.1.2.28 | 3.3 |
| The SEIS Proposed Action should specify the administrative limits for plutonium and any other SNM allowed under the new security category and specify whether (and the process by which) those limits could be raised without further altering the security category. | Not applicable | 3.2 |
| What quantity of weapons grade plutonium and enriched uranium is currently stored at the lab? If the security category is changed from Security CAT III to Security CAT II, what will be the administrative limit or quantity of weapons grade plutonium and highly enriched uranium that can be stored and tested at LLNL. The total amount of plutonium that would be allowable on the LLNL site must be stated clearly in the SEIS. | Not applicable | 3.2. 3.3 |
| What alternate uses --that do not involve nuclear materials and testing-- could LLNL develop in the SEIS that would pose less health risks to surrounding communities and businesses? | Not applicable | 3.4 |
| This work should be done at more remote sites. Why can’t this work be done at LANL, SRS, or NNSS? | Not applicable | 3.4 |
| Analyze alternatives in the SEIS that could use LLNL's supercomputing technology, the NIF, and other high-tech machines/programs that would require smaller quantities of plutonium and/or nuclear materials. | Not applicable | 3.4 |

| Scoping Comment Issue | Section(s) of 2023 LLNL SWEIS where addressed | Section(s) of SEIS where addressed |
|---|---|---|
| Propose reasonable alternatives that include more specific design, containment, storage and transportation measures that would, among other things, attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences. | Not applicable | 3.4 |
| Develop action alternatives for the SEIS that are responsive to matters raised during coordination or consultations with Federal and State resource agencies or Tribes or identified during public scoping. | Not applicable | 3.3 |
| Briefly discuss reasons for elimination of alternatives that are not evaluated in detail in the SEIS. | Not applicable | 3.4 |
| Present the alternatives in the SEIS selected for analysis in comparative form, in whole or in part, to show how each fulfills the project's purpose and balances benefits with environmental and safety concerns. | Not applicable | 3.5 |
| Identify the SEIS environmentally preferrable alternative. | Not applicable | Comment noted |
| The SEIS should discuss whether and what artificial intelligence is going to be used for any of the experiments. | Not applicable | 3.3 |
| The SEIS should discuss whether any surplus plutonium will be used in any of the experiments. | Not applicable | 3.3 |
| The SEIS should consider an alternative to shut down LLNL. | 3.5 | 3.4 |
| **NEPA Process** | | |
| The public scoping and comment period for the SEIS should be extended to 60-90 days and the comment period on the Draft SEIS should be at least 120 days. | Not applicable | 1.6 |
| What regulatory guidance will be used to prepare the SEIS | Not applicable | 1.1 |
| What is the deadline for submission of public scoping comments? | Not applicable | 1.6 |
| Enhanced Plutonium Utilization at LLNL should be considered as part of the PEIS NNSA is required to prepare for the plutonium pit production program. The SEIS needs to explain the connection of Enhanced Plutonium Utilization at LLNL and NNSA's national plan to produce new plutonium pits. | Not applicable | 1.3 |
| Public comment periods for the SEIS should include at least one in-person hearing for people who do not have access to technology or prefer speaking in person. | Not applicable | 1.6 |
| The single virtual scoping meeting was insufficiently noticed and generally not adequate to provide a robust public process. The Draft SEIS public comment period should hold in-person hearings in Livermore, Tracy, Mountain House, Pleasanton and Dublin. For the Draft SEIS, the agency should provide notice of the public hearings, both in-person and virtual, in regional newspapers, social media, public postings, and mailings to all neighborhoods surrounding LLNL. | Not applicable | 1.6 |
| Community members who prefer Spanish should at least have access to a Spanish translation of the Summary. Request is made for NNSA to link to our Spanish language version of the NOI (https://trivalleycares.org/wpcontent/uploads/2025/01/AGENCY-FEDERAL-REGISTER-SPANISH.pdf) or create the government's own Spanish language version. There should be translated materials, and virtual meetings which have interpreters and translators. | Not applicable | 1.6 |

| Scoping Comment Issue | Section(s) of 2023 LLNL SWEIS where addressed | Section(s) of SEIS where addressed |
|---|---|---|
| Was notice of the SEIS scoping meeting/process provided to the following: ranchers; winery owners; olive oil producers; city council members of Dublin, Pleasanton, Mountain House, Tracy and Livermore; Regional Water Quality Control Boards (both San Francisco and Central Valley); the US Army Corps of Engineers; California Department of Fish and Wildlife (CDFW); and the US Fish and Wildlife Service (USFWS)? Will they be contacted with instructions on how to comment on the Draft SEIS? | Not applicable | 1.6 |
| Make sure the upcoming documents are in plain English. | All | All |
| All Draft SEIS references should be made accessible online. | Not applicable | Chapter 5; to the extent practicable, NNSA has included hyperlinks for all references used in this SEIS |
| Continue consultation with State and Federal regulators to discuss the need for additional corrective actions, changes to CERCLA or *Resource Conservation and Recovery Act* remedies or potential amendments to the CERCLA ROD, and other air and water quality permits. | Comment noted | Comment noted |
| **General Support or Opposition**. | | |
| Opposition to LLNL's existence and the Proposed Action for a variety of reasons including nuclear proliferation, health, environmental risks, and accidents | Comment noted | Comment noted |
| The United States should put our resources toward working for peace and other societal problems. | Comment noted | Comment noted |
| Support for the proposed action. | Comment noted | Comment noted |
| **SEIS Resource Analyses** | | |
| Provide baseline conditions and cumulative impacts in all the areas discussed in this email and other environmental areas to be studied in the Draft SEIS | Chapter 4, 6 | Chapter 4 |
| **Land Use:** The SEIS should discuss how the Proposed Action relates to, and will be integrated with, federal, state, tribal, and local land use plans in the project area. | 4.2, 5.2 | 4.2 |
| **Land Use:** The surrounding population of Livermore has increased in density and footprint to the point that it is no longer safe to conduct nuclear research at the Livermore Site. | 4.2, 5.2, 4.14, 5.14, Appendix C | 4.2, 4.14, 4.16 |
| **Geology and Soils:** The SEIS must fully consider the latest data from the USGS on earthquake scenarios in the Bay Area near LLNL. | 4.4.3, 5.4, 5.16, Appendix C, Section C.3.4 | 4.4, 4.16 |
| **Geology and Soils:** LLNL is close to many major fault lines. In the Draft SEIS, please analyze how a rupture along any of these fault lines could impact the Plutonium Facility at LLNL and the safety of nuclear materials and nuclear activities as conceived by the proposed alternative. Address seismic risks in construction. | 4.4.3, 5.4, 5.16, Appendix C, Section C.3.4 | 4.4, 4.16 |
| **Geology and Soils:** Address whether the Proposed Action could cause erosion, lead to potential mobilization of sediments, be susceptible to seismic-related ground failure/landslides. | 4.4.3, 5.4, 5.16 | 4.4 |
| **Water:** The Draft SEIS should include data from LLNL's groundwater monitoring wells both on and offsite and describe wastewater from the Plutonium Facility. | 4.5, 4.12.4, 4.15, 5.5, 5.12.4 | 4.5 |

| Scoping Comment Issue | Section(s) of 2023 LLNL SWEIS where addressed | Section(s) of SEIS where addressed |
|---|---|---|
| **Water:** The SEIS should include a comprehensive analysis of stormwater runoff and contribution to local flood control channels. | 4.5, 5.5 | 4.5 |
| **Water:** The SEIS should analyze surface water and groundwater quality, quantity, and interactions, and provide information on drinking water sampling. | 4.5, 5.5 | 4.5 |
| **Water:** The SEIS should address PFAS issues such as water testing for PFAS at LLNL and whether groundwater monitoring wells would be placed around the perimeter of the project? | Volume 3, Chapter 2, CRD #21-E and 24-C | 4.5, 4.15 |
| **Air Quality:** The SEIS should provide a full accounting of greenhouse gas emissions, including upstream activities such as fuel production and transportation. | 4.6.3, 5.6 | Appendix A |
| **Air Quality:** Provide a detailed discussion of ambient air conditions, national ambient air quality standards (NAAQS), criteria pollutant non-attainment zones in the project area, and potential air quality impacts of proposed project activities, including indirect and cumulative impacts. | 4.6, 5.6, 6.4.6 | 4.6 |
| **Air Quality:** Address whether radionuclide emissions are expected to substantially change under the Proposed Action, and discuss current efforts to limit, control and minimize radionuclide emissions and evaluate mitigation to minimize radionuclide emissions. | 4.6, 5.6 | 4.6 |
| **Noise:** Analyze noise impacts, including exceedances of noise limits and vibration levels. | 4.7, 5.7 | 4.7 |
| **Biological Resources:** Identify endangered species, special status plants, and watch lists species at LLNL. Discuss whether the project could lead to habitat fragmentation, degradation and dispersal of wildlife near Lake Haussmann and the surrounding area? Discuss impacts to aquatic resources and impacts to species behavior, feeding behavior, breeding success, and possible disruption of migratory patterns. Identify mitigation that may be needed to protect identified threatened or endangered species or critical habitats. | 4.8, 5.8, Appendix I | 4.8 |
| **Cultural:** Discuss potential impacts on cultural resources. | 4.9, 5.9 | 4.9 |
| **Socioeconomics:** Describe how the Proposed Action would address the potential for disproportionate adverse impacts to at-risk populations in Livermore and within a 50-mile radius. Specifically, has LLNL adopted EJ criteria to map all Section 8 housing and limited-English households nearby? Can the Draft SEIS analyze conducting independent health monitoring for Census Tract 6001451506? | 4.10.5, 5.10 | 4.10 |
| **Socioeconomics:** The SEIS should provide maps that show at-risk communities along transportation routes. | 4.10, Appendix D | 4.10, 4.11 |
| **Transportation:** The SEIS must analyze the environmental impact of transporting plutonium into and radioactive waste out of LLNL, including a description of the radionuclides and activities of waste that will be transported to New Mexico for disposal at WIPP, along with anticipated changes in waste generation and disposal that will result from the Proposed Action. Identify all highways and routes that would be used in transporting nuclear materials to and from LLNL. | 4.11, 5.11, Appendix D | 4.11 |
| **Transportation:** Will full plutonium pits or hemi-shells (half-pits) be shipped to Livermore Lab? What are the approximate quantities that will be shipped to Livermore? | 4.11, 5.11, Appendix D | 4.11 |
| **Transportation:** Identify any changes to traffic flow on local roads. | 4.11, 5.11 | 4.11 |

| Scoping Comment Issue | Section(s) of 2023 LLNL SWEIS where addressed | Section(s) of SEIS where addressed |
|---|---|---|
| **Waste Management:** The SEIS should address potential direct, indirect, and cumulative impacts of hazardous materials management and storage from proposed project activities and disclose whether disposal facilities can handle the increase in wastes. | 4.13, 5.13 | 4.13 |
| **Health and Safety:** The SEIS must consider worker health and safety in all of its analyses. Further, the document must consider past worker exposures when contemplating further operations with these potentially deadly materials. Communicate effectively key radiological exposure sources, pathways, accident scenarios, dose standards and risk principles or other scientific terms or measurements in terms familiar to the general public | 4.14, 5.14, Appendix C | 4.14 |
| **Health and Safety:** What are the increased risks of exposure with increased plutonium to the health of unprotected nearby employees at LLNL and nearby businesses, schools, residences, and tourists. | 4.14, 5.14, Appendix C | 4.14 |
| **Health and Safety:** The SEIS should include the agency's current understanding of the health impacts of exposure to ionizing radiation, including but not limited to the dose response curve generally, and specifically how it may differ between females and males and by age and other factors. | 4.14, 5.14, Appendix C | 4.14 |
| **Accidents:** Prepare an accident analysis which presents both the probability and consequences of a maximum reasonably foreseeable accident as well as the probability that the radioactive dose would incur a fatal cancer. Characterize the degree to which buildings, land, and environmental media or biota would be contaminated from an accident. Analyze how the new quantities of plutonium will not be released into the environment by using the best available technologies to prevent accidents, criticalities, fires, spills, releases, and intentionally destructive acts. Analyze packaging techniques to reduce/minimize dispersal of plutonium. | 5.16, Appendix C | 4.16 |
| **Accidents:** Describe the relationship between security category operations and Hazard Category safety thresholds and standards. Describe how threshold calculations, material inventories, and accident analysis techniques or release assumptions would be used to identify the magnitude of the hazard involved and appropriate safety controls needed to protect workers and members of the public. | 5.16, Appendix C | 4.16 |
| **Accidents:** Describe LLNL's accident notification protocol for the nearby community, including information on evacuation routes, coordination with regional, state, and local law enforcement and emergency response. | 5.16, Appendix C | 4.16 |
| **Intentional Destructive Acts (IDAs) and Safeguards and Security**: Explain in detail what new security measures will be implemented to ensure the proposed larger quantities of plutonium will be secured from potentially intentional acts and/or accidents. Will there be transparency for the public to examine the regular required security tests results performed now and in the future at LLNL? | 5.16, Appendix C | 4.16 |

| Scoping Comment Issue | Section(s) of 2023 LLNL SWEIS where addressed | Section(s) of SEIS where addressed |
|---|---|---|
| **Contamination and Remediation:** Past contamination must be fully considered in the SEIS. Additionally, the SEIS must state whether any program activities considered in the document will complicate or delay any of the Superfund monitoring or cleanup underway. Detail the current Superfund cleanup schedule. | 4.15, 5.15 | 4.15 |
| **Cumulative Impacts:** Analyze the combined effects of multiple direct and indirect impacts that could result from implementation of the Enhanced Plutonium project. | Chapter 6 | 4.2-4.16 |
| **Mitigation**: Prepare a Mitigation Action Plan that details the methods that would be used to minimize/avoid impacts. | 5.19 | 4.19 |
| **Out of Scope** | | |
| The U.S. should cease all nuclear activities: design, production, refinement, and refurbishment. | Out of scope | Out of scope |
| Address the full range of alternatives to "modernizing" the US nuclear weapons stockpile, including current global disarmament efforts such as the UN Treaty to Prohibit Nuclear Weapons that could potentially counter any perceived need to continue or expand LLNL plutonium activities. | Out of scope | Out of scope |
| Estimate the social costs and moral injury/psychological harm associated with this project. | Out of scope | Out of scope |
| Add a declassified explanation of the work that was done in laboratory 1377 in the 1970s. That work was highly over-classified and what reasons there were for classification have been eroded over the last 40 years as the needs and directions of the nuclear program changed radically. | Out of scope | Out of scope |
| Who assumes liability for potentially poisoning millions of American citizens who travel our highways and live in close proximity to our rails who will be exposed to unnecessary risk from ionizing radiation? | Out of scope | Out of scope |
| Include a list of plutonium accidents caused by the lab directly or indirectly, as well as documentation of how they have exposed workers and residents in the past. | Out of scope | Out of scope |
| Discuss any formal or informal consultations with State and Federal Resource agencies that have occurred since 2018. | Out of scope | Out of scope |

## 1.7 ORGANIZATION OF THIS SEIS

This Draft LLNL SEIS contains eight chapters, which include the following information:

- **Chapter 1. Introduction and Purpose and Need.** Contains background information, explains why NNSA needs to act, and describes the purposes to be achieved.
- **Chapter 2. NNSA Capabilities Supported by the Plutonium Facility.** Provides an overview of NNSA activities and research capabilities at the Plutonium Facility.
- **Chapter 3. Enhanced Plutonium Facility Utilization (Proposed Action) and Alternatives.** Describes the way NNSA proposes to meet the specified need and achieve the objectives. This chapter also describes alternatives considered but eliminated from detailed analysis, provides a summary comparison of the potential environmental impacts of the SEIS alternatives, and identifies the preferred alternative.
- **Chapter 4. Environmental Impacts.** Uses the 2023 LLNL SWEIS for the existing environment and analyzes the environmental consequences and cumulative impacts of the alternatives.
- **Chapters 5–8.** Contains a list of references cited, an index, a glossary, and a list of preparers.

In addition to these chapters, Appendix A provides a crosswalk between NEPA and CEQA; Appendix B includes all project notices; and Appendix C contains the comments that were received from agency reviews of the Draft LLNL SEIS, as well as NNSA's responses.

# CHAPTER 2

# NNSA Capabilities Supported by the Plutonium Facility

## 2.0 NNSA CAPABILITIES SUPPORTED BY THE PLUTONIUM FACILITY

The LLNL organization structure is presented in the 2023 LLNL SWEIS, Section 2.1. The NNSA Weapons Program provides for continued maintenance and investment in the NNSA Nuclear Security Enterprise to be more responsive and resilient through the SSP.

The NNSA Weapons Program at LLNL works to ensure that the nation's nuclear deterrent remains safe, secure, and reliable by its support of the SSP. This is accomplished through an ongoing effort to develop and apply a science-based fundamental understanding to the assessment and certification of nuclear weapons. This includes using enhanced warhead surveillance tools that detect the onset of potential concerns. LLNL also supports NNSA's production capability and capacity to produce necessary warhead components through development and maturation of advanced manufacturing capabilities. Essential to this work is the use of high-performance computational capabilities and advanced experimental facilities.

The following descriptions are summarized from the 2023 LLNL SWEIS, Section 2.2.4.

NNSA SSP activities at the Plutonium Facility include material characterization and analytical chemistry of plutonium and highly enriched uranium components of U.S. stockpile weapons to ensure that current weapons function as designed; fabrication of plutonium targets for the NIF; and plutonium aging studies. The Plutonium Facility also performs certification activities for remanufactured pit components to ensure they meet design intent, testing, and certification activities for Life Extension Programs (LEPs) and Modifications (Mods) of nuclear material components. Since Security CAT I and Security CAT II quantities of special nuclear material[5] (SNM) were de-inventoried in 2012, LLNL continues this mission with Security CAT III quantities of SNM, including plutonium isotopes and enriched uranium.

LLNL also has the capabilities for working with depleted uranium, tritium, and lithium. Since the end of underground nuclear explosive testing in 1992, LLNL's annual assessment efforts have been predicated on a fundamental understanding of the nuclear weapons stockpile, which involves an in-depth understanding of the properties of plutonium and how plutonium performs in weapons. Researchers must grasp the physics of how plutonium material ages and its behavior under extreme conditions, such as ultrahigh temperatures and pressures. Since its discovery, plutonium has constantly surprised researchers and engineers with its unique and unprecedented properties; thus, developing accurate physics models for plutonium is not easily accomplished merely by extrapolating models of other materials. Instead, LLNL has focused on understanding plutonium through a combination of unique experimental and computational tests.

LLNL researchers run state-of-the-art, high-performance computing calculations to predict the properties of plutonium in conditions unachievable by experiment. These calculations are validated and benchmarked with high-fidelity experiments at ambient conditions and elevated pressures. LLNL continuously pushes the frontiers of high-pressure science to develop new

[5] Section 11 of the *Atomic Energy Act* defines SNM as: "(1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the U.S. Nuclear Regulatory Commission determines to be special nuclear material, or (2) any material artificially enriched by any of the foregoing."

platforms that can reach more extreme conditions and interrogate material properties in those new regimes. These new experiments help refine theoretical models, more accurately predict observed phenomena in plutonium, and connect those phenomena to performance.

## 2.1 CURRENT PLUTONIUM RESEARCH CAPABILITIES

The capability and infrastructure for this strategic defense material includes assets for R&D, waste, and storage. R&D activities include stockpile surveillance, process development, certification for production agencies, long-term aging, fabrication of small test objects, material characterization testing, and recovery of material from residues. Planning the future needs of the U.S. nuclear weapons stockpile and complex depends on plutonium R&D work by LLNL scientists to maintain confidence in new manufacturing methods, changes in metallurgy, and the long-term stability of the plutonium residing inside weapons.

## 2.2 SUPPORTING INFRASTRUCTURE

LLNL's work with nuclear materials—including highly enriched uranium, plutonium, and tritium—is primarily conducted at the Superblock facilities, one of just two defense plutonium R&D facilities in the nation. These facilities support a wide variety of NNSA, DOE, and DoD sponsored activities. However, stockpile stewardship encompasses the majority of Superblock's programmatic activities. These efforts contribute to the annual assessment by providing the President of the United States with the technical basis for the safety, reliability, and performance of nuclear components for which LLNL is responsible. The Superblock facilities house modern equipment for research and engineering testing of nuclear materials. These have been upgraded over time to ensure they meet the latest nuclear safety requirements (NNSA 2023).

Plutonium processing and characterization equipment and other associated capabilities in Building 332 support NNSA's mission needs and are described in Section 3.1.1. These are all essential to ensure that LLNL can meet current and anticipated stockpile stewardship needs. Specific infrastructure related to waste and storage needs are discussed in the 2023 LLNL SWEIS, Section 2.2.9. Ongoing upgrades to support and maintain these facilities are discussed in the 2023 LLNL SWEIS, Chapter 3, Section 3.2.

# CHAPTER 3

# Enhanced Plutonium Facility Utilization and Alternatives

# 3.0 ENHANCED PLUTONIUM FACILITY UTILIZATION AND ALTERNATIVES

## 3.1 INTRODUCTION

This chapter describes the existing operations in Building 332 (Section 3.1.1) and the details for the proposed Enhanced Plutonium Facility Utilization (Proposed Action), which expands the current Plutonium Facility utilization from Security CAT III operations as described in the 2023 LLNL SWEIS, to Security CAT II operations (Section 3.2). This approach would more effectively utilize the Plutonium Facility for handling increased amounts of plutonium and would increase operational efficiencies. The No-Action Alternative is described in Section 3.3. This chapter also discusses alternatives that were considered but eliminated from detailed analysis, provides a summary comparison of the potential environmental impacts of the SEIS alternatives, and identifies the preferred alternative.

### 3.1.1 Existing Operations in Building 332

Major ongoing work activities in the Plutonium Facility (Building 332) are described in detail in the 2023 LLNL SWEIS Appendix A, Section A.1.2.28. Operations and activities similar to those that have historically and are currently being performed in Building 332 would continue.

The Plutonium Facility routinely upgrades systems such as the electrical system, safety monitoring systems, and inert gas supply systems, among others. Replacement of aging programmatic equipment in existing R&D laboratories is also routine. These replacements are part of the LLNL ongoing R&D mission in support of NNSA's programmatic requirements. Programmatic enabling equipment such as mills, lathe welder, surface science instrumentation, and other support equipment will be replaced, as well as upgrading and replacing equipment to perform separation to recover material for R&D activities (NNSA 2023).

Building 332 has been classified as a Hazard Category 2 nuclear facility on the basis of radionuclide inventories in accordance with DOE-STD-1027 revisions approved for use at LLNL. The radiological and chemical hazards described in the 2023 LLNL SWEIS (NNSA 2023) for Building 332 would remain the same under the Enhanced Plutonium Facility Utilization. The proposed elements of the Enhanced Plutonium Facility Utilization project are described below.

## 3.2 ENHANCED PLUTONIUM FACILITY UTILIZATION (PROPOSED ACTION)

Under the Proposed Action in this SEIS, LLNL would continue ongoing operations and enhance the utilization of the LLNL Plutonium Facility (Building 332) in the Superblock to support the increased DOE/NNSA mission need. This entails: (1) enhancing utilization of Building 332 to allow an increase in plutonium R&D activities and a corresponding increase in the amount of fissile materials used; (2) upgrading the security categorization of the Plutonium Facility from Security CAT III to Security CAT II; (3) conducting security and infrastructure construction activities in the Superblock to support Security CAT II operations in the Plutonium Facility; (4) increasing materials shipments and waste generation/shipments; (5) adding operational and security personnel to support Security CAT II operations; and (6) constructing a new office building to support additional personnel.

Table 3-1 shows the comparison of parameters for the No-Action Alternative and the Enhanced Plutonium Facility Utilization. The proposed location for the Enhanced Plutonium Facility Utilization project at the Livermore Site is shown in blue in Figure 3-1.

**Table 3-1. Comparison of Superblock Parameters for the Alternatives**

| | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **Security Categories** | Security CAT III Operations | Security CAT II Operations |
| **Hazard Category** | 2 | No change |
| **Administrative Limits for Superblock** | As specified in 2023 LLNL SWEIS | No change |
| **Building 332 Facility Room Material-at- Risk[6] (MAR)** | As specified in 2023 LLNL SWEIS | No change |
| **Building 332 Work Area Limits** | As specified in DOE O 474.2A. | As specified in DOE O 474.2A. |
| **Additional Personnel** | Not applicable (N/A) | 245 additional personnel |
| **New Office Building** | N/A | 30,000-square-foot-office building |
| **DD&D or Upgrade Buildings 336 and 337, as needed** | N/A | Two 800-square-foot buildings |
| **New Security Portal, as needed** | N/A | 2,000-square-foot new pedestrian portal entry |
| **Infrastructure Construction Activities** | N/A | Fencing, walls, sidewalk, vehicle entry locations and traffic changes, lighting towers, trenching for fencing and utilities, etc. |
| **Infrastructure changes at Site 300** | N/A | Upgrade/recertify live fire shoot house for enhanced training |

Source: LLNL 2025.

NNSA is proposing to increase the fissile material quantities within a work area in the Plutonium Facility, which would result in changing Security CAT III operations to Security CAT II operations. As shown in Table 3-1, the facility room limits in the Plutonium Facility would remain at the same limits as specified in the 2023 LLNL SWEIS, and the bounding accident analysis detailed in the 2023 LLNL SWEIS would remain unchanged.

[6] Material-at-risk is the maximum amount of the referenced material that is involved in the process and thus at risk in the event of a postulated accident. Material locked in a secure storage is not considered material-at-risk.

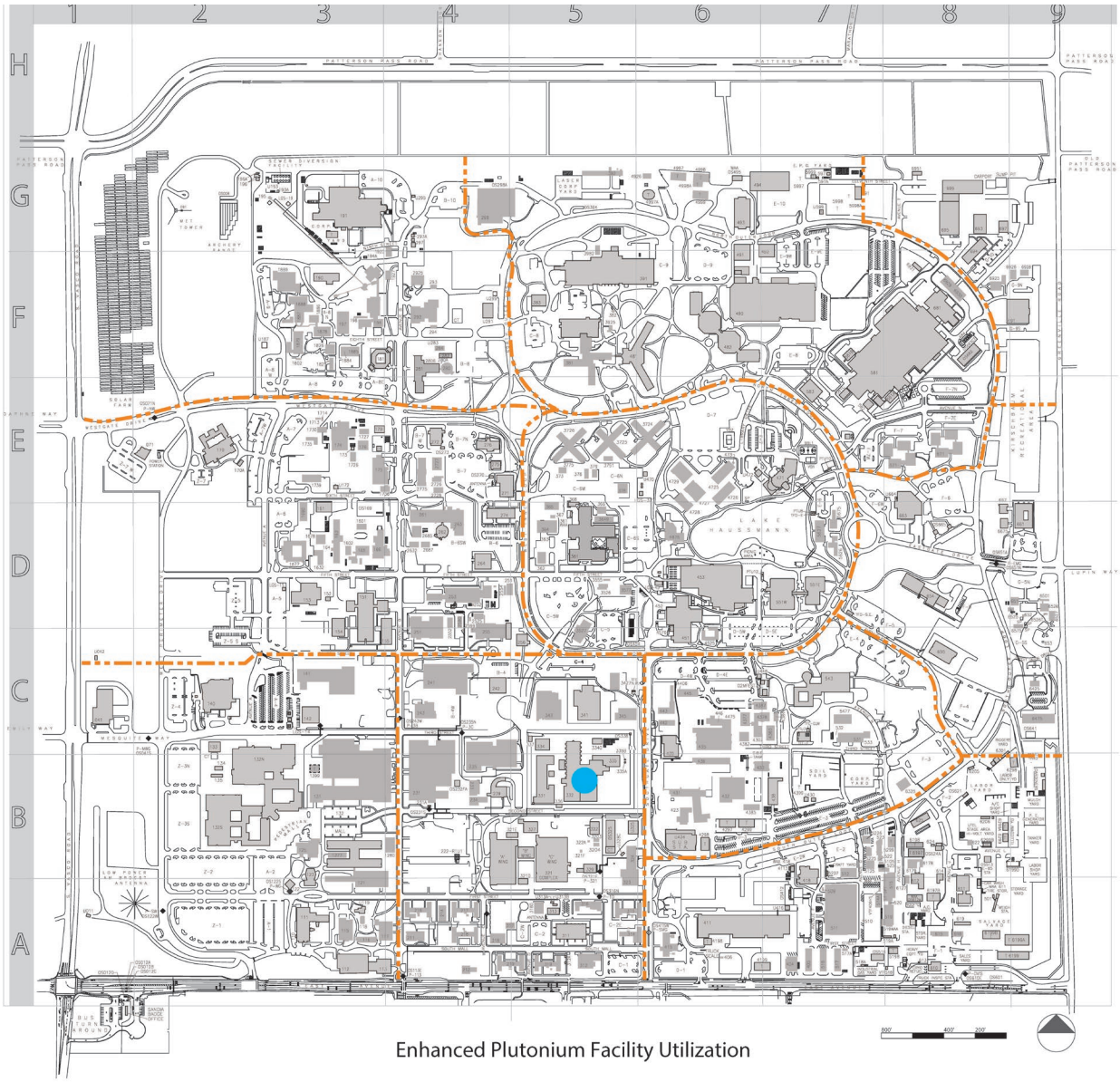


**Figure 3-1. Enhanced Plutonium Facility Utilization Project, shown in blue**

### 3.2.1 Enhanced Utilization of Building 332

NNSA is proposing to enhance utilization of Building 332 to achieve greater operational efficiency for NNSA's mission to design, certify, and assess the nation's nuclear weapons stockpile. This would be accomplished through handling greater quantities of fissile materials (through changing the security category of the Plutonium Facility. Although greater quantities of fissile materials would be handled in a work area at any one time, the administrative limits and MAR limits as defined in the 2023 LLNL SWEIS would remain unchanged.

### 3.2.2 Security Category Change

NNSA is proposing to enhance utilization of Building 332 for plutonium R&D, necessitating an increase in the amount of fissile materials handled. As a result, the security category at Building 332 would change from Security CAT III operations to Security CAT II operations. Security CAT I operations were previously conducted in Building 332 prior to the de-inventory project, which phased out Security CAT I operations by the end of 2012. The increase proposed in this SEIS would require infrastructure changes within the Superblock and its vicinity, as well as an increase in security and other personnel (LLNL 2025).

### 3.2.3 Other Infrastructure Changes

To support Enhanced Plutonium Facility Utilization, a number of security and other infrastructure changes would be made. These would enhance the existing infrastructure within the Superblock. All work would be done in existing developed areas. These changes include, but are not limited to, the items below:

- Upgrade existing space for a secondary alarm station (SAS)
- Install a backup generator
- Construct new security fences and other barriers, such as concrete blocks, bollards, etc.
- Install new lighting towers
- Construct concrete walls
- Install miscellaneous underground utilities
- Upgrade vehicle entry facility and gates
- Construct a new east pedestrian entry control facility (up to 2,000 square feet)
- Decontamination, decommissioning, and demolition (DD&D) of Buildings 336 and 337 pedestrian entry control facilities, or upgrade the facilities for reuse
- DD&D of two guard towers at the Superblock
- Upgrade Central Alarm Station, as needed, or replace with a new
- Modify or relocate (to an existing developed area) the parking lot north of the Superblock
- To support the training of security personnel, an existing live fire shoot house at Site 300 would be upgraded and recertified.

### 3.2.4 New Office Building

The Enhanced Plutonium Facility Utilization project would require a new approximately 30,000-square-foot office building in the vicinity of the LLNL Superblock. This would be needed to house the additional workforce required for the enhanced utilization at the Plutonium Facility.

### 3.2.5 Additional Personnel

The Enhanced Plutonium Facility Utilization project would require a number of additional personnel for security, plutonium work, facility operations, waste management operations, and packaging and transportation operations. The total number of additional personnel is estimated to be 245 (LLNL 2025). Increases in worker doses would result and are analyzed in this SEIS.

### 3.2.6 Operational Changes (Utilities, Air Emissions, Materials and Waste Management)

There would be increases in utility requirements (e.g., domestic water, wastewater, electrical power, and natural gas) at LLNL as a result of Enhanced Plutonium Facility Utilization. In addition, non-radiological air emissions could increase from construction activities, worker commuting, and increased operations at the site. These increases are analyzed in this SEIS in Sections 4.6 and 4.12. There would be no change to radiological air emissions and potential doses to the public (LLNL 2025).

The 2023 LLNL SWEIS projected a transuranic (TRU) waste volume of 175.6 cubic meters generated per year. Although this project would increase the amount of TRU waste generated per year, it would not exceed these SWEIS projections. Routine quantities of low-level radioactive waste (LLW) (such as personal protective equipment and rags) would increase from approximately 1,000 cubic meters per year under the No-Action Alternative to 1,200 cubic meters per year under Enhanced Plutonium Facility Utilization. Non-routine LLW generation would remain at 7,000 cubic meters per year across the LLNL site (LLNL 2025).

The number of anticipated TRU waste shipments to the Waste Isolation Pilot Plant (WIPP) would increase from 8 to as many as 40 shipments per year. As explained in Section 4.11.2.2, a small portion of this increase (2 additional shipments per year) is associated with the proposed increase in plutonium R&D activities in the Plutonium Facility. However, the largest portion of this increase (up to 30 additional shipments per year) is associated with TRU shipments of non-routine TRU waste, which were not accounted for in the 2023 LLNL SWEIS. This SEIS analyzes the potential environmental impacts of these additional shipments of non-routine TRU waste. The LLW shipments would remain within the 2023 LLNL SWEIS projections. Enhanced Plutonium Facility Utilization would require additional shipments of materials to and from LLNL and other NNSA sites. Plutonium materials shipments would increase from 22 to 40 total shipments per year (LLNL 2025).

Approximately 20,000 cubic meters of soils/concrete/asphalt could be excavated from construction activities associated with Enhanced Plutonium Facility Utilization. These would be sampled for contamination prior to disposition. If uncontaminated, most soils would be reused for filling excavations and other grading around the site. Contaminated soils/concrete/asphalt would be disposed of at appropriate hazardous waste treatment, storage, and disposal facilities and/or the NNSS according to existing procedures (LLNL 2025).

## 3.3 NO-ACTION ALTERNATIVE

The No-Action Alternative is based on implementing the ROD for the 2023 LLNL SWEIS, which would continue current facility (Security CAT III) operations at the Superblock as described in the Proposed Action of the 2023 LLNL SWEIS. The room MAR and work area limits for accident analysis would remain the same as in the 2023 LLNL SWEIS, and Building 332 would continue to operate as a Hazard Category 2 nuclear facility.

## 3.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

NNSA considered public input and comments received during the scoping process in determining the range of alternatives in this SEIS. NNSA only considered reasonable alternatives that would meet the purpose and need described in Chapter 1 of this SEIS. The following alternatives were considered in developing the SEIS but were eliminated from detailed analysis because they would not allow NNSA to fulfill the mission requirements. The specific reasons for elimination are detailed below.

**Complete Closure of Superblock.** This alternative is inconsistent with the purpose and need defined in Chapter 1 of this SEIS. NNSA does not consider it reasonable to evaluate Superblock closure at this time. As one of only three nuclear weapons laboratories, LLNL contributes significantly to the core intellectual and technical competencies of the U.S. related to nuclear weapons. These competencies embody more than 60 years of weapons knowledge and experience. The laboratories perform basic research, design, system engineering, development testing, reliability and assessment, support of production functions at other sites, and certification of nuclear weapon safety, reliability, and performance. From a broader national security perspective, the core intellectual and technical competencies of LLNL (as well as LANL and Sandia National Laboratories, NNSA's other nuclear weapons laboratories) provide the technical basis for the pursuit of U.S. arms control and nuclear nonproliferation objectives.

**Transfer of Current Superblock Missions/Operations from LLNL to Other Sites or Construct a New Plutonium Facility.** This was initially addressed in the 2008 Complex Transformation Supplemental PEIS (NNSA 2008), which considered and evaluated the transfer of missions/operations to and/or from LLNL. For this SEIS, NNSA has not identified any other existing facility that would be reasonable for conducting the LLNL plutonium R&D mission needed to meet SSP requirements (NNSA 2024). NNSA has no other facilities that have the capability and the capacity to conduct this work. In addition, construction of a new plutonium facility (at LLNL or other sites) could take decades, which would not meet the purpose and need discussed in Section 1.4 of this SEIS.

**Conversion of LLNL to an Academic Laboratory and/or an Environmental Research Laboratory.** Under this alternative, LLNL would cease nuclear weapons-related work and instead perform academic/environmental research work. NNSA would remove nuclear materials from LLNL and remove all waste. LLNL would use existing facilities and staff for academic research and/or environmental research. Such an alternative would not allow NNSA to meet the purpose and need discussed in Section 1.4 of this SEIS.

**Reduced Operations at the Superblock.** Under this alternative, Superblock would reduce operations to a level below the operations defined under the No-Action Alternative. Such an alternative would not allow NNSA to meet the purpose and need discussed in Section 1.4 of this SEIS.

**Shift Funding from Weapons Work to Environmental Cleanup.** Such an alternative would not allow NNSA to meet the purpose and need discussed in Section 1.4 of this SEIS.

**No LEPs and MODs at LLNL**. As discussed in the 2023 LLNL SWEIS, Section 1.3.3, over the next 15 years, one of LLNL's primary responsibilities will be to continue to support LEPs and MODs, which modify the existing weapons packages for new delivery systems and extend the service life and enhance the safety, security, and reliability of nuclear weapons. This alternative would not allow NNSA to meet the purpose and need as discussed in Section 1.4 of this SEIS.

**Use other Facilities and/or Technologies to Accomplish the Plutonium R&D**. NNSA's national security missions require access to facilities that allow plutonium processing and R&D which cannot currently be achieved using other facilities such as the NIF and/or technologies such as supercomputing. Such an alternative would not allow NNSA to meet the purpose and need discussed in Section 1.4 of this SEIS.

## 3.5 COMPARISON OF THE POTENTIAL CONSEQUENCES OF THE ALTERNATIVES

A summary comparison of the environmental consequences for the continued operation of LLNL is provided in Table 3-2. The table compares the potential impacts to environmental resources associated with the continued operation of the Superblock under the No-Action Alternative and the Enhanced Plutonium Facility Utilization project. The Enhanced Plutonium Facility Utilization column includes the incremental change due to the new operations, in addition to the No-Action Alternative for the cumulative total. The increases are shown as a percentage over the No-Action. The information in Table 3-2 includes data for both construction and operations. Detailed analyses supporting the summary comparisons in Table 3-2 are contained in Chapter 4 of this SEIS.

## Table 3-2. Summary Comparison of Environmental Impacts of the Alternatives

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **LAND USE** | | |
| *Livermore Site (821 Acres)* | | |
| Site-wide Land Disturbance (acres) | 758.9 | 763.9 total acres (5 additional acres disturbed, which would be an increase of 0.7% over the No-Action Alternative) |
| Square Footage of Facilities ($ft^2$) | 8,975,700 | 9,007,700 (~32,000 additional $ft^2$, which would be an increase of 0.36% over the No-Action Alternative) |
| Land Use at Livermore Site | The Livermore Site is approximately 85% developed. The Enhanced Plutonium Facility Utilization project would be consistent with current land use designations. | |
| Land Use at Site 300 | The Enhanced Plutonium Facility Utilization would require upgrades and recertification to an existing live-fire training facility and exercise area. Actions at Site 300 would be consistent with current land use designations. | |
| **AESTHETICS AND SCENIC RESOURCES** | | |
| Scenic Resources | Construction activities would result in temporary changes to the visual appearance of both Livermore Site and Site 300. Several new facilities would be located near the site boundary and would be visible from offsite locations. | Impacts from construction activities would be the same as the No-Action Alternative. The proposed changes at the Livermore Site would not be visible from the site boundary. At Site 300, upgrades to the training area would be visible from Corral Hollow Road but would not change the existing views of Site 300. |
| **GEOLOGY AND SOILS** | | |
| Site-wide Soils Disturbed (acres) | 758.9 | 763.9 (5 additional acres of soil disturbed) |
| Prime Farmland | Soils are not classified as prime farmland. No potential impacts. | |
| Erosion Potential | Erosion controls and best management practices (BMPs) would be used to minimize soil erosion during construction and operations. | |
| Mineral Resources | No known geologic resources (i.e., aggregate, clay, coal, or mineral resources) would be adversely affected by construction and operations. | |
| Existing Soil Contamination | Prior to ground disturbance, NNSA would determine the extent and nature of any contaminated media and required remediation in accordance with the established procedures. Contaminated soils and media would be managed in accordance with existing waste management practices. | |
| Geologic Hazards | Facilities would be designed and constructed to meet seismic design criteria commensurate with risk category requirements for the facility. | |
| **WATER RESOURCES** | | |
| *Livermore Site:* | | |
| Site-wide Impervious Footprint (acres) | 758.9 | 763.9 (5 additional acres) |

| Resource/Metric | | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|---|
| Potential for Contaminant Releases during Construction | | Mitigated with BMPs and LLNL procedures | No changes over the No-Action Alternative |
| *Site 300:* | | | |
| Operational Impervious Footprint (acres) | | 384.7 | No changes over the No-Action Alternative |
| Potential for Contaminant Releases during Construction | | Mitigated with BMPs and LLNL procedures | Mitigated with BMPs and LLNL procedures |
| **AIR QUALITY** | | | |
| Non-radiological Stationary Emissions (tons/year) | CO | 21.0 | 21.1 |
| | NOx | 18.2 | 18.3 |
| | PM10/2.5 | 2.2 | 2.2 |
| | $SO_2$ | 0.9 | 0.9 |
| | VOC | 7.6 | 7.6 |
| Air Quality Thresholds and Standards | | • Emissions would be below *de minimis* threshold values.<br>• No air quality standards exceeded. | • Emissions would be below *de minimis* threshold values.<br>• No air quality standards exceeded. |
| Radiological Emissions | | 3,610 Ci tritium<br>$<1.5\times10^{-7}$ Ci uranium | No additional radiological emissions or doses over the No-Action Alternative |
| MEI Dose (millirem/year) | | 4.21 | |
| MEI Latent Cancer Fatality (LCF) Risk | | $2.5\times10^{-6}$ | |
| Population Dose (person-rem/year) | | 7.1 | |
| Population LCF Risk | | $4.3\times10^{-3}$ | |
| **NOISE** | | | |
| New Projects within 800 Feet of Site Boundary | | 15 at Livermore Site<br>4 at Site 300 | No changes over the No-Action Alternative |
| Noise Increase from Traffic | | Worker population of 10,750 | Worker population of 10,995, which is a 2.2% increase over No-Action Alternative. Area traffic would increase by 0.4%. Noise levels would remain between 50 and 70 dBA. |
| Exceedance of Noise Regulations | | No | No |
| **BIOLOGICAL RESOURCES** | | | |
| Site-wide Land Disturbed (acres) | | 758.9 | 763.9 (5 additional acres) |
| Fish & Wildlife | | There would be no changes in fish habitat. Any wildlife temporarily displaced during construction could occupy adjacent habitat. Potential impacts would be reviewed and mitigated. | No changes over the No-Action Alternative |

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| Special Status Species & Habitats | Potential impacts on biological resources would be reviewed and mitigated. | No changes over the No-Action Alternative |
| Tritium Levels in Vegetation & Commodities | Tritium levels in local vegetation and commodities would continue to be monitored. | No changes over the No-Action Alternative |
| Radiological Protection of Biological Resources | Vegetation, soils and commodities would continue to be monitored. Radionuclides considered for dose contribution to biota include gross alpha and gross beta levels, and the sum of the fractions was 0.16, below the threshold of 1.0. | No changes over the No-Action Alternative |
| Wetlands | Potential impacts on wetlands would be reviewed and mitigated. | No changes over the No-Action Alternative |
| **CULTURAL AND PALEONTOLOGICAL RESOURCES** | | |
| Archaeological and Paleontological Resources | Any proposed ground-disturbing activities at the Livermore Site or Site 300 would be reviewed against archaeological and paleontological sensitivity maps, prior field surveys, etc., and assessed for the potential for effects on cultural resources. If an item is unearthed during construction activities, the item would be investigated for its significance. If deemed necessary, consultation with the California State Historic Preservation Officer, or mitigation activities would be completed as needed. | No changes over the No-Action Alternative |
| Architectural Resources | | |
| Cultural Resources of Significance to Tribes | | |
| **SOCIOECONOMIC CHARACTERISTICS** | | |
| Increase in Direct LLNL Jobs | 10,750 | 10,995<br>(2.2% over No-Action Alternative) |
| Increase in Indirect Jobs | 8,538 | 8,738<br>(2.3% over No-Action Alternative) |
| Total Direct and Indirect Employment | 19,288 | 19,728<br>(2.3% over No-Action Alternative) |
| Total Region of Influence (ROI) Labor Force | 2,238,799 | 2,238,799<br>(0.0% over No-Action Alternative) |
| Annual Earnings from Direct Jobs at LLNL | $1,740.5M | $1,781.0M<br>(2.3% over No-Action Alternative) |
| Annual Earnings from Indirect Jobs | $1,412.9M | $1,446.6M<br>(2.4% over No-Action Alternative) |
| Total Annual Value Added to ROI Economy | $3,167.8M | $3,241.7M<br>(2.3% over No-Action Alternative) |

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| Additional School Children from LLNL Added to ROI | 4,300 | 4,396<br>(1.9% over No-Action Alternative) |
| Additional Housing units occupied by LLNL Workforce | 10,750 | 10,990<br>(2.2% over No-Action Alternative) |
| Disproportionate Human Health or Environmental Effects on at-risk Populations | There would be no disproportionate and adverse environmental impacts on at-risk populations from construction and operational activities under the 2023 LLNL SWEIS at Livermore Site or Site 300. | No changes over the No-Action Alternative |
| **TRAFFIC AND TRANSPORTATION** | | |
| Traffic Increase in Area Roads | 1.6%–3.2%<br>(average of 2.3%) | 0.2%–0.5% over the No-Action Alternative<br>(average of 0.4%) |
| Number of Annual Radiological Shipments | 888 | 938<br>(5.6% increase over No-Action Alternative) |
| Crew Dose (person-rem) | 69.2 | 73.8<br>(6.6% increase over No-Action Alternative) |
| Crew Radiological Risk (LCF) | 0.042 | 0.045<br>(6.6% increase over No-Action Alternative) |
| Population Dose (person-rem) | 24.7 | 30.0<br>(21% increase over No-Action Alternative) |
| Population Radiological Risk (LCF) | 0.015 | 0.018<br>(21% increase over No-Action Alternative) |
| **INFRASTRUCTURE** | | |
| Domestic water consumption for both Sites (million gallons/year) | 503.05<br>(1,524 capacity for both sites) | 511.05<br>(1.8% increase over No-Action Alternative) |
| Wastewater generation for both Sites (million gallons/day) | 432,250<br>(2,507,500 capacity for both sites) | 440,335<br>(1.8% increase over No-Action Alternative) |
| Electrical Power consumption for both sites (million kWh/year) | 559.7 | 561.7<br>(0.36% increase over No-Action Alternative) |
| Natural Gas consumption for Livermore Site (therms/day) | 13,500 (24,500 capacity) | 13,549<br>(0.36% increase over No-Action Alternative) |
| Fuel (gasoline and diesel) for both Sites (gallons/year) | 96,000 | No changes over the No-Action Alternative |

| Resource/Metric | | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|---|
| **WASTE MANAGEMENT AND MATERIALS MANAGEMENT** | | | |
| *Radioactive Waste:* | | | |
| Low-level radioactive waste (LLW), routine (cubic meters [$m^3$]/year) | | 1,000 | 1,200<br>(20% increase over No-Action Alternative) |
| LLW, non-routine ($m^3$/year) | | 7,000 | No change over the No-Action Alternative |
| Total LLW waste ($m^3$/year) | | 8,000 | 8,200<br>(2.5% increase over No-Action Alternative) |
| Transuranic (TRU) waste, routine ($m^3$/year) | | 52.8 | No change over the No-Action Alternative |
| TRU waste, non-routine ($m^3$/year) | | 122.8 | No change over the No-Action Alternative |
| Total TRU waste ($m^3$/year) | | 175.6 | No change over the No-Action Alternative |
| *Nonhazardous Solid Waste:* | | | |
| Municipal solid waste, routine (metric tons/year) | | 3,400 | 3,475<br>(2.2% increase over No-Action Alternative) |
| Construction and demolition waste, non-routine (metric tons/year) | | 5,500 | 5,537<br>(0.7% increase over No-Action Alternative) |
| **HUMAN HEALTH AND SAFETY** | | | |
| *Annual Radiological Impacts to the Public:* | | | |
| Offsite MEI | Dose (millirem/year) | 4.21 | No additional radiological emissions over the No-Action Alternative |
| | LCF risk | $2.5\times10^{-6}$ | |
| Population Within 50 Miles | Collective dose (person-rem/year) | 7.1 | |
| | LCF | $4.3\times10^{-3}$ | |
| *Annual Radiological Impacts to Workers:* | | | |
| Number of radiological workers who receive a measurable dose | | 615 | 840<br>(39% increase over No-Action Alternative |
| Average annual dose to radiological worker (millirem/year) | | 173.5 | 162.3<br>(6.5% decrease over No-Action Alternative |
| LCFs per worker | | $1.1\times10^{-4}$ | $9.7\times10^{-5}$<br>(11.8% decrease over No-Action Alternative) |
| Collective annual dose to radiological workers (person-rem/year) | | 106.7 | 135.5<br>(27% increase over No-Action Alternative) |
| Total Annual Radiological Worker Risk (LCFs) | | 0.06 | 0.08<br>(33% increase over No-Action Alternative) |

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **SITE CONTAMINATION AND REMEDIATION** | | |
| Compliance with CERCLA-remedial actions and cleanup goals at Livermore Site and Site 300 | Remediation of groundwater and soil contamination at both the Livermore Site and Site 300 would continue. NNSA complies with provisions specified in the two Federal Facility Agreements (FFAs) entered into by USEPA, DOE, the California Department of Toxic Substances Control and the San Francisco Bay Regional Water Quality Control Board. Any future remediation actions would be conducted in accordance with these FFAs. NNSA would ensure that regulatory standards and CERCLA milestones are maintained. | No changes over the No-Action Alternative |
| **ACCIDENT ANALYSIS** | | |
| Offsite Population Risk | As stated in the 2023 LLNL SWEIS, Section 5.16.2, the total risk from an accident is small. Even with conservative meteorology, the maximum offsite population risk is estimated to be $1.0\times10^{-6}$ fatalities per year, or about one fatality for every 1 million years of operation. There are additional tables in the 2023 LLNL SWEIS, Chapter 5, Section 5.16, and Appendix C, Section C.3.4, that provide more details on average meteorological conditions and risks associated with these accidents. | Enhanced Plutonium Facility Utilization would not result in any additional accident risks over the No-Action Alternative. |
| Consequences of Radiological Accidents to three receptors:<br>1) MEI at the LLNL boundary<br>2) Offsite population within 50 miles of LLNL<br>3) Non-involved worker located 100 meters from the accident | The 2023 LLNL SWEIS analyzed the bounding radiological accident involving plutonium in a room and a TRU waste yard fire outside of Building 332. The accident analysis results are as follows:<br>1) MEI—1.5 rem<br>2) Offsite population—340 person-rem<br>3) Non-involved worker—64 rem | The accident analysis is based on the MAR, which does not change under the proposed Security CAT II operations. Therefore, there are no changes from the No-Action Alternative. |
| **INTENTIONAL DESTRUCTIVE ACTS** | | |
| Identification of IDA Scenarios, Results of IDA Analysis, and Comparison of the IDA Impacts to Accident Impacts | NNSA prepared an IDA analysis to support the 2023 LLNL SWEIS that analyzed the potential impacts of intentional destructive acts (e.g., sabotage, terrorism). The IDA consequences relative to environmental concerns would be similar to, and consistent with, the accident consequences. | NNSA has prepared a Conceptual Security Vulnerability Assessment (CVA) to determine physical mitigative features for the Superblock based on potential terrorist threats for Security CAT II operations. The CVA provides security mitigations that would not result in consequences relative to environmental concerns different from the No-Action Alternative. |

## 3.6 PREFERRED ALTERNATIVE

The preferred alternative is the alternative that NNSA believes would fulfill its statutory missions and responsibilities, considering economic, environmental, technical, and other factors. This SEIS provides information on the potential environmental impacts under the No-Action Alternative and the Enhanced Plutonium Facility Utilization project. NNSA prepares cost, schedule, and technical analyses separately, and will consider all relevant factors in preparation of the ROD. NNSA has determined that the Plutonium Facility is critical to its SSP and has identified the Enhanced Plutonium Facility Utilization project as the preferred alternative for the continuation of that mission.

# CHAPTER 4

# Environmental Impacts

# 4.0 ENVIRONMENTAL IMPACTS

## 4.1 INTRODUCTION

This section presents the potential environmental impacts, including the cumulative impacts, for the Enhanced Plutonium Facility Utilization project, and discusses those impacts in relation to the No-Action Alternative, which is based on implementing the ROD for the 2023 LLNL SWEIS. The methodology for the impacts analysis of individual resource areas is described in the 2023 LLNL SWEIS, Section 5.1 and Appendix B. The analyses in this SEIS are based on the same ROIs as those in the 2023 LLNL SWEIS. The organization of this SEIS varies from the 2023 LLNL SWEIS, in that the existing environment and the environmental impacts (including cumulative impacts) are combined into one chapter (Chapter 4). This approach is designed to enable an easy, direct comparison of alternatives and their environmental consequences.

The analyses in this chapter are based on the description of the Enhanced Plutonium Facility Utilization project and the No-Action Alternative in Chapter 3 of this SEIS. Chapter 3 of the 2023 LLNL SWEIS (Tables 3-7 and 3-8) shows the parameters used for the environmental impacts analysis. These parameters are outlined in individual resource areas described below. For the No-Action Alternative, no significant new information or changes were identified compared to the information that was presented in the 2023 LLNL SWEIS. The analysis in the 2023 LLNL SWEIS addressed construction of new facilities, modernization/upgrade/utility projects, DD&D of excess and aging facilities, operational changes, and continued operations through approximately 2035. The impacts shown for the Enhanced Plutonium Facility Utilization project include those of the No-Action Alternative.

## 4.2 LAND USE

### 4.2.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.2.2 (NNSA 2023). This information is summarized in Table 4-1.

### 4.2.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential land use impacts for the Enhanced Plutonium Facility Utilization project resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. These may include constructing new security fencing and concrete walls, lighting towers, and other modifications, as well as a 30,000-square-foot office building and a new 2,000-square-foot pedestrian entry control facility. Two 800-square-foot entry portals to the Superblock would undergo DD&D or be upgraded for reuse. In addition, two guard towers at the Superblock would undergo DD&D. Modifying or relocating (to an existing developed area) the parking lot north of the Superblock would not change land use. At Site 300, the only change involves upgrading and recertifying an existing training facility. Table 4-1 summarizes the Land Use impacts that would occur under Enhanced Plutonium Facility Utilization for the Livermore Site.

Under Enhanced Plutonium Facility Utilization, approximately 5 acres of previously developed areas would be disturbed at the Livermore Site. This represents 0.7 percent of the total acreage at the site. Because of the historic development activities at the Livermore Site, any land disturbance is expected to occur on previously disturbed land.

The Livermore Site is largely developed with a structural footprint of about 8,975,700 square feet. Under Enhanced Plutonium Facility Utilization, approximately 32,000 square feet of facilities would be added, resulting in a 0.36 percent change over the No-Action Alternative.

The existing land use designation of "Research and Development" (as described in the 2023 LLNL SWEIS) would be maintained with the proposed construction and infrastructure projects under the Enhanced Plutonium Facility Utilization. These activities would take place within previously developed areas of the Livermore Site. Therefore, Enhanced Plutonium Facility Utilization would not represent a change in land use designation, nor lead to conflicts with existing and approved future land use adjacent to the site.

**Table 4-1. Land Use Impacts at Livermore Site for the Alternatives**

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **Livermore Site (821 Acres)** | | |
| Net Land Disturbance | 758.9 acres | 5 acres disturbed<br>(0.7% increase over the No-Action Alternative) |
| Square Footage of Facilities | 8,975,700 square feet | 32,000 square feet<br>(0.36% increase over the No-Action Alternative) |
| Land Use | The Livermore Site is approximately 85 percent developed. The proposed Enhanced Plutonium Facility Utilization Project would be confined to areas that have been previously disturbed and would not result in the conversion of any previously undisturbed lands. In the long term, the project would align with existing land use designations. | |
| **Land Use at Site 300** | Recertify and upgrade an existing training facility and exercise area. | |

Source: NNSA 2023.

### 4.2.3 Cumulative Impacts on Land Use

Key metrics in this analysis include: (1) amount of land disturbance; and (2) a qualitative analysis of consistency with current land use designations. There are no NNSA plans in either of the alternatives to acquire land beyond the boundaries of the Livermore Site and Site 300. As discussed above, the Enhanced Plutonium Facility Utilization would disturb approximately 5 acres of previously developed areas, which is 0.7 percent of the total acreage of the Livermore Site. There would be less than 1 acre of temporary land disturbances (out of 7,000 acres) at Site 300. Land disturbances would occur within site boundaries and would not impact offsite land uses. At both sites, the Enhanced Plutonium Facility Utilization would be consistent with current land use designations. For a more detailed discussion of the cumulative land use impacts of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 6.4.2.

## 4.3 AESTHETICS AND SCENIC RESOURCES

### 4.3.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.3.2 (NNSA 2023).

### 4.3.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to aesthetic and scenic resources for Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. These proposed changes would be located within the interior of the Livermore Site and would not be visible from the site boundary. At Site 300, upgrades to the training area would be visible from public viewpoints along Corral Hollow Road but would not change the existing views of Site 300. Therefore, there would be no additional impacts to aesthetics or scenic resources.

### 4.3.3 Cumulative Impacts on Aesthetics and Scenic Resources

The Enhanced Plutonium Facility Utilization project would not contribute to cumulative impacts to aesthetics and scenic resources over the No-Action Alternative, which are identified in the 2023 LLNL SWEIS, Section 6.4.3.

## 4.4 GEOLOGY AND SOILS

### 4.4.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.4.2 (NNSA 2023). This information is summarized in Table 4-2.

### 4.4.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to geology and soils from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Table 4-2 summarizes the potential impacts to geology and soils.

The Enhanced Plutonium Facility Utilization project would disturb approximately 5 acres of previously developed areas over the No-Action Alternative, which equals a 0.7 percent additional land disturbance. Any potential impacts to geology and soils would occur in the construction phases of the project at the Livermore Site. Approximately 20,000 cubic meters of soil would be excavated. Contaminated soils and possibly other media could be encountered during excavation and other site activities. Prior to commencing any new ground disturbance, NNSA would survey planned areas of disturbance to determine the extent and nature of any contaminated media and required remediation in accordance with LLNL's procedures. Most of the uncontaminated soils would be re-used as backfill. Any contaminated soils and associated media would be managed in accordance with existing waste management practices. Existing pathways for soil disposal could

include municipal landfills, NNSS, or other treatment, storage, and disposal (TSD) facilities, based on contaminant type and concentration**.** Following construction, operations would take place in areas already disturbed by previous activities. There would be less than 1 acre (out of 7,000 acres) of soil disturbance at Site 300. No additional operational impacts to geology or soils would occur from Enhanced Plutonium Facility Utilization.

**Table 4-2. Potential Impacts to Livermore Site Geology and Soils for the Alternatives**

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| Net Land Disturbance | 758.9 acres | 5 additional acres of previously developed land (0.7% increase over the No-Action Alternative) |
| Prime Farmland | Soils are not classified as prime farmland. No potential impacts. | |
| Erosion Potential | Erosion controls and BMPs would be used to minimize soil erosion during construction and operations. | |
| Mineral Resources | No known geologic resources (i.e., aggregate, clay, coal, or mineral resources) would be adversely affected by construction and operations. | |
| Existing Soil Contamination | Prior to ground disturbance, NNSA would determine the extent and nature of any contaminated media and required remediation in accordance with the established procedures. Contaminated soils and media would be managed in accordance with existing waste management practices. | |
| Geologic Hazards | Facilities would be designed and constructed to meet seismic design criteria commensurate with risk category requirements for the facility. | |

Source: NNSA 2023.

### 4.4.3 Cumulative Impacts on Geology and Soils

The Enhanced Plutonium Facility Utilization project would disturb soils on approximately 5 acres of previously developed areas at the Livermore Site; at Site 300, less than 1 acre of soils would be temporarily disturbed. Overall, soil disturbances would not result in cumulative impacts when combined with the No-Action Alternative, which are identified in the 2023 LLNL SWEIS, Section 6.4.4.

## 4.5 WATER RESOURCES

### 4.5.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.5.2 (NNSA 2023). This information is summarized in Table 4-3.

### 4.5.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to water resources from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. No activities at either site would occur within any floodplains or wetlands. Table 4-3 summarizes the potential impacts to water resources.

### *Livermore Site*

#### Surface Water

The National Pollution Discharge Elimination System (NPDES) 2022 General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order Number 2022-0057-DWQ, adopted September 8, 2022) is the main NPDES permit covering construction projects larger than one acre throughout California (SWRCB 2022). As part of the NPDES permit, each construction project greater than one acre would develop and implement a project-specific Stormwater Pollution Prevention Plan (SWPPP) to help minimize any pollution that might leave the site by stormwater. Additionally, LLNL would comply with Section 438 of the *Energy Independence and Security Act* (42 U.S.C §17094), and facility design would incorporate permanent controls for the proper management of stormwater and minimize any impacts to receiving waterbodies during construction and operations. These mitigation requirements would help to minimize impacts to surface water during construction and operations.

Protection of surface water resources would continue under Enhanced Plutonium Facility Utilization as discussed in the 2023 LLNL SWEIS, Section 5.5.2 (NNSA 2023). Surface water and stormwater monitoring would continue in accordance with DOE guidelines and the NPDES General Permit. Wastewater monitoring would continue as discussed in the 2023 LLNL SWEIS, Section 4.12.4 (NNSA 2023), in accordance with Wastewater Discharge Permit #1250 requirements. Because of the extensive monitoring program and capability to divert and hold potentially contaminated wastewater through the sewage diversion facility, no impacts to the City of Livermore Water Reclamation Plant (LWRP) or to downstream receiving surface waters would be expected.

#### Groundwater

Under Enhanced Plutonium Facility Utilization, protection of groundwater resources would continue, as discussed in the 2023 LLNL SWEIS, Section 5.5.2. Groundwater monitoring would continue to ensure that remediation of contamination already present is effective and that contaminant fate and transport is fully understood. Groundwater quality would continue to improve because extracted groundwater would be collected and treated at the onsite treatment facilities. No negative impacts to groundwater at the Livermore Site are expected from the Enhanced Plutonium Facility Utilization project because there would be no discharges to groundwater.

### *Site 300*

#### Surface Water

Under Enhanced Plutonium Facility Utilization, protection of surface water resources would continue, as discussed in the 2023 LLNL SWEIS, Section 5.5.2. Surface water and stormwater monitoring would continue in accordance with DOE guidelines. Wastewater monitoring would continue as discussed in the 2023 LLNL SWEIS, Chapter 4, Section 4.12.4.

**Groundwater**

Protection of groundwater resources would continue under the Enhanced Plutonium Facility Utilization project as discussed in the 2023 LLNL SWEIS, Section 5.5.2. Groundwater monitoring would continue to ensure that remediation of contamination already present is effective. Groundwater quality would continue to improve as remediation activities continue at Site 300.

**Table 4-3. Potential Impacts to Water Resources for the Alternatives**

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **Livermore Site** | | |
| Net Operational Impervious Footprint (acres) | 758.9 acres | 5 additional acres (0.7% increase over the No-Action Alternative) |
| Potential for Contaminant Releases during Construction | Mitigated with BMPs and LLNL procedures | No change over the No-Action Alternative |
| Contaminant Releases during Operations | Within permit limits | No change over the No-Action Alternative |
| **Site 300** | | |
| Site-wide Operational Impervious Footprint (acres) | 384.7 | No change over the No-Action Alternative |
| Potential for Contaminant Releases during Construction and Operation | Mitigated with BMPs and LLNL procedures | |

Source: NNSA 2023.

### 4.5.3 Cumulative Impacts on Water Resources

Key metrics in this analysis include: (1) increases in impervious areas and stormwater effects; (2) analysis of effluents and the potential for surface/groundwater contamination; and (3) potential floodplain impacts. The details for the No-Action Alternative cumulative impacts are discussed in the 2023 LLNL SWEIS, Section 6.4.5. NNSA's actions would not contribute to offsite cumulative impacts to water resources. Any potential impacts to surface water and groundwater quality would be mitigated through compliance with NPDES and Wastewater Discharge Permit limits and requirements, and the use of BMPs. Groundwater monitoring would continue to ensure that remediation of contamination already present continues to be effective. Irrespective of any offsite development activities, because no offsite impacts to water resources would occur under either alternative, NNSA's actions would not contribute to offsite cumulative impacts to water resources. Therefore, Enhanced Plutonium Facility Utilization would have no additional impact over the No-Action Alternative.

## 4.6 AIR QUALITY

### 4.6.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.6.2 (NNSA 2023). This information is summarized in Table 4-4.

### 4.6.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to air quality from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Approximately 245 employees would be added to the workforce, increasing the number of workers commuting to and from LLNL, which could impact air quality.

This analysis uses the Air Conformity Applicability Model (USAF 2020) to determine whether emissions from new sources would exceed the general conformity rule's *de minimis* threshold values for assessing effects to air quality. Emissions were estimated for construction activities of approximately 32,000 square feet in size, demolition of Building 336, and other infrastructure changes associated with the Enhanced Plutonium Facility Utilization including fencing and utility trenching. Emissions for upgrades at Site 300 were not quantified since no new facilities are being proposed.

Land disturbance associated with construction would generate particulate matter and fugitive dust. In addition, emissions were estimated for on- and off-road diesel equipment and vehicles, new worker trips, and paving off-gasses. These emissions would result in releases of sulfur dioxide, nitrogen oxide, particulate matter, total suspended particulates, volatile organic compounds, and carbon monoxide. These temporary construction emissions would also be expected to generate intermittent, localized odors from diesel exhaust. Operational emissions were estimated for heating and cooling of new buildings and use of vehicles for new workers. Odors anticipated from operational sources would be the same as from current activities.

The total estimated annual emissions for the No-Action Alternative and Enhanced Plutonium Facility Utilization from construction, demolition, and operational activities are presented in Table 4-4. For Enhanced Plutonium Facility Utilization, emissions for Site 300 would remain the same as for the No-Action Alternative. Under the Enhanced Plutonium Facility Utilization project, emissions would remain below the *de minimis* thresholds. Therefore, the general conformity rules would not apply, and these activities would not expose sensitive receptors to substantial pollutant concentrations.

**Table 4-4. Estimated Annual Non-Stationary Emissions for Enhanced Plutonium Facility Utilization**

| Pollutant | Emissions (tons/year) | | | | *De Minimis* Thresholds[c] (tons/year) | Exceeds *De Minimis* Threshold? |
|---|---|---|---|---|---|---|
| | No -Action Alternative | | Enhanced Plutonium Facility Utilization Construction[a,b] | Operations for No-Action Alternative + Enhanced Plutonium Facility Utilization | | |
| | Construction | Operations | | | | |
| VOC | 0.7 | 4.2 | 0.8 | 4.7 | 100(10) | No |
| $NO_x$ | 4.7 | 14.7 | 2.3 | 15.3 | 100(10) | No |
| CO | 4.9 | 51.9 | 3.4 | 57.8 | 100 | No |
| $SO_x$ | <0.1 | 0.1 | <0.1 | 0.1 | 100(70) | No |
| $PM_{10}$ | 26.6 | 1.0 | 0.5 | 1.0 | 100 | No |
| $PM_{2.5}$ | 0.2 | 1.0 | 0.1 | 1.0 | 100(70) | No |
| Pb | <0.1 | <0.1 | <0.1 | <0.1 | 25 | No |

CO = carbon monoxide; $NO_x$ = nitrogen oxides; Pb = lead; $PM_{10}$ = particulate matter less than or equal to 10 microns in aerodynamic diameter; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in aerodynamic diameter; $SO_x$ = sulfur oxides

a. For the Enhanced Plutonium Facility Utilization, the quantity shown would occur for the duration of construction, which is assumed to be 1 year, then revert back to No-Action Alternative levels.
b. Upgrading the training facility at Site 300 is not expected to increase annual emissions above the No-Action Alternative.
c. Least restrictive *de minimis* threshold carried forward for attainment pollutants to determine the level of effects under NEPA. *De minimis* thresholds for Site 300 are 10 tons/year for VOCs and NOx and 70 tons/year for SOx and $PM_{2.5}$.
Sources: USEPA 2024; USAF 2020.

### *Stationary Sources*

The Enhanced Plutonium Facility Utilization project would install a stationary emergency diesel generator to maintain Superblock security systems during an electrical outage. Heating for the new office building would be supported by either natural gas or electric heat pumps. Table 4-5 presents the estimated additional stationary source emissions expected from the Enhanced Plutonium Facility Utilization project. The change in emissions was estimated based on the total change in building square footage. Ultimately, for the permitting of stationary sources, emissions would be evaluated based on the actual equipment selected during the facility design stage.

**Table 4-5. Estimated Livermore Site Stationary Source Emissions for the Alternatives**

| Pollutant | Annual Stationary Sources[a] of Emissions (tons per year) | |
|---|---|---|
| | No-Action Alternative | Enhanced Plutonium Facility Utilization |
| CO | 21.0 | 0.1<br>(0.5% increase over the No-Action Alternative |
| $NO_x$ | 18.2 | 0.1<br>(0.5% increase over the No-Action Alternative) |
| $PM_{10}/PM_{2.5}$ | 2.2 | No change over the No-Action Alternative |
| $SO_x$ | 0.9 | No change over the No-Action Alternative |
| VOC | 7.6 | No change over the No-Action Alternative |

$PM_n$ = particulate matter less than *n* microns in diameter.
a. Because air permitting requirements apply to stationary sources of emissions, those emissions are presented in this table.
Sources: NNSA 2023, USEPA 2024; USAF 2020.

As with the No-Action Alternative, all new stationary sources of air emissions would be reviewed for compliance with all federal, state, and local permitting requirements. LLNL would continue to comply with all regulations and programs outlined in the 2023 LLNL SWEIS, Section 4.6. The Enhanced Plutonium Facility Utilization project would not: (1) result in a net increase greater than the *de minimis* thresholds of any criteria pollutant for which the project region is in non-attainment; (2) expose sensitive receptors to substantial pollutant concentrations; (3) conflict with or obstruct implementation of the applicable air quality plan; or (4) violate any air quality standard or contribute substantially to an existing or projected air quality violation. As a result, no mitigation would be required; however, the following BMPs would be implemented to reduce these already-limited effects:

- All people responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust would take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions might include using water to control dust from building construction and demolition, road grading, or land clearing.
- Construction equipment and vehicles would be inspected daily for leaks of fuel, engine coolant, and hydraulic fluid.
- LLNL personnel would routinely inspect construction sites to ensure adherence to all project-specific requirements.

### *Radiological Air Emissions*

There would be no additional radiological emissions over the No-Action Alternative during the construction or operational activities for the Enhanced Plutonium Facility Utilization project.

### *Summary*

Table 4-6 summarizes the potential air quality impacts for the alternatives.

**Table 4-6. Potential Air Quality Impacts at the Livermore Site for the Alternatives**

| Metric | | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|---|
| Non-Radiological Stationary Source Emissions (tons/year) | CO | 21.0 | 0.1<br>(0.5% increase over No-Action Alternative |
| | NOx | 18.2 | 0.1<br>(0.5% increase over No-Action Alternative) |
| | PM10/2.5 | 2.2 | No change over No-Action Alternative |
| | $SO_2$ | 0.9 | No change over No-Action Alternative |
| | VOC | 7.6 | No change over No-Action Alternative |
| Air Quality Thresholds and Standards | | • Emissions would be below *de minimis* threshold values.<br>• No air quality standards exceeded. | • Emissions would be below *de minimis* threshold values.<br>• No air quality standards exceeded. |
| Radiological Emissions | | 3,610 Ci tritium<br>$<1.5\times10^{-7}$ Ci uranium | No additional radiological emissions over No-Action Alternative |
| MEI Dose (millirem/year) | | 4.21 | |
| MEI LCF[7] Risk | | $2.5\times10^{-6}$ | |
| Population Dose (person-rem/ year) | | 7.1 | |
| Population LCF Risk | | $4.3\times10^{-3}$ | |

MEI = Maximally exposed individual; LCF = Latent cancer fatality.

## 4.6.3 Cumulative Impacts on Air Quality

Key metrics presented in this analysis are: (1) quantities of air emissions from LLNL activities and regional activities; and (2) quantities of radiological emissions. The cumulative annual emissions from LLNL are shown in Table 4-7 below. This shows that the percentage of cumulative criteria pollutant emissions from LLNL would be less than 0.02 percent of the regional $NO_x$ emissions. Other criteria pollutant emissions would be even less. Cumulative radiological emissions considered under the No-Action Alternative include emissions from LLNL along with accelerator operations at Lawrence Berkeley National Laboratory (LBNL) and the Stanford Linear Accelerator (SLAC) (see Table 4-30 in Section 4.14.3 of this SEIS). LLNL would continue to implement mitigation strategies aimed at reducing emissions of all air pollutants that pose health risks to the surrounding community.

[7] Term used to indicate the estimated number of cancer fatalities which may result from exposure to a cancer-causing element. Latent cancer fatalities are similar to naturally occurring cancers and may occur at any time after the initial exposure.

**Table 4-7. Cumulative Impacts on Air Quality**

| Pollutant (tons/year) | Regional Emissions[a] | No-Action Alternative w/ % of regional emissions | Enhanced Plutonium Facility Utilization w/ % of regional emissions |
|---|---|---|---|
| CO | 484,355 | 21.0 (0.004%) | 21.1 (0.004%) |
| $NO_x$ | 115,340 | 18.2 (0.02%) | 18.3 (0.02%) |
| $PM_{10}/PM_{2.5}$ | 54,750 | 2.2 (0.004%) | 2.2 (0.004%) |
| $SO_x$ | 7,665 | 0.9 (0.01%) | 0.9 (0.01%) |
| VOC | 99,645 | 7.6 (0.008%) | 7.6 (0.008%) |

a. From the 2023 LLNL SWEIS, Section 6.4.6. This data relied on 2014 emission data from BAAQMD.

## 4.7 NOISE

### 4.7.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.7.2 (NNSA 2023). This information is summarized in Table 4-8.

### 4.7.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential noise impacts from the Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Approximately 245 employees would be added to the workforce, increasing the number of workers commuting to and from LLNL, which could affect noise impacts.

The projects related to Enhanced Plutonium Facility Utilization would be more than 800 feet from the Livermore Site boundary. Onsite noise from these construction activities would be temporary and managed by BMPs; offsite noise from construction and operations would not be detectable over existing noise levels.

At Site 300, the live fire shoot house is located in the southern portion of the site approximately 500 feet from the site boundary, directly across Corral Hollow Road from the Carnegie State Vehicular Recreation Area. Because there are few residences/businesses, and no schools, within close proximity to Site 300, noise impacts from this facility would be similar to the noise sources at the existing range.

As was discussed in the 2023 LLNL SWEIS (Section 5.7.2), construction workers could be exposed to noise levels higher than the permissible exposure limit of 90 A-weighted decibels specified by the Occupational Safety and Health Administration (OSHA) (29 CFR 1926.52). LLNL would implement appropriate BMPs, including administrative controls, engineering controls, and personal hearing protection equipment.

Under Enhanced Plutonium Facility Utilization traffic noise associated with construction and operations would be similar to the No-Action Alternative. The operational workforce is expected to increase by 245 workers to a total of 10,995 workers for the Enhanced Plutonium Facility Utilization project, a 2.2 percent increase compared to the No-Action Alternative workforce. If all 245 additional workers were to commute to the Livermore Site (which is a bounding assumption

for both the transportation analysis and this noise analysis), local traffic would increase by an average of approximately 0.4 percent over the No-Action Alternative. For Enhanced Plutonium Facility Utilization, a 0.4 percent increase in traffic on area roads is within the projected noise levels as identified in the 2023 LLNL SWEIS. Noise levels from local traffic are typically between 50 and 70 dBA, and these would remain within this range. The summary of the potential noise impacts for both alternatives is shown in Table 4-8. Enhanced Plutonium Facility Utilization would also include back-up generators to be used only during power outages and periodic testing. Noise from facility support equipment internal to the site would not normally be audible beyond the property boundaries.

**Table 4-8. Potential Noise Impacts for the Alternatives**

| Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| Number of New Projects within 800 Feet of Site Boundary | 15 at Livermore Site<br>4 at Site 300 | No change over the No-Action Alternative |
| Noise Increase from Traffic | Worker population of 10,750 | 245 additional workers (2.3% increase over the No-Action Alternative). Although there will be more vehicles on the road, the noise levels would remain between 50 and 70 dBA. |
| Exceedance of Noise Regulations | No | No |

Sources: NNSA 2023; LLNL 2025.

### 4.7.3 Cumulative Impacts on Noise

Key metrics presented in this analysis include: (1) identification of new projects within 800 feet of site boundaries, which may contribute to offsite noise; and (2) cumulative traffic noise analysis. The additional construction activities for Enhanced Plutonium Facility Utilization would be internal to the Livermore Site (>800 ft from the site boundary). At Site 300, noise from construction activities would be temporary; operational noise would be predominately from the existing security training facility and outdoor exercise area. There would be no change in cumulative noise impacts from construction and operational activities over the No-Action Alternative.

The 2023 LLNL SWEIS, Chapter 6 (Section 6.4.11) discusses the cumulative increase in traffic on area roads. Noise levels from local traffic are typically between 50 and 70 dBA, and the Enhanced Plutonium Facility Utilization would remain within this range. On area freeways (such as I-580), the typical noise levels are 70 to 80 dBA and would not change due to Enhanced Plutonium Facility Utilization. Therefore, there would be no additional cumulative noise impacts from traffic.

## 4.8 BIOLOGICAL RESOURCES

### 4.8.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.3.2 (NNSA 2023). This information is summarized in Table 4-9.

### 4.8.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to biological resources from the Enhanced Plutonium Facility Utilization project resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. As shown in Table 4-9, there would be no additional impacts to vegetation, fish and wildlife, special status species and habitat, or wetlands at the Livermore Site. At Site 300, modifications would be conducted in already developed areas and would have no impact on vegetation, fish or wildlife, special status species and habitat, or wetlands. At both sites, a biologist will review the disturbed areas during construction and recommend BMPs and mitigations.

**Table 4-9. Potential Impacts to Biological Resources**

| Biological Resource Area | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| Net Land Disturbed | Livermore Site: 52.5 acres<br>Site 300: 34.6 acres | Livermore Site: 5 additional acres disturbed<br>Site 300: Less than 1 acre disturbed |
| Fish & Wildlife | There would be no changes in fish habitat. Any wildlife temporarily displaced during construction could occupy adjacent habitat. Potential impacts would be reviewed and mitigated. | No changes over the No-Action Alternative |
| Special Status Species & Habitats | Potential impacts on biological resources would be reviewed and mitigated. | No changes over the No-Action Alternative |
| Tritium Levels in Vegetation & Commodities | Tritium levels in local vegetation and commodities would continue to be monitored. | No changes over the No-Action Alternative |
| Radiological Protection of Biological Resources[a] | Vegetation, soils and commodities would continue to be monitored. Radionuclides considered for dose contribution to biota include gross alpha and gross beta levels, and the sum of the fractions was 0.014, below the threshold of 1.0. | No changes over the No-Action Alternative |
| Wetlands | Potential impacts on wetlands would be reviewed and mitigated. | No changes over the No-Action Alternative |

a. Source: LLNL 2024.

### 4.8.3 Cumulative Impacts on Biological Resources

The Enhanced Plutonium Facility Utilization project would not contribute to cumulative biological impacts over the No-Action Alternative, which are identified in the 2023 LLNL SWEIS, Section 6.4.8. A biologist would monitor construction activities and recommend BMPs and mitigations.

## 4.9 CULTURAL AND PALEONTOLOGICAL RESOURCES

### 4.9.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.9.2 (NNSA 2023).

### 4.9.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to cultural and paleontological resources from the Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. The Livermore Site contains no additional recorded archaeological resources. At the Livermore Site and Site 300, all previous National Registered Historic Places (NRHP)-eligible architectural facilities, including Building 332, have been reviewed, re-evaluated, and mitigated, and no longer retain NRHP eligibility. There are no cultural resources of religious or cultural significance that have been identified by Native American tribes at either site.

There is a low risk that any ground-disturbance associated with the Enhanced Plutonium Facility Utilization project would encounter cultural resources or compromise the integrity of built-in historic buildings. Also, since excavations associated with the Enhanced Plutonium Facility Utilization project are expected to be in highly disturbed areas and at depths of less than approximately 10 feet, there is a low probability that fossil remains would be encountered during construction activities.

As described in the 2023 LLNL SWEIS, Chapter 4, Section 4.9.3, any proposed ground-disturbing activities at the Livermore Site or Site 300 would be reviewed against archaeological and paleontological sensitivity maps and other information (such as prior field surveys or historical records) and assessed for potential effects to cultural resources. If an item is unearthed during construction activities, the item would be investigated for its significance. If deemed necessary, consultation with the California State Historic Preservation Officer, or mitigation activities would be completed as needed.

### 4.9.3 Cumulative Impacts on Cultural and Paleontological Resources

The Enhanced Plutonium Facility Utilization project would not contribute to cumulative impacts on cultural and paleontological resources over the No-Action, which are identified in the 2023 LLNL SWEIS, Section 6.4.9. If an item of significance is found during excavation, it would be assessed and mitigated.

## 4.10 SOCIOECONOMIC CHARACTERISTICS AND DEMOGRAPHICS

### 4.10.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.10.2 (NNSA 2023). This information is summarized in Table 4-10.

### 4.10.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential socioeconomic impacts of Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Approximately 245 employees would be added to the workforce.

### *Socioeconomics*

The peak construction workforce is not expected to change as a result of the Enhanced Plutonium Facility Utilization, therefore the analysis in this section focuses on changes associated with the operational workforce. Table 4-10 shows the summary comparison of socioeconomic impacts with the Enhanced Plutonium Facility Utilization project. The approximate increase in operational workforce of 245 personnel represents a 2.2 percent increase over the No-Action. Changes to the key socioeconomic indicators of (1) employment and economic activity, (2) population and housing, and (3) community services and schools, are identified in Table 4-10. The details supporting these analyses are shown in the 2023 LLNL SWEIS, Section 5.10.1.2.

**Table 4-10. Potential Socioeconomic Impacts for the Alternatives**

| Resource/Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| Increase in Direct LLNL Jobs | 10,750 | 245 (2.2% increase over the No-Action Alternative) |
| Increase in Indirect Jobs | 8,538 | 200[a] (2.3% increase over the No-Action Alternative) |
| Total Direct and Indirect Employment[a] | 19,288 | 440 (2.2% increase over the No-Action Alternative) |
| Total ROI[b] Labor Force | 2,238,799 | No increase over the No-Action Alternative |
| Annual Earnings from Direct Jobs at LLNL | $1,740.5M | $40.5M (2.3% increase over the No-Action Alternative) |
| Annual Earnings from Indirect jobs | $1,412.9M | $33.7M (2.4% increase over the No-Action Alternative) |
| Total Annual Value Added to ROI Economy | $3,167.8M | $72.9M (2.3% increase over the No-Action Alternative) |
| Additional School Children from LLNL Added to ROI | 4,300 | 96 (2.2% increase over the No-Action Alternative) |
| Housing units occupied by LLNL Workforce[c] | 10,750 | 245 (2.2% increase over the No-Action Alternative) |

a. Indirect employment for operational workforce was estimated using a direct-effect multiplier of 1.8322 (BEA 2021).
b. The socioeconomic ROI (Region of Influence) is defined on the basis of the residential location of full-time LLNL workers directly involved in LLNL activities and encompasses the area in which most of these workers spend their wages and salaries.
c. Assuming one LLNL worker per household.

### *Demographics*

In January 2025, several orders and initiatives that directed federal agencies to incorporate demographic considerations into the decision-making process were rescinded by Executive Order 14173. This SEIS includes an analysis of at-risk populations to reflect the analyses from the 2023 LLNL SWEIS. This analysis includes the environmental impacts that the alternatives may have on at-risk populations, and whether such impacts are disproportionate to those populations in the potentially affected area.

The 2023 LLNL SWEIS, Section 4.10.5 presents information on at-risk populations in the ROI for census tracts within a 50-mile radius of the Livermore Site and Site 300. The 50-mile radius population surrounding the Livermore Site is 8,457,535, of which 62.8 percent is minority, and surrounding Site 300 is 7,453,607, of which 63.8 percent is minority. The average low-income

population living within the 50-mile radius of the Livermore Site is 9.6 percent and of Site 300 is 9.9 percent.

Adverse health effects are measured in risks and rates that could result in latent cancer fatalities (LCFs)[8] and other fatal or nonfatal adverse impacts on human health. A disproportionate environmental impact that is significant refers to an impact or risk of an impact on the natural or physical environment in an at-risk community that appreciably exceeds the environmental impact on the larger community. Such effects may include ecological, cultural, human health, economic, or social impacts. In assessing cultural and aesthetic environmental impacts, LLNL considered impacts that uniquely affect geographically dislocated or dispersed at-risk populations or American Indian Tribes.

The 2023 LLNL SWEIS, Chapter 5, Table 5-27, shows the potential impacts to at-risk populations for each resource area. Based on the analysis of impacts, there would be no disproportionate environmental impacts on at-risk populations from construction and operational activities under the 2023 LLNL SWEIS at the Livermore Site and Site 300. There would be no additional impacts from Enhanced Plutonium Facility Utilization.

### 4.10.3 Cumulative Impacts on Socioeconomics and Demographics

#### *Socioeconomics*

Key metrics presented in this analysis include: (1) employment and population changes; and (2) impacts on housing, community services, and schools. The details for the No-Action Alternative are discussed in the 2023 LLNL SWEIS, Section 6.4.10.

As shown in Table 4-11, direct and indirect labor from LLNL operations associated with Enhanced Plutonium Facility Utilization would increase to 19,728, which would be 0.88 percent of the projected regional workforce of 2.24 million. The 2023 LLNL SWEIS projected that the population in the ROI is expected to increase to 4,752,927 people. The Enhanced Plutonium Facility Utilization project would add approximately 245 direct workers. If these 245 new jobs were completely filled by workers migrating into the ROI, the maximum population increase in the ROI would be 720 people, assuming 3 people per household (or 245 multiplied by 3 per household), or 0.02 percent of the projected 2035 ROI population.

Enhanced Plutonium Facility Utilization would not have any additional cumulative impacts on fire protection, police protection services, medical services, and school enrollment. Similarly, there would not be any additional cumulative impacts on housing or availability, as those issues would be largely driven by non-NNSA population increases.

[8] A latent cancer fatality (LCF) is a term used to indicate the estimated number of cancer fatalities which may result from exposure to a cancer-causing element. LCFs are similar to naturally occurring cancers and may occur at any time after the initial exposure.

**Table 4-11. Cumulative Socioeconomic Impacts for Both Alternatives**

| Resource/Metric | No-Action Alternative[a] | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **Jobs** | | |
| Total Direct and Indirect Employment[b] | 19,288 | 440 (19,728 including No-Action Alternative, a (2.2% increase) |
| Total ROI labor force (persons)[c] | 2,238,799 | 2,239,239 (0.02% increase over the No-Action Alternative) |
| **Earnings/Value Added** | | |
| Earnings from direct jobs at LLNL[d] (millions of dollars) | $1,740.5M | $40.5M (2.3% increase over the No-Action Alternative) |
| Earnings from indirect jobs from LLNL in ROI[e] (millions of dollars) | $1,412.9M | $33.7M (2.4% increase over the No-Action Alternative) |
| Value added from LLNL[f] (millions of dollars) | $3,167.8M | $72.9M (2.3% increase over the No-Action Alternative) |
| **Population** | | |
| Total ROI population[g] | 4,752,927 | 4,753,647 (0.02% increase over the No-Action Alternative |

a. Values are shown in Chapter 5, Table 5-25.
b. Derived from direct and indirect employment. Indirect employment for construction/DD&D was estimated using a direct-effect employment multiplier of 1.3855 and indirect employment for operational workforce was estimated using a direct-effect employment multiplier of 1.8322 (BEA 2021).
c. Calculated using the average labor force growth rate of historic labor force in the ROI (EDD 2020).
d. Derived from earnings from direct jobs using a final-demand earnings multiplier of 0.4467 applied to the change in jobs / change in final demand multiplier of 5.0364 for construction and a final-demand earnings multiplier of 0.4374 applied to the change in jobs / change in final demand multiplier of 2.5926 for operations (BEA 2021).
e. Derived from earnings from earnings directs jobs/change in employment.
f. Value added was estimated using a using a final-demand value added multiplier of 0.7584 applied to the change in jobs/change in final demand multiplier of 5.0364 for construction and a final-demand value added multiplier of 0.7986 applied to the change in jobs/change in final demand multiplier of 2.5926 (BEA 2021).
g. Population projection for the year 2035 (the end date for the 2023 LLNL SWEIS) for counties in the ROI from California's Department of Finance, Table P-1: State Population Projections (2010-2060) (DOF 2020a).
Sources: DOF 2020, EDD 2020, LLNL 2019a; USCB 2021, BEA 2021.

### *Demographics*

The analysis in this section identifies and addresses any disproportionate and adverse human health or environmental effects on at-risk populations, based on other resource impacts. The details for the No-Action Alternative cumulative impacts are discussed in the 2023 LLNL SWEIS, Chapter 6, Section 6.4.10.2. Additionally, the 2023 LLNL SWEIS, Chapter 5, Section 5.10.2, shows that no disproportionate or adverse impacts are expected for at-risk populations. Consequently, the impacts from NNSA's actions would not be expected to contribute to off-site cumulative impacts to at-risk populations from other non-NNSA actions.

With specific regard to radiological transportation (see Table 4-14 in Section 4.11.2.2), including TRU waste to WIPP (or INL), the collective incident-free dose to the general public would be 30.0 person-rem, with an associated increased risk of 0.018 LCF/year for Enhanced Plutonium Facility Utilization. For the No-Action Alternative, the collective incident-free dose to the general public would be 24.7 person-rem, with an associated increased risk of 0.015 LCF/year. An increase of 5.3 person-rem to the population along the transportation route would not result in any statistically significant change to the LCF risk and any impacts to at-risk populations are expected to be similar

to those that would be experienced by the general population; therefore, radiological transportation would not result in disproportionate and adverse impacts on at-risk populations.

## 4.11 TRAFFIC AND TRANSPORTATION

### 4.11.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.11.2 (NNSA 2023). This information is summarized in Table 4-12.

### 4.11.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to traffic and transportation from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Approximately 245 employees would be added to the total workforce, increasing the number of workers commuting to and from LLNL. There would also be an increase in the number of shipments of materials and wastes.

#### *Traffic*

Construction and operational activities associated with Enhanced Plutonium Facility Utilization would use the transportation infrastructure in the region and would have the potential to cause impacts as a result of worker-commuting and additional construction vehicles. Under the No-Action Alternative, a maximum of 700 construction workers per year would commute to LLNL annually (mostly to the Livermore Site, but some to Site 300). This peak construction workforce (700 workers) would not change for Enhanced Plutonium Facility Utilization. The operational workforce at LLNL is expected to increase 2.2 percent from the No-Action Alternative baseline of 10,750 workers to approximately 10,995 workers for the Enhanced Plutonium Facility Utilization project.

Traffic impacts were determined by comparing No-Action Alternative traffic levels with projected traffic increases associated with Enhanced Plutonium Facility Utilization. Table 4-12 displays how an increase of 245 workers would impact area roads. If all 245 workers were to commute to the Livermore Site (which is a bounding assumption for the transportation analysis), local average daily traffic (ADT) would increase by an average of approximately 0.4 percent. (Note: as Table 4-12 shows, traffic on specific roads in the vicinity of the Livermore Site would increase by 0.2 to 0.5 percent.) The increase in traffic would not affect the level of service (LOS) on roads in the vicinity of the Livermore Site. As discussed in the 2023 LLNL SWEIS, Section 5.11.1, traffic would need to increase by at least 20 percent to cause a LOS change (NNSA 2023).

As described in the 2023 LLNL SWEIS, Section 4.11.1.1, in the vicinity of the Livermore Site, I-580 carries an ADT volume of 165,000 to 220,000 vehicles. The addition of 245 vehicles under the Enhanced Plutonium Facility Utilization project would be less than 0.1 percent of the average daily volume on I-580. An increase in the Livermore Site workforce from 10,750 workers under the No-Action Alternative to a total of 10,995 workers under Enhanced Plutonium Facility Utilization would not increase traffic volumes that would challenge the primary and secondary

road network on LLNL. Changing 2nd Street on the Livermore Site to a one-way road would not affect traffic flow on the site.

**Table 4-12. Impacts to Area Roads for the Alternatives**

| Road | ADT Volume (vehicles/day)[a] | % of LLNL Traffic Using Road | ADT Volume Due to No-Action Alternative LLNL Traffic (vehicles/day) | Potential Increase in ADT Volume Due to Enhanced Plutonium Facility Utilization (vehicles/day)[b] |
|---|---|---|---|---|
| East Avenue | 18,128 | 20% | 2,150 | 49 (0.4% increase over the No-Action Alternative) |
| Patterson Pass Road | 6,883 | 10% | 1,075 | 25 (0.4% increase over the No-Action Alternative) |
| Greenville Road | 14,416 | 33% | 3,547 | 81 (0.6% increase over the No-Action Alternative) |
| Vasco Road | 20,638 | 37% | 3,978 | 90 (0.4% increase over the No-Action Alternative) |
| **Total** | **60,065** | **100%** | **10,750** | **245 (0.4% increase over the No-Action Alternative)** |

a. Source: NNSA 2023, LLNL 2025.
b. Assumes that: (1) future traffic would be distributed across area roads in the same percentages as existing pre-pandemic traffic, and (2) each additional worker would commute to LLNL alone daily. Increase is presented in comparison to existing pre-pandemic ADT volumes on roads.

### *Transportation of Radiological Materials and Waste*

Under Enhanced Plutonium Facility Utilization, LLNL would transport radiological materials to and from other NNSA sites and the LLNL Livermore Site. LLNL would also transport TRU wastes and LLW to offsite disposal facilities. Transportation of these materials is shown in Table 5-31 of the 2023 LLNL SWEIS. A summary of that table is presented in Table 4-13 below. This section evaluates the potential impacts of these shipments.

The 2023 LLNL SWEIS, Section 5.11.3.2, presents the impacts under the No-Action Alternative. Onsite transportation of radioactive materials is discussed in the 2023 LLNL SWEIS, Appendix C (Section C.3.8). As for the 2023 LLNL SWEIS, the Radioactive Materials Transport (RADTRAN) computer model was used for this impact analysis.

No radiological or hazardous waste materials/shipments are expected to be done in support of new construction activities under Enhanced Plutonium Facility Utilization at the Livermore Site unless contaminated soils are encountered and require offsite disposal. If contamination is found in excavated soil, it would be transported and disposed of according to established procedures.

This section addresses the Enhanced Plutonium Facility Utilization project as it pertains to estimated transportation impacts associated with radiological materials and waste shipped to/from the Livermore Site. As was the case under the No-Action Alternative, LLW and MLLW would primarily be transported from the Livermore Site to either the Nevada National Security Site (NNSS) or Energy*Solutions* in Clive, Utah. LLNL estimates that approximately 85 percent of the routine LLW and MLLW generated at the Livermore Site under the project would be sent to NNSS and the remaining 15 percent would be sent to Energy*Solutions*. No changes from the No-Action Alternative's LLW/MLLW shipment quantities are anticipated under the Enhanced Plutonium Facility Utilization project.

Anticipated changes under the Enhanced Plutonium Facility Utilization project would, however, include an increase in TRU waste shipments from 8 to 40 shipments per year, and an increase in plutonium-material shipments from 22 to 40 shipments per year. For TRU waste, up to 30 additional shipments are associated with non-routine TRU waste that was not accounted for in the 2023 LLNL SWEIS. This includes TRU wastes associated with DD&D of rooms, gloveboxes, and major pieces of equipment, some of which would require shipment directly to INL for characterization, volume reduction, repackaging, and ultimately disposed of at WIPP. The 2023 LLNL SWEIS acknowledged the possibility for TRU packages to be shipped to INL for any additional characterization or repackaging that may be required (see Section 5.11.3). Any potential transportation impacts from LLNL to INL are bounded by those from LLNL to WIPP (see footnote "b" in Table 4-13).

Radiological shipment information is summarized in Table 4-13. Radiological shipment categories that are not changing from the 2023 LLNL SWEIS (i.e., under "All Other Shipments") are not repeated here and can be found in Table 5-31 of the SWEIS. The total number of shipments for Enhanced Plutonium Facility Utilization would be approximately 5.6 percent over the No-Action Alternative.

**Table 4-13. Radiological Transportation Shipments for the Alternatives**

| Metric | Origin | Destination | No-Action Alternative[a] | Enhanced Plutonium Facility Utilization[a] | Total Shipments | Percent Increase |
|---|---|---|---|---|---|---|
| TRU Shipments | LLNL | WIPP[b] | 8[c] | 2 additional (for routine TRU) | 10 (routine) | 25% |
| TRU Shipments | LLNL | WIPP[b] | N/A[c] | up-to 30 additional (for non-routine TRU) | 30 (non-routine) | N/A |
| LLW Shipments | LLNL | Various | 509 | No change over the No-Action Alternative | 509 | 0% |
| Plutonium Materials | LLNL or NNSS or LANL | NNSS or LLNL or LANL | 22 | 18 additional | 40 | 82% |
| All Other Shipments | Various | Various | 349 | No change over the No-Action Alternative | 349 | 0% |
| **Totals of All Shipments** | | | **888[d]** | **50 additional** | **938** | **5.6%** |

a. Number of shipments
b. The 2023 LLNL SWEIS acknowledged the possibility for TRU packages to be shipped to the Idaho National Laboratory (INL) for any additional characterization or repackaging that may be required (*see* Section 5.11.3). The distance from LLNL to INL is approximately two-thirds as far as LLNL to WIPP and the population densities along potential transportation routes are collectively smaller from LLNL to INL as compared to LLNL to WIPP. Consequently, any potential transportation impacts from LLNL to INL are bounded by those from LLNL to WIPP.
c. The 2023 LLNL SWEIS provided a range for non-routine TRU waste generation (60 – 123 cubic meters per year). The total TRU waste shipments identified in the 2023 LLNL SWEIS (i.e., 8 shipments) did not account for this non-routine waste. NNSA believes that an additional 15 to 30 shipments may be needed for this waste. To be conservative, this SEIS presents the potential impacts associated with up to 30 additional shipments of non-routine TRU waste.
d. From Table 5-31 of the 2023 LLNL SWEIS.

For the RADTRAN analysis, crew members consist of a driver and a backup driver for each shipment vehicle. The general population is defined as those residing within 0.50 miles of a vehicle's projected route, those sharing the road with the vehicle, and people nearby at vehicle rest-stops. The dose/LCF risks to the exposed population under the Enhanced Plutonium Facility Utilization project are scaled from the 2023 LLNL SWEIS along anticipated transportation routes.

Two types of transportation impacts are presented here. The first, shown in Table 4-14, presents the potential radiological dose on the transportation crew and general population as the vehicle travels along its route, with no traffic incidents ("incident-free"). Under the Enhanced Plutonium Facility Utilization project, the increase of the total number of shipments from 888 to 938 would yield a cumulative dose to transportation crews of 73.8 person-rem per year (a 6.6 percent increase over the No-Action Alternative), with an associated risk of 0.045 LCF/year. As discussed in Table 4-14, a maximally exposed crew member may allowably receive up to 2 rem/year (per DOE's administrative control level) from incident-free transportation. For the entire population along the route, the cumulative collective dose is 30.0 person-rem (a 21 percent increase over the No-Action Alternative), with an associated risk of 0.018 LCF/year.

**Table 4-14. Annualized Radiological Transportation Impacts for the Alternatives—Incident-Free Dose and Risk**

| Metric | Shipments per year | Crew Dose (person-rem)[a] | Crew Risk (LCF) | Population Dose (person-rem) | Population Risk (LCF) |
|---|---|---|---|---|---|
| **No-Action Alternative** | | | | | |
| TRU Shipments[b] | 8 | 0.88 | $5.3 \times 10^{-4}$ | 1.1 | $6.5 \times 10^{-4}$ |
| LLW/MLLW Shipments | 509 | 7.9 | $4.7 \times 10^{-3}$ | 4.2 | $2.5 \times 10^{-3}$ |
| Pu Material Shipments | 22 | 1.4 | $8.5 \times 10^{-4}$ | 0.64 | $3.8 \times 10^{-4}$ |
| All Other Shipments | 349 | 59 | 0.036 | 19 | 0.011 |
| **Cumulative[c]** | **888** | **69.2** | **0.042** | **24.7** | **0.015** |
| **Enhanced Plutonium Facility Utilization** | | | | | |
| TRU Shipments[b] | 40 | 4.4 | $2.6 \times 10^{-3}$ | 5.6 | $3.2 \times 10^{-3}$ |
| LLW/MLLW Shipments | 509 | 7.9 | $4.7 \times 10^{-3}$ | 4.2 | $2.5 \times 10^{-3}$ |
| Pu Material Shipments | 40 | 2.5 | $1.5 \times 10^{-3}$ | 1.2 | $6.9 \times 10^{-4}$ |
| All Other Shipments | 349 | 59 | 0.036 | 19 | 0.011 |
| **Cumulative[d]** | **938** | **73.8 (6.6% increase over No-Action)** | **0.045** | **30.0 (21% increase over No-Action)** | **0.018** |

a. A DOE employee would also need to comply with DOE regulations at 10 CFR Part 835, which limits worker radiation doses to 5 rem/year; At LLNL, administrative control limits are multi-tiered, meaning they can vary between 100 millirem/year up to 500 millirem/year, depending on the situation (LLNL 2023b). This limit/guideline would apply to any non-TRU waste shipment conducted by DOE personnel. Drivers of non-TRU waste shipments have a DOE administrative exposure guideline of 2 rem/year, and drivers of TRU waste shipments to WIPP have an administrative exposure guideline of 1 rem/year. Commercial (i.e., non-DOE-employed) drivers are subject to OSHA regulations, which limit the whole-body dose to 5 rem/year (29 CFR 1910.1096), and to the USDOT requirement of 2 millirem/hour inside the truck cab (49 CFR 173.411).

b. Impacts are presented for TRU transportation from LLNL to WIPP. The 2023 LLNL SWEIS acknowledged the possibility for TRU packages to be shipped to INL for any additional characterization or repackaging that may be required (*see* Section 5.11.3). Any potential transportation impacts from LLNL to INL are bounded by those from LLNL to WIPP. The 40 TRU shipments include up to 30 shipments of non-routine TRU waste that were not accounted for in the 2023 LLNL SWEIS.

c. The 2023 LLNL SWEIS shows radiological transportation impacts (Table 5-31) from all radiological material and waste shipments. These are summarized here.

d. These cumulative totals include the additional 20 shipments under Enhanced Plutonium Facility Utilization, together with the No-Action Alternative, as well as up to 30 shipments associated with non-routine TRU waste that were not accounted for in the 2023 LLNL SWEIS.

The second type of transportation impact is presented in Table 4-15. This shows the potential radiation risk to the public following an accident that results in a container breach and release. Under Enhanced Plutonium Facility Utilization, the accident radiation risk of $3.1 \times 10^{-6}$ LCF/year would be a slight increase over the No-Action Alternative. The traffic fatalities risk for the Enhanced Plutonium Facility Utilization project would increase by approximately 5 percent to a cumulative risk of 0.040 fatalities for all 938 shipments.

**Table 4-15. Annualized Radiological and Non-Radiological Transportation Accident Impacts for the Alternatives**

| Metric | Shipments per year | Accident Radiation Risk (LCF) | Accident Non-Radiation Risk (traffic fatalities) |
|---|---|---|---|
| **No-Action Alternative** | | | |
| TRU Shipments[a] | 8 | $4.9 \times 10^{-8}$ | $2.4 \times 10^{-4}$ |
| LLW/MLLW Shipments | 509 | $2.4 \times 10^{-6}$ | 0.028 |
| Pu Material Shipments | 22 | $9.1 \times 10^{-9}$ | $7.0 \times 10^{-4}$ |
| All Other Shipments | 349 | $4.4 \times 10^{-7}$ | $9.1 \times 10^{-3}$ |
| **Cumulative[b]** | **888** | **$2.9 \times 10^{-6}$** | **0.038** |
| **Enhanced Plutonium Facility Utilization** | | | |
| TRU Shipments[a] | 40 | $2.4 \times 10^{-7}$ | $1.2 \times 10^{-3}$ |
| LLW/MLLW Shipments | 509 | $2.4 \times 10^{-6}$ | 0.028 |
| Pu Material Shipments | 40 | $1.7 \times 10^{-8}$ | $1.3 \times 10^{-3}$ |
| All Other Shipments | 349 | $4.4 \times 10^{-7}$ | $9.1 \times 10^{-3}$ |
| **Cumulative[c]** | **938** | **$3.1 \times 10^{-6}$** | **0.040** |

a. Impacts are presented for TRU transportation from LLNL to WIPP. The 2023 LLNL SWEIS acknowledged the possibility for TRU packages to be shipped to INL for any additional characterization or repackaging that may be required (*see* Section 5.11.3). Any potential transportation impacts from LLNL to INL are bounded by those from LLNL to WIPP.

b. The 2023 LLNL SWEIS provides radiological transportation impacts (Table 5-31) from all radiological material and waste shipments and are not repeated in this SEIS, except for cumulative totals.

c. These cumulative totals include the additional 20 shipments under Enhanced Plutonium Facility Utilization, together with the No-Action Alternative, as well as up to 30 shipments associated with non-routine TRU waste that were not accounted for in the 2023 LLNL SWEIS.

The summary of all transportation impacts for the alternatives are shown in Table 4-16.

**Table 4-16. Summary of Transportation Impacts for the Alternatives**

| Metric | No-Action Alternative | Enhanced Plutonium Facility Utilization[a] |
|---|---|---|
| Traffic Increase on Area Roads | 1.6%–3.2% (average of 2.3%) | 0.2%–0.5% over No-Action Alternative (average of 0.4%) |
| Number of Annual Radiological Shipments | 888 | 938 (5.6% increase over the No-Action Alternative) |
| Crew Dose (person-rem) | 69.2 | 73.8 (6.6% increase over the No-Action Alternative) |
| Crew Radiological Risk (LCF) | 0.042 | 0.045 (6.6% increase over the No-Action Alternative) |
| Population Dose (person-rem) | 24.7 | 30.0 (21% increase over the No-Action Alternative) |
| Population Radiological Risk (LCF) | 0.015 | 0.018 (21% increase over the No-Action Alternative) |

As discussed in Section 4.4.2 of this SEIS, construction for Enhanced Plutonium Facility Utilization could generate approximately 20,000 cubic meters of soil from excavation activities, some of which could be contaminated. Contaminated soils would be managed in accordance with existing waste management practices. Existing pathways for disposal of non-radiologically contaminated soil could include municipal landfills or other TSD facilities, depending on contaminant type and concentration. Radiologically contaminated soils would likely be disposed of at NNSS or Energy*Solutions*. NNSA has previously analyzed the transportation of up to 4 million cubic feet (which equates to 108,000 cubic meters) of radiologically contaminated soils from the Santa Susana Field Laboratory, California to the NNSS (NNSS 2024). That transportation

was estimated to require approximately 8,000 truck trips. The dose to the transportation crew was estimated to be approximately $5x10^{-5}$ person-rem/mile and the dose to the public along the transportation route was estimated to be $9x10^{-6}$ person-rem/mile. For the Enhanced Plutonium Facility Utilization, transporting up to 2,000 cubic meters of contaminated soils (which assumes approximately 10 percent of the excavated soils are radiologically contaminated) from LLNL to NNSS would require approximately 150 truck trips, which would equate to approximately 90,000 miles of total transport.[9] The doses for this transport would be 4.4 person-rem to the transportation crew and 0.8 person-rem to the public along the transportation route.

### 4.11.3 Cumulative Impacts on Traffic and Transportation

Key metrics presented in this analysis include: (1) traffic changes on area roads; and (2) impacts to the public and transportation crews from shipments of radiological and hazardous materials.

#### *Local Transportation*

The 2023 LLNL SWEIS, Chapter 6, Section 6.4.11.1, discusses cumulative traffic impacts for the No-Action Alternative. Enhanced Plutonium Facility Utilization would increase the LLNL population by 245 persons. Compared to the projected ROI population of 4,752,927 persons, this increase would be much less than 0.01 percent. The local traffic in the vicinity of the LLNL Livermore Site would increase by an average of approximately 0.4 percent. These traffic increases would not be expected to degrade the LOS on area roads.

#### *Radiological Transportation*

Tables 4-14 and 4-15 above provide information on radiological transportation for both alternatives. The assessment of cumulative impacts includes other nationwide facilities and their present and reasonably foreseeable future actions involving radioactive material transport; and focuses on radiological impacts from offsite transportation throughout the nation that would result in potential radiation exposure to the general population. This is in addition to those environmental impacts evaluated above. Cumulative radiological impacts from transportation are measured using the collective dose to the general population and workers because dose can be directly related to LCFs using a dose conversion factor.

Table 4-17 shows the potential impacts on transportation workers and the general population from future transportation activities considered in this SEIS, compared to DOE and non-DOE radiological transportation activities. Cumulative impacts include contributions from both alternatives, as shown. As emphasized below, the increases depicted in Tables 4-14 and 4-15 for the total number of shipments (and associated assessed potential impacts) of radiological materials and waste would be expected to increase for Enhanced Plutonium Facility Utilization over what is estimated for the No-Action Alternative exclusively.

[9] A 600-mile route from LLNL to NNSS would keep trucks on U.S. interstates and major state roads.

**Table 4-17. Cumulative Radiological Transportation Impacts**

| Action | | Crew Dose (person-rem) | Risk of Crew Latent Cancer Fatality | Population Dose (person-rem) | Risk of Population Latent Cancer Fatality |
|---|---|---|---|---|---|
| **All other DOE and non-DOE Radiological Transportation Subtotal[a]** | | **427,680–430,000** | **256–258** | **438,500–440,200** | **263–264** |
| **LLNL SEIS** | No-Action Alternative (over 15 years) | 1,038 (0.2% of total cumulative crew dose) | 0.62 (0.2% of total cumulative crew LCF) | 370 (0.08% of total cumulative population dose) | 0.22 (0.08% of total cumulative population LCF) |
| | Enhanced Plutonium Facility Utilization (over 15 years) | 69 (0.016% increase over the No-Action cumulative crew dose) | 0.041 (0.016% increase over the No-Action cumulative crew LCF) | 80 (0.018% increase over the No-Action cumulative population dose) | 0.048 (0.018% increase over the No-Action Alternative) |
| **Total Cumulative Impact (up to 2073)** | | **428,787–431,107** | **257–259** | **438,950–440,650** | **263–264** |

a. From Table 6-7 of the 2023 LLNL SWEIS, Section 6.4.11.2.

## 4.12 INFRASTRUCTURE

### 4.12.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.12.2 (NNSA 2023). This information is summarized in Table 4-18.

### 4.12.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to infrastructure resource areas (water consumption, sanitary sewer, etc.) from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Table 4-18 summarizes the existing infrastructure capacities, current demands, and projected demands associated with both alternatives.

#### *Water Consumption*

Construction and operational activities associated with the Enhanced Plutonium Facility Utilization project are expected to require an additional 8 million gallons of water per year at the Livermore Site (1.7 percent increase over No-Action Alternative). At Site 300, water use would not increase over the No-Action Alternative) (see Table 4-18). The existing capacities of both the Livermore Site domestic water system (approximately 1,051 million gallons per year) and the Site 300 domestic water system (approximately 473 million gallons per year) are adequate to meet future water demand.

### *Sanitary Sewer*

Construction and operational activities associated with Enhanced Plutonium Facility Utilization are expected to discharge up to 8,085 additional gallons of wastewater per day at the Livermore Site (2.2 percent increase over the No-Action Alternative); at Site 300, wastewater discharges would not change (see Table 4-18). The LWRP currently receives approximately 7.0 million gallons of effluent per day. The capacity of this facility is 9.5 million gallons of effluent per day. The General Service Area (GSA) wastewater treatment facility at Site 300 can process about 7,500 gallons per day.

### *Electricity Consumption*

Construction and operational activities associated with Enhanced Plutonium Facility Utilization are expected to consume up to 2 million additional kWh per year at the Livermore Site for a total steady-state electricity consumption of 537 million kWh per year (0.36 percent increase over the No-Action Alternative). At Site 300, the anticipated electricity consumption is projected to remain effectively unchanged, with any potential increase to be within the margin of normal operational variability. The LLNL distribution system would have sufficient capacity to meet the electrical power requirements for Enhanced Plutonium Facility Utilization.

### *Fuel Consumption*

A comparison of the Enhanced Plutonium Facility Utilization project to the No-Action Alternative is provided in Table 4-18. At the Livermore Site, natural gas consumption would increase by 49 therms per day to 13,549 therms per day under Enhanced Plutonium Facility Utilization (a 0.36 percent increase over the No-Action Alternative). The available capacity at the Livermore Site is 24,500 therms per day. Natural gas is not used at Site 300. For fuel (gasoline and diesel), NNSA has set a goal to reduce usage by 2 percent year-over-year, and that would continue under Enhanced Plutonium Facility Utilization (DOE 2025b). As described in the 2023 LLNL SWEIS, by 2035, petroleum usage at LLNL is expected to decline to 85,000 gallons per year (NNSA 2023).

**Table 4-18. Existing Capacity and Use of Infrastructure Resources for the Alternatives**

| Resource/Metric | Site | Existing Capacity | No-Action Alternative Consumption | Enhanced Plutonium Facility Utilization Consumption |
|---|---|---|---|---|
| Domestic water (million gallons/year) | Livermore Site | 1,051 | 482 | 8 (1.7% increase over the No-Action Alternative) |
| | Site 300 | 473 | 21.05 | No change over the No-Action Alternative |
| Wastewater (gallons/day) | Livermore Site | 2,500,000[a] | 421,689 | 8,085 (2.2% increase over the No-Action Alternative) |
| | Site 300 | 7,500[e] | 10,561 | No change over the No-Action Alternative |
| Electricity—Power Consumption | Livermore Site | 125 MW[f] | 535 million kWh/yr | 2 million kWh/yr (0.36% increase over the No-Action Alternative) |
| | Site 300 | ND[b] | 24.7 | No change over the No-Action Alternative |
| Natural Gas (therms/day) | Livermore Site | 24,500 | 13,500 | 49 (0.36% increase over the No-Action Alternative) |
| | Site 300 | None | None | No change over the No-Action Alternative |
| Fuel (gasoline and diesel) usage (gallons/year) | Livermore Site | Not Applicable[c] | 85,000[d] | No change over the No-Action Alternative |
| | Site 300 | | | |

a. Total facility capacity of the LWRP is 9,500,000 gallons per day; there is an available capacity of 2,500,000 gallons per day.
b. ND = No available data.
c. Petroleum fuel is delivered by truck and not capacity limited.
d. NNSA's goal is to reduce petroleum usage at LLNL by approximately 2 percent year-over-year. By 2035 petroleum usage is expected to decline to 85,000 gal/year.
e. This capacity is for the GSA wastewater treatment facility as described in the 2023 LLNL SWEIS.
f. Capacity is based on instantaneous capability in MW and actual usage (consumption) is presented in million kWh.
Source: NNSA 2023

### 4.12.3 Cumulative Impacts on Infrastructure

Key metrics presented in the infrastructure analysis are: (1) quantities of water, electricity, sanitary sewer (wastewater), and fuel (petroleum and natural gas); and (2) current infrastructure to meet these demands.

#### *Cumulative Impacts on Water Consumption*

LLNL's primary water suppliers are the San Francisco Public Utilities Commission (SFPUC) Hetch Hetchy Regional Water System (HHS) and Zone 7. These systems provide water to about 3 million residents and businesses. The existing capacity of the Livermore Site domestic water system is approximately 1,051 million gallons per year. Under Enhanced Plutonium Facility Utilization, water consumption at LLNL would increase by 8 million gallons per year to 511 million gallons. California continues to have variation in water supply due to yearly precipitation and groundwater capacity, and any increase in water consumption at the Livermore Site would add to overall water demands and water supply issues in the region.

#### *Cumulative Impacts on Sanitary Sewer*

The LWRP is responsible for managing and treating the City of Livermore and the Livermore Site wastewater (sewer) discharges. The LWRP is capable of treating 9.5 million gallons of wastewater

per day. Currently, the LWRP treats 7.0 million gallons per day. Under Enhanced Plutonium Facility Utilization, the Livermore Site would discharge 440,335 gallons per day (an increase of 8,085 gallons per day over the No-Action Alternative). This total represents 4.6 percent of the LWRP capacity (see Table 4-19).

Under the Enhanced Plutonium Facility Utilization project, wastewater discharge at Site 300 would not change. Site 300 sanitary sewage in the GSA would be discharged to the existing treatment facility. In other areas of Site 300, sanitary sewage would be discharged through septic tanks and leach fields or cesspools at individual building locations.

**Table 4-19. Cumulative Sanitary Sewer Impacts for the Alternatives at the Livermore Site**

| Resource/ Metric | Existing Capacity (gal/day) | No-Action Alternative (gal/day) (% of existing capacity) | Enhanced Plutonium Facility Utilization[a] (gal/day) (% of existing capacity) |
|---|---|---|---|
| Wastewater | 9,500,000 | 432,250 (4.6% of existing capacity) | 8,085 (440,335, including the No-Action Alternative) (4.6% of existing capacity) |

a. Based on maximum population increase of 245 persons.

### *Cumulative Impacts on Electricity Consumption*

The 2023 LLNL SWEIS, Chapter 6, Table 6-10, shows the power mix for the DOE Northern California Electric Power Consortium, PG&E, the State of California, and the National Average (NNSA 2023). The electric power consumption at LLNL is expected to increase by 2 million kWh per year from the No-Action Alternative to approximately 562 million kWh per year under Enhanced Plutonium Facility Utilization, as shown in Table 4-18. The LLNL distribution system and the capacity of PG&E and the Western Area Power Administration are anticipated to adequately meet the projected increase. Increase in electricity use at LLNL would add to any overall electricity demands and supply constraints in the region.

### *Cumulative Impacts on Fuel Consumption*

The 2023 LLNL SWEIS, Chapter 6, Section 6.4.12.4, provides the details for cumulative impacts on fuel consumption. NNSA has set a goal to reduce fuel (gasoline and diesel) usage by 2 percent year-over-year, and that would continue under Enhanced Plutonium Facility Utilization (DOE 2025b). By 2035, fuel usage at LLNL is expected to decline to 85,000 gallons per year. The LLNL impact on cumulative fuel consumption would continue to decrease over time.

For Enhanced Plutonium Facility Utilization, natural gas consumption would increase by 49 therms per day to approximately 13,549 therms per day compared to the No-Action Alternative of 13,500 million therms per day (0.36 percent increase). As shown in Table 4-20 below, PG&E provides 970 billion cubic feet of natural gas per year to its customers. This amount equates to roughly 2.6 billion cubic feet per day (2.7 trillion therms per day) (NNSA 2023). The fuel consumed by LLNL would be less than 0.01 percent of the PG&E total demand per day.

**Table 4-20. Cumulative Natural Gas Consumption Impacts for the Alternatives**

| Resource/ Metric | PG&E Demand (therms/day) | No-Action Alternative (therms/day) (% of PG&E demand) | Enhanced Plutonium Facility Utilization[a] (therms/day) (% of PG&E Demand) |
|---|---|---|---|
| Natural Gas | 2.7 trillion | 13,500 (<<0.01% of PG&E demand) | 42 (13,542, including the No-Action Alternative) (<<0.01% of PG&E demand) |

Source: 2023 LLNL SWEIS.

## 4.13 WASTE MANAGEMENT AND MATERIALS MANAGEMENT

### 4.13.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.13.2. This information is summarized in Tables 4-21 and 4-22.

### 4.13.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to waste management and materials management from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Waste projections are presented in Table 4-23, which shows the No-Action Alternative waste quantities, as well as the additional waste generated by the Enhanced Plutonium Facility Utilization project. NNSA does not expect additional waste associated with Enhanced Plutonium Facility Utilization to be unique or substantially different from the types of waste already managed within LLNL. In each waste stream discussion in this section, waste quantities projected for Enhanced Plutonium Facility Utilization are compared to the No-Action Alternative.

***Radioactive Waste Management***

The discussion of radioactive waste includes the categories of LLW and TRU waste. For more details on routine and non-routine LLW and TRU wastes, see the 2023 LLNL SWEIS, Chapter 5, Sections 5.13.1 and 5.13.2. Enhanced Plutonium Facility Utilization would increase LLW generation quantities, as shown in Table 4-21. TRU waste generation may increase but would not exceed the volumes estimated under the No-Action Alternative. MLLW is typically not generated in the Superblock, therefore, there would be no additional MLLW.

**LLW**

For Enhanced Plutonium Facility Utilization, there would be increases in routine LLW. Table 4-21 shows the comparison of waste generation rates for both alternatives, as well as the percentage increase in waste generation over the No-Action Alternative. For routine LLW generation, waste volumes would increase by 200 cubic meters/year to 1,200 cubic meters/year, a 20 percent increase. The non-routine LLW generation would remain the same as under the No-Action Alternative. There is sufficient onsite storage capacity for both routine and non-routine operations

to handle this anticipated waste stream. The total LLW generated from the Enhanced Plutonium Facility Utilization project would increase by 2.5 percent over the No-Action Alternative.

The 2023 LLNL SWEIS, Section 5.13.2.1, describes that approximately 85 percent of the routine LLW generated at the Livermore Site would be sent to the NNSS and 15 percent would be sent to Energy*Solutions*. Approximately 90 percent of the non-routine LLW would be sent to Energy*Solutions* and 10 percent to NNSS.

**TRU/Mixed TRU**

As discussed in Section 4.13.1.2 of the 2023 LLNL SWEIS, generation rates for TRU/Mixed TRU waste have historically remained below the conservative rates projected in prior NEPA documents such as the 2005 LLNL SWEIS. NNSA also expects future generation rates for TRU/Mixed TRU waste to remain below the conservative rates projected in the 2023 LLNL SWEIS. While the routine TRU/Mixed TRU waste generation under Enhanced Plutonium Facility Utilization could be expected to increase, the total generation per year would remain within the No-Action Alternative projection of 52.8 cubic meters/year (see Table 4-21). Additionally, Enhanced Plutonium Facility Utilization would not increase the quantity of non-routine TRU/Mixed TRU wastes over the No-Action Alternative (122.8 cubic meters per year). The total routine and non-routine TRU/Mixed TRU waste generation for Enhanced Plutonium Facility Utilization would remain within 175.6 cubic meters/year. There is sufficient onsite storage capacity for all operations to handle this anticipated waste stream.

Once sufficient TRU waste is accumulated and verified to meet WIPP waste acceptance criteria, arrangements would be made to ship the waste to WIPP. Under Enhanced Plutonium Facility Utilization, NNSA estimates 2 more shipments per year to WIPP than under the No-Action Alternative as shown in Table 4-13. If shipments are limited on an annual basis, LLNL has the capacity to store up to 3,520 cubic meters onsite. The estimated quantity of TRU/MTRU waste generated under the Enhanced Plutonium Facility Utilization project would be 5 percent of the onsite storage capacity of LLNL's waste management facilities.

**Table 4-21. LLW and TRU Waste Generation for the Alternatives**

| Metric[a] | No-Action Alternative (cubic meters/year) | Enhanced Plutonium Facility Utilization (cubic meters/year) |
|---|---|---|
| LLW, Routine | 1,000 | 200 (20% increase over the No-Action Alternative) |
| LLW, Non-routine | 7,000 | No change over the No-Action Alternative |
| **Total LLW** | **8,000 $m^3$/year** | **8,200 $m^3$/year (2.5% increase over the No-Action Alternative)** |
| TRU waste, Routine | 52.8[b] | No change over the No-Action Alternative |
| TRU waste, Non-routine | 122.8 | No change over the No-Action Alternative |
| **Total TRU waste** | **175.6 $m^3$/year** | **No change over the No-Action Alternative** |

a. For LLW and TRU wastes, both the non-routine and total values are averages. Estimates for the non-routine LLW and TRU waste are not intended to reflect annual occurrences, as these quantities would not be generated in all years (see 2023 LLNL SWEIS, Table 5-43).

b. While the TRU waste generation under the Enhanced Plutonium Facility Utilization would increase, the total generation per year will remain within the SWEIS estimate (LLNL 2025).

### *Management of Other Waste Types*

#### Other Waste Types

Under Enhanced Plutonium Facility Utilization, there would be no changes to the hazardous waste generation rates over the No-Action Alternative. There are no explosives or biohazardous/medical waste generated in the Superblock.

#### Nonhazardous Solid Waste

Table 4-22 shows the routine and non-routine nonhazardous solid waste generation for both alternatives. Under Enhanced Plutonium Facility Utilization, routine nonhazardous solid waste would increase by 75 metric tons per year (2.2 percent increase over the No-Action Alternative). For non-routine nonhazardous waste, additional wastes would be generated from construction activities. Under the Enhanced Plutonium Facility Utilization project, non-routine nonhazardous solid waste would increase by 37 metric tons per year (0.7 percent increase over the No-Action Alternative).

For Enhanced Plutonium Facility Utilization, construction of new security fencing and concrete walls, lighting towers, and other modifications, such as DD&D activities, would generate nonhazardous solid waste. The estimated soil volume generated for these activities would be approximately 20,000 cubic meters. Prior to commencing any new ground disturbance, NNSA would survey construction areas to determine the extent and nature of any contaminated media and required remediation in accordance with LLNL's regulatory-approved procedures including the Soil Screening and Management Plan (NNSA 2023). Any contaminated soils would be managed in accordance with existing waste management practices. Existing pathways for disposal of contaminated soil could include municipal landfills, NNSS, or other TSD facilities, depending on contaminant type and concentration. Most of the uncontaminated soils would be reused, as backfill, or recycled according to LLNL procedures.

Details regarding offsite disposal locations and amounts are presented in the 2023 LLNL SWEIS, Section 5.13.2.5. During the past 10 years, more than 70 percent of both the municipal solid waste segment and the construction and demolition segment have been diverted (recycled, repurposed, reused, etc.) from landfill disposal. It is anticipated that some of the waste estimated above would be diverted. For the Enhanced Plutonium Facility Utilization project, NNSA expects similar solid waste reuse and diversion.

**Table 4-22. LLNL Generation of Nonhazardous Solid Waste Under the Alternatives**

| Nonhazardous Solid Waste Category | No-Action Alternative (MT/year) | Enhanced Plutonium Facility Utilization (MT/year) % Increase Over the No-Action Alternative |
|---|---|---|
| Routine (Municipal Solid Waste) | 3,400 | 75[a] (2.2% increase over the No-Action Alternative) |
| Non-routine (Construction and Demolition Waste) | 5,500 | 37[b] (0.7% increase over the No-Action Alternative) |

MT/year = metric tons per year (1 metric ton = 1,000 kilograms). Metric tons multiplied by 1.1023 equals tons.

a. Increase based on additional number of employees.

b. Increase based on square footage of new buildings.

### *Hazardous Materials Management*

Under Enhanced Plutonium Facility Utilization, there would be no changes to hazardous materials management over the No-Action Alternative.

### *Radioactive Materials Management*

For the Enhanced Plutonium Facility Utilization project, Building 332's security category would increase from Security CAT III to Security CAT II. These limits are described in DOE Order 474.2A, Nuclear Material Control and Accountability, Table IV, the Graded Safeguards Table. The environmental impacts analysis is based on the material-at-risk (MAR), which does not change under Enhanced Plutonium Facility Utilization. The MAR plutonium room limit in Building 332 remains the same for both alternatives. Hence, the bounding accident for Building 332 remains the same for both alternatives.

LLNL would continue to manage radioactive materials and conduct radiological operations at the Livermore Site using existing facilities. Increasing the operations in the LLNL Superblock from Security CAT III to Security CAT II would be consistent with past operations for this facility.

## 4.13.3 Cumulative Impacts on Waste Management and Materials Management

Key metrics in this cumulative impact analysis includes: (1) the disposal site capabilities and capacities; (2) historic usage of radioactive materials.

### *Cumulative Impacts on Low-Level Radioactive Waste*

As described in more detail in the 2023 LLNL SWEIS, Chapter 6, Section 6.4.13, there are two main facilities that accept LLW—NNSS and Energy*Solutions*. NNSS disposed of an average of 28,200 cubic meters of LLW per year, in its land-based disposal cells. Energy*Solutions*, a commercial disposal facility, received an average of 96,800 cubic meters of LLW per year.

Under the No-Action Alternative, LLNL ships about 1,550 cubic meters per year of LLW to NNSS, which represents about 5.5 percent of the total volume received at the NNSS per year. Additionally, LLNL ships about 6,450 cubic meters per year of LLW to Energy*Solutions*, which represents about 6.7 percent of the total volume received at Energy*Solutions* per year. Under Enhanced Plutonium Facility Utilization, LLNL would ship an additional 20 cubic meters total per year, for a cumulative total of 1,570 cubic meters per year to NNSS. This would represent about 5.6 percent of the total volume received at NNSS per year. LLNL would ship an additional 180 cubic meters of LLW (for a cumulative total of 6,630 cubic meters per year) to Energy*Solutions*, which represents about 6.9 percent of the total volume received at Energy*Solutions* per year. These increases are well within the capacities of NNSS and Energy*Solutions*. Table 4-23 shows the cumulative LLW disposal impacts for the alternatives.

**Table 4-23. Cumulative LLW Disposal Impacts for the Alternatives**

| LLW Disposal Site | No-Action Alternative[a] ($m^3$/year) (% of Disposal Site Yearly Total) | Enhanced Plutonium Facility Utilization (% of Disposal Site Yearly Total) |
|---|---|---|
| NNSS ($28{,}200\ m^3$/year total) | 1,550 (5.5% of yearly total) | 20 (1,570, including the No-Action Alternative) (5.6% of yearly total) |
| EnergySolutions[a] ($96{,}800\ m^3$/year total) | 6,450 (6.7% of yearly total) | 180 (6,630, including the No-Action Alternative) (6.9% of yearly total) |
| Total | 8,000 | 200 (8,200, including the No-Action Alternative) |

a. One to five shipments per year may also be sent to other offsite facilities such as Perma-Fix Environmental Services in Oak Ridge, Tennessee; Perma-Fix in Richland Washington; and Waste Control Specialists in Andrews County, Texas. These, or other offsite facilities, would only be utilized if they had appropriate permits/licenses and the capacity and capability to treat, store, and/or dispose of the specific LLW.

### *Cumulative Impacts on Transuranic Waste and Mixed Transuranic Waste*

The WIPP facility is the only permanent disposal option for TRU waste generated by atomic energy defense activities as required by the WIPP *Land Withdrawal Act* (LWA; Public Law 102-579). The WIPP LWA specifies a TRU waste disposal volume capacity of 6.2 million cubic feet (175,564 cubic meters). As described in detail in the 2023 LLNL SWEIS, Section 6.4.13.3, the maximum amount of TRU waste estimated to potentially be generated by LLNL activities over the next 15 years is 2,634 cubic meters. The 2,634 cubic meters of TRU waste would represent 1.5 percent of the WIPP LWA TRU waste disposal volume capacity of 175,564 cubic meters. It would also represent 2.4 percent of the available WIPP capacity, based on the 2019 *Annual TRU Waste Inventory Report* (ATWIR). While the TRU waste generation under the Enhanced Plutonium Facility Utilization project would increase, the total generation per year would remain within the SWEIS estimate; therefore, the cumulative impacts presented in the 2023 LLNL SWEIS remain unchanged.

As discussed in detail in the 2023 LLNL SWEIS, Section 6.4.13.3, TRU waste volume estimates such as those provided in NEPA documents cannot be used to determine compliance with the WIPP LWA total TRU waste disposal volume capacity limit. The TRU waste estimates in the ATWIR change annually. Compliance with the WIPP LWA disposal capacity limit is determined by proven and audited procedures and processes implemented for the WIPP facility by the Carlsbad Field Office (CBFO). CBFO monitors and tracks the actual defense related TRU waste volume emplaced at the WIPP facility to ensure compliance with the WIPP LWA and will act as appropriate in a timely and appropriate manner to ensure the needs of the DOE complex are met (NNSA 2023).

### *Cumulative Impacts on Other Waste Types*

#### Hazardous Waste

Under Enhanced Plutonium Facility Utilization, there would be no changes to the hazardous waste generation rates over the No-Action Alternative. Therefore, there would be no additional cumulative impacts.

**Nonhazardous Solid Waste**

As described in more detail in the 2023 LLNL SWEIS, Chapter 6, Section 6.4.13.5, routine and non-routine nonhazardous solid waste is typically sent to three local disposal sites. Nonhazardous solid waste generated from within the Livermore Site is taken to either the Altamont Landfill or the Vasco Road Landfill. Nonhazardous solid waste generated at Site 300 generally goes through the Tracy Material Recovery and Transfer Station. The maximum permitted throughput for the Altamont, Vasco Road, and Tracy Landfills is 10,115 metric tons per day, 2,284 metric tons per day, and 1,633 metric tons per day, respectively. The total nonhazardous solid waste generated under Enhanced Plutonium Facility Utilization would be 9,012 metric tons per year (about 25 metric tons per day), which is well within the daily capacities of these disposal sites.

## 4.14 HUMAN HEALTH AND SAFETY

### 4.14.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.14.2 (NNSA 2023). This information is summarized in Table 4-26 and Tables 4-27, and 4-29 below.

### 4.14.2 Enhanced Plutonium Facility Utilization

#### *Radiological Impacts*

The analysis in this section presents the potential radiological impacts from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2. Radiological impacts to the public from all LLNL sources are presented in Table 4-24. There are no changes to the public radiation doses over the No-Action Alternative. The annual radiation dose from Livermore Site to the offsite maximally exposed individual (MEI) would be below the limit of 10 millirem per year set by both the USEPA (40 CFR Part 61, Subpart H) and DOE (DOE Order 458.1) for airborne releases of radioactivity. Under Enhanced Plutonium Facility Utilization, the risk of an LCF to the MEI) would be the same ($2.5\times10^{-6}$ per year) as the No-Action Alternative. The projected number of LCFs to the population within a 50-mile radius ($4.3\times10^{-3}$ LCFs) would not change from the No-Action Alternative.

**Table 4-24. Annual Radiological Impacts to the Public from Operations under the Alternatives at the Livermore Site**

| Receptor/Dose/Risk | No-Action Alternative | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **Offsite MEI[a]** | | |
| Dose (millirem)[d] | 4.21 | There are no radiological emissions from Building 332. No change over the No-Action Alternative. |
| LCF risk[b] | $2.5\times10^{-6}$ | |
| **Population Within 50 Miles[c]** | | |
| Collective dose (person-rem) | 7.1 | There are no radiological emissions from Building 332. No change over the No-Action Alternative. |
| LCF[c] | $4.3\times10^{-3}$ | |

LCF = latent cancer fatality.

a. The MEI is a hypothetical individual located offsite who could potentially receive the maximum dose of radiation. The MEI at the Livermore Site is located at the Integrative Veterinary Care facility, about 35 meters outside the site's eastern perimeter.

b. Based on an LCF risk estimate of 0.0006 LCF per rem or person-rem.
c. Based on projection of 8,364,520 people living within 50 miles of the Livermore Site in the year 2030.
d. The annual radiation dose limit of 10 millirem per year is set by both the U.S. Environmental Protection Agency (USEPA) (40 CFR Part 61, Subpart H) and DOE (DOE Order 458.1) for airborne releases of radioactivity.
Source: NNSA 2023.

With regard to workers, Table 4-25 identifies the types and numbers of new workers under the Enhanced Plutonium Facility Utilization project, including the associated doses per year. An additional 245 workers would be required under Enhanced Plutonium Facility Utilization, but 20 of those individuals would not receive a radiological dose. As shown, the annual doses to individual workers would be well below the DOE limit of 5,000 millirem (10 CFR Part 835).

**Table 4-25. Increase in Number of Workers and the Associated Dose**

| Metric | Enhanced Plutonium Facility Utilization Numbers of Workers | Dose per Worker (millirem/year) |
|---|---|---|
| Total Number of Additional Workers with Radiological Dose | 225 | 131 (average dose to additional worker) |
| **Total Number of LLNL Workers with Radiological Dose** | **840** | **162.3 (average dose to all radiological workers)** |

Source: LLNL 2025.

Table 4-26 presents the estimates of annual radiological doses for the No-Action Alternative and Enhanced Plutonium Facility Utilization. The increase in total worker dose is due to the increase in fissile materials handling under Security CAT II operations. Under the Enhanced Plutonium Facility Utilization, the collective worker dose would increase by 28.8 person-rem and worker LCFs would increase by 0.02 under the No-Action Alternative to 0.08 LCFs. This is equivalent to 0.08 cancer fatalities in their lifetime for 835 workers receiving a measurable dose.

**Table 4-26. Annual Radiological Impacts to Workers from Operations under the Alternatives at the Livermore Site and Site 300**

| Receptor/Dose/Risk | No-Action Alternative (includes workers at both the Livermore Site and Site 300) | Enhanced Plutonium Facility Utilization |
|---|---|---|
| **Radiological Workers** | | |
| Number of radiological workers who receive a measurable dose[a] | 615 | 840 |
| Average annual dose to radiological workers (millirem/year) | 173.5 | 162.3 |
| LCFs per worker | $1.1\times10^{-4}$ | $9.7\times10^{-5}$ |
| Collective annual dose to radiological workers (person-rem) | 106.7 | 135.5 |
| **Total Annual Radiological Worker Risk (LCFs)[b]** | **0.06** | **0.08** |

a. Radiological worker is defined as a general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed above 100 millirem per year.
b. Based on an LCF risk estimator of 0.0006 LCF per rem or person-rem.
Note: Annual doses for individual workers would be well below the DOE limit of 5,000 millirem (10 CFR Part 835). At LLNL, administrative control levels are multi-tiered, meaning they can vary between 500 millirem/year and up to 5,000 millirem/year with appropriate management approval.
Sources: NNSA 2023, LLNL 2025.

### 4.14.3 Cumulative Impacts on Human Health and Safety

The key metric presented in this analysis is radiological doses and potential latent cancer fatalities (LCF) to the public. Human health cumulative impacts are described in the 2023 LLNL SWEIS, Section 6.4.14. Members of the public would be subject to radiological exposures from: (1) LLNL operations; (2) LBNL and SLAC operations; and (3) background radiation. As shown in Table 4-27, the doses from LLNL operations are a small percentage compared to the doses from background radiation (unrelated to LLNL operations). Background radiation sources are defined in the 2023 LLNL SWEIS, Chapter 4, Table 4-42. Statistically, the projected number of annual LCFs to the population from background radiation within a 50-mile radius of LLNL would be 3,137 LCFs. There would be no increases in radiological emissions from the Enhanced Plutonium Facility Utilization project, therefore, there would be no change over the No-Action Alternative.

**Table 4-27. Cumulative Radiological Impacts to the Public under the Alternatives**

| Receptor/Dose/Risk | Background Radiation | LLNL No-Action Alternative & Enhanced Plutonium Facility Utilization | LBNL and SLAC[e] | Cumulative |
|---|---|---|---|---|
| **Population Within 50 Miles[a]** | | | | |
| Collective dose (person-rem) | 5,227,825[c] | 7.1 (0.0001% of cumulative dose) | 0.091 | 5,227,833 |
| LCF[b] | 3,137 | $4.3\times10^{-3}$ (0.0001% of cumulative dose) | $5.5 \times 10^{-5}$ | 3,137 |

a. Based on projection of 8,364,520 people living within 50 miles of LLNL in the year 2030.
b. Based on an LCF risk estimate of 0.0006 LCF per person-rem.
c. Based on background radiation dose of 625 millirem/year to the average person in the United States (see 2023 LLNL SWEIS, Table 4-42).
d. Conservatively assumes that all doses from LBNL and SLAC impact the same 50-mile population that surrounds LLNL.
Note: Data from the 2023 LLNL SWEIS, Table 4-42 and Table 5-56.

## 4.15 SITE CONTAMINATION AND REMEDIATION

### 4.15.1 No-Action Alternative

For a discussion of the No-Action Alternative, see the 2023 LLNL SWEIS, Section 5.15.2 (NNSA 2023).

### 4.15.2 Enhanced Plutonium Facility Utilization

The analysis in this section presents the potential impacts to site contamination and remediation from Enhanced Plutonium Facility Utilization resulting from infrastructure changes within and outside the Superblock, as described in Section 3.2.

As discussed in the 2023 LLNL SWEIS, Sections 5.15.1 and 5.15.2, NNSA complies with provisions specified in the FFAs. Any future remediation actions would be conducted in accordance with the FFAs, and NNSA is not proposing any specific remediation activities in this SEIS. Regarding environmental restoration for the Enhanced Plutonium Facility Utilization project, no additional environmental impacts would result due to the limited site activities and localized nature of this alternative. Most additional activities are within the Superblock at the Livermore Site. The proposed office building is located in a well-characterized soil/geologic area

and should not represent any risk to groundwater contamination. Additionally, the Site 300 modifications do not represent any additional changes to Site 300 that would impact restoration activities, because only a training facility will be upgraded/recertified near the south entrance. The proposed DD&D activities are not expected to contribute to groundwater contamination. No additional activities are being conducted with any potential to release contaminants into the groundwater.

Efforts would be taken to minimize any impacts from new construction and modification activities and mobilization of contaminants of concern. This includes a review of alternatives to ensure that ground disturbance activities are minimized, and appropriate mitigation methods are used when needed. NNSA and LLNL would continue to provide additional characterization and monitoring data as requested by Federal and State regulators. Any *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) corrective actions and changes are addressed in ongoing CERCLA data evaluations and reporting, including the five-year review process and Remedial Project Manager meetings.

## 4.16 ACCIDENT ANALYSIS AND INTENTIONAL DESTRUCTIVE ACTS

### 4.16.1 Accident Analysis

This section presents the potential environmental impacts from postulated accident analysis for Enhanced Plutonium Facility Utilization. The 2023 LLNL SWEIS (Section 5.16.2, and Appendix C, Section C.3.4, Tables C-37 and C-38) provide detailed accident analyses which would not change under the Enhanced Plutonium Facility Utilization project since the source terms for all accident scenarios would remain unchanged.

The accidents analyzed in the SWEIS were selected from the safety basis document (SBD) and emergency planning hazards analysis (EPHA) for Building 332. These documents provided the initiating events, the accident frequencies, the MAR, and the source term for each of the accidents analyzed.

NNSA estimated radiological consequences to three receptors: (1) the MEI at the LLNL site boundary, (2) the offsite population within 50 miles of LLNL, and (3) a non-involved worker located 100 meters from the accident location. The consequences used the methodology described in Appendix C, Section C.3.1 of the 2023 LLNL SWEIS. The offsite population dose is based on a population of approximately 8.4 million persons residing within 50 miles of LLNL. The MEI was assumed to be located along the site boundary, the shortest distance to the boundary from the Superblock. Similarly, the non-involved onsite worker location was taken as 100 meters from the release in any direction. The calculated radiation doses were converted to LCFs using the factor of $6\times10^{-4}$ LCF per rem for both members of the general public and workers (NNSA 2023).

For Building 332, four bounding accidents were identified based upon the types of radionuclides they release: fuels grade equivalent plutonium, TRU waste yard fire, Pu criticality, and uranium criticality. The results for these radiological accident scenarios are presented in Table 4-28. This table presents the conservative meteorology (i.e., stable plume class and 1 m/sec wind speed), which established the bounding Building 332 accidents. As shown, the worst-case bounding

accident scenario is the Building 332 Yard Fire, with an MEI dose of 1.5 rems, offsite population dose of 340 person-rems, and a non-involved worker dose of 64 rem.

**Table 4-28. Radiological Accident Frequency and Consequences Remain the same under Both Alternatives—Conservative Meteorology (F-stability and 1 m/sec)**

| Accident Scenario[g] | Frequency (per year) | Maximally Exposed Individual[a,d] | | Offsite Population[b] | | Non-involved Worker[c,d] | |
|---|---|---|---|---|---|---|---|
| | | Dose (rem) | Latent Cancer Fatalities[e] | Dose (Person-rem) | Latent Cancer Fatalities[e] | Dose (rem) | Latent Cancer Fatalities[e] |
| Building 332–Hydrogen explosion with subsequent fire | $\leq 1\times10^{-4}$ to $1\times10^{-6}$ | $5.4\times10^{-4}$ | $3.0\times10^{-7}$ | 0.12 | $7.2\times10^{-5}$ | 0.021 | $1.3\times10^{-5}$ |
| Building 332–Yard Fire (both alternatives) | $\leq 1\times10^{-4}$ to $1\times10^{-6}$ | 1.5 | $9.1\times10^{-4}$ | 340 | 0.2 | 64 | 0.039 |
| Building 332–Plutonium Criticality (both alternatives) | $\leq 1\times10^{-4}$ to $1\times10^{-6}$ | 0.1 | $6.0\times10^{-5}$ | 22 | 0.013 | 3.1 | 0.0019 |
| Building 332–Uranium Criticality (both alternatives) | $\leq 1\times10^{-4}$ to $1\times10^{-6}$ | 0.035 | $2.1\times10^{-5}$ | 7.8 | 0.0047 | 6.2 | 0.0037 |

a. The shortest distance to an area with unrestricted public access from the Superblock is 800 meters.
b. Based on a population of approximately 8.4 million persons residing within 50 miles of LLNL (NNSA 2023).
c. At a distance of 100 meters from the facility.
d. The MEI and the non-involved worker scenarios each assume that one person was exposed. If more than one person was exposed in either of these scenarios, then that scenario's dose would be per person and the fatalities would be multiplied by the number of persons exposed.
e. Based on an LCF risk estimate of 0.0006 LCF per rem or person-rem.

The LCFs identified in Table 4-28 are "conditional" risks, based on the assumption that the accident has occurred with the assumed meteorological conditions. This table shows that the total risk from an accident is small. Even with conservative meteorology, the maximum offsite population risk is estimated to be $1.0\times10^{-6}$ fatalities per year, or about one fatality for every 1 million years of operation. To put this risk into perspective, in 2019, the total annual death rate from all causes in California was 682.9 deaths per 100,000 people (CDC 2021). Within the 50-mile radius of LLNL, about 53,000 deaths occurred in 2019. There are additional tables in the 2023 LLNL SWEIS, Chapter 5, Section 5.16, and Appendix C, Section C.3.4, that provide more details on average meteorological conditions and risks associated with these accidents. The supporting information/analyses in those tables for the No-Action would remain the same for Enhanced Plutonium Facility Utilization.

### 4.16.2 Intentional Destructive Acts

DOE's *Recommendations for Analyzing Accidents under the National Environmental Policy Act* (DOE 2002) require that EISs include a range of accident scenarios analyzed for IDAs. Although these IDAs (i.e., malevolent acts of sabotage or terrorism) are not accidents, their physical effects—whether caused by a fire, explosion, missile, or other impact force—may be compared to the effects of postulated accidents. These consequences, involving radioactive and hazardous materials with environmental and/or health risks, caused by an act of sabotage or terrorism, can then be compared to the accident analyses documented in the 2023 LLNL SWEIS.

Under Enhanced Plutonium Facility Utilization, NNSA would increase the Security Category levels for the Superblock from Security CAT III operations to Security CAT II operations. NNSA

has prepared a Conceptual Security Vulnerability Assessment (CVA) to determine physical mitigative features for the Superblock based on potential terrorist threats for Security CAT II operations. The CVA contains sensitive information related to security concerns and is not publicly releasable. The CVA provides security mitigations under Security CAT II operations that would not result in environmental consequences from IDAs different from those bounded by the accident scenarios analyzed in the 2023 LLNL SWEIS.

With regard to safeguards and security, NNSA would modify and upgrade security infrastructure within and outside of the Superblock to comply with applicable laws, regulations, DOE Orders, and DOE Standards related to Security CAT II requirements. In summary, the accident analyses prepared for the 2023 LLNL SWEIS represent the bounding accidents relative to environmental concerns for the IDA analysis.

## 4.17 DESIGN FEATURES, BEST MANAGEMENT PRACTICES, AND MITIGATION MEASURES

For the Enhanced Plutonium Facility Utilization project, a combination of design features and BMPs would be implemented to avoid or reduce potential environmental impacts. Section 5.19 of the 2023 LLNL SWEIS identifies examples of design features and potential BMPs that could be utilized for new projects at LLNL. NNSA did not identify any additional design features and potential BMPs for this SEIS.

## 4.18 UNAVOIDABLE ADVERSE IMPACTS

This SEIS has identified potential impacts that could occur under Enhanced Plutonium Facility Utilization and measures that could be taken to minimize or avoid these impacts. This section discusses any potential unavoidable adverse impacts that could occur if the Enhanced Plutonium Facility Utilization project were implemented.

The majority of the Livermore Site consists of highly developed and previously disturbed industrial area; therefore, construction activities would not result in loss of habitat or impacts to biological, cultural, or archaeological resources. Construction activities would disturb approximately 5 acres of previously developed land at the Livermore Site. This land requirement represents less than 1 percent of the area of the Livermore Site. Construction impacts would be minor, and appropriate soil and erosion mitigation measures would minimize any adverse impacts.

For both construction and operations, the use of water, fuel, and electricity is considered unavoidable, but increases would be limited as described in Section 4.12. The increases would be supported by the existing infrastructure. There would be some positive socioeconomic impacts associated with operational workforces (see Section 4.10), and limited increases in vehicle traffic (as described in Section 4.11).

During normal operations, workers would be exposed to an increased risk of cancer as a result of occupational exposure to radiation. The collective dose to radiological workers at LLNL would increase by approximately 28.8 person-rem. The collective dose to radiological workers at LLNL is estimated to be a maximum of 135.5 person-rem per year, which translates into an LCF risk of 0.08.

Operations would generate a variety of wastes (including radioactive, hazardous, mixed, and sanitary) as an unavoidable result of normal operations. Although LLNL uses pollution prevention and waste avoidance measures, generation of chemical and radioactive wastes would be unavoidable. LLNL would continue to further reduce hazards and potential exposures through the continued success of pollution prevention and waste avoidance measures.

Under Enhanced Plutonium Facility Utilization, offsite shipments would yield a cumulative incident-free dose to transportation crews of 73.8 person-rem per year, with an associated increased risk of 0.045 LCF/year; a cumulative incident-free dose to the general public of 30.0 person-rem, with an associated increased risk of 0.018 LCF/year; and a cumulative risk of $3.1\times10^{-6}$ LCF/year to the general public from accidents that result in a container breach/release.

## 4.19 Relationship Between Short-Term Uses and Enhancement of Long-Term Productivity

Sections 4.2 to 4.16 of this SEIS discuss potential impacts that could occur under the No-Action Alternative and Enhanced Plutonium Facility Utilization. NNSA reviewed these potential impacts and determined that land use, biological resources, water resources, air quality, and waste management warranted discussion regarding short-term uses of the environment and the maintenance and enhancement of long-term productivity. This section discusses the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.

**Land Use and Biological Resources**. Construction would occur in previously disturbed areas at the Livermore Site. After construction is complete, operations would not adversely affect the long-term productivity of the land because operations would be consistent with historic uses at LLNL. After the operational life of any new facilities, NNSA would perform DD&D of the facilities in accordance with applicable regulatory requirements. Appropriate reviews under CERCLA and/or NEPA would be conducted before initiation of DD&D actions.

**Water Resources**. Municipal water would be used to meet process and sanitary wastewater needs during construction and operations. LLNL's effluent contains both domestic waste and process wastewater and is discharged in accordance with Wastewater Discharge Permit (Permit #1250) requirements administered by the City of Livermore Water Resources Division and the City of Livermore Municipal Code. Most of the process wastewater generated at the Livermore Site is collected in retention tanks and discharged to LLNL's collection system following characterization and approval from LLNL's Wastewater Discharge Authorization Record approval process (NNSA 2023).

**Air Resources**. Air emissions associated with construction and operation of the Enhanced Plutonium Facility Utilization project would add to criteria pollutants to the LLNL regional air environment. These emissions are not expected to affect LLNL compliance with air quality standards. No significant residual environmental effects on long-term environmental productivity are expected.

**Wastes**. The management and disposal of solid wastes would require energy and space at TSD facilities in regional landfills. The use of these offsite TSD facilities to support LLNL activities is not expected to change their planned closure dates, and therefore, should not result in an incremental change in the potential long-term productivity of these sites. Similarly, disposal of TRU waste at WIPP would require the continued long-term commitment of that site to support national defense missions.

## 4.20 IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS

A commitment of resources is irreversible when its primary or secondary impacts limit the future options for a resource. For example, as a landfill receives waste, the primary impact is a limit on waste capacity. The secondary impact is a limit on future land use options. An irretrievable commitment refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations. NNSA reviewed the impacts in Sections 4.2 through 4.16 of this SEIS and determined that land, energy, material, and water have the potential to be committed irreversibly or irretrievably under the Enhanced Plutonium Facility Utilization project.

**Land.** The land requirements in support of the Enhanced Plutonium Facility Utilization project would be minimal in relation to the existing land at the Livermore Site and would represent an irreversible commitment of the land. The areas identified for the Enhanced Plutonium Facility Utilization project were previously committed to DOE/NNSA mission support.

**Energy**. The irretrievable commitment of resources during construction and operation of the Enhanced Plutonium Facility Utilization project would include the consumption of fossil fuels used to generate heat and electricity. Energy would also be expended in the form of diesel fuel, gasoline, and oil for construction equipment and transportation vehicles. The amount of irretrievable energy required for the Enhanced Plutonium Facility Utilization project is estimated in Section 4.12 of this SEIS.

**Materials**. The irreversible and irretrievable commitment of material resources during the life of the Enhanced Plutonium Facility Utilization project includes construction materials that cannot be recovered or recycled, materials that are rendered radioactive and cannot be decontaminated, and materials consumed or reduced to unrecoverable forms of waste. Materials used during construction would include wood, concrete, sand, gravel, plastics, steel, aluminum, and other metals. At this time, no unique construction material requirements have been identified. The construction resources, except for those that can be recovered and recycled with present technology, would be irretrievably lost. However, none of these identified construction resources is in short supply and all are readily available in the vicinity of LLNL. The materials to be manufactured into new equipment that could not be recycled at the end of the project's useful life are considered irretrievable. While irretrievable, consumption of operating supplies, miscellaneous chemicals, and gases would not constitute a permanent drain on local sources or involve any material in critically short supply in the United States as a whole. Plans to recover and recycle as many useful materials as practical would depend upon need. Each item would be considered individually at the time a recovery decision is required.

**Water**. Water is a scarce resource in many parts of the United States, and especially in California, where long-term drought conditions are common. Under the Enhanced Plutonium Facility Utilization project, there would be minimal impacts on surface water and groundwater resources. Wastewater, stormwater runoff, and other industrial waste streams would be managed and disposed of in compliance with the NPDES permit limits and requirements. There would be no direct release of contaminated effluents to groundwater or surface waters. To the extent water is recoverable, it has been designed into the facility planning process.

## 4.21 STATUTORY REQUIREMENTS AND ENVIRONMENTAL STANDARDS

Activities at LLNL must be performed in a manner that ensures the protection of public health, safety, and the environment through compliance with all applicable federal, state, and local laws, regulations, and other requirements. Section 5.24 of the 2023 LLNL SWEIS identified the statutory requirements and environmental standards that were potentially applicable to alternatives addressed in that SWEIS and are not repeated in this SEIS. Since the ROD for the 2023 LLNL SWEIS was published, there have been some changes to those regulations and Executive Orders. Table 4-29 identifies those changes.

**Table 4-29. Changes to Regulations and Executive Orders Since the 2023 LLNL SWEIS**

| Law or Regulation | Citation | Responsible Agency | Previous DOE/NNSA Responsibilities | Current Status of the Law or Regulation |
|---|---|---|---|---|
| Regulations for Implementing the Procedural Provisions of NEPA | 40 CFR Parts 1500–1508 | CEQ | These regulations seek to integrate the NEPA process into the early planning phase of a project to ensure appropriate consideration of NEPA policies, eliminate delays, emphasize cooperative consultation among agencies before the environmental document is prepared, identify at an early stage the significant environmental issues deserving of study, provide a mechanism for putting appropriate time limits on the environmental documentation process, and provide for public participation in the NEPA process. | On February 25, 2025, the CEQ published an interim final rule in the Federal Register to remove the CEQ regulations implementing NEPA from the Code of Federal Regulations (90 FR 10610). |
| EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations | N/A | USEPA | Requires each federal agency to identify and address any disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. | This EO was rescinded on January 20, 2025. |

# CHAPTER 5

# References

## 5.0 REFERENCES

The references used to prepare this SEIS are listed below. To the extent practicable, NNSA has included hyperlinks for the references used in this SEIS. As of the date when this SEIS was published, NNSA verified that these hyperlinks were active and accurate. NNSA notes that hyperlinks may have changed after the publication of this SEIS. Reference documents without a hyperlink can be requested from NNSA.


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# CHAPTER 6

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# CHAPTER 7

# Glossary

# 7.0 GLOSSARY

Chapter 9 of the 2023 LLNL SWEIS includes a detailed glossary of relevant terms used in that document. This chapter supplements that glossary with additional terms that are relevant to this SEIS.

**Lawrence Livermore National Laboratory (LLNL) Superblock:** The Superblock is comprised of facilities that conduct nuclear R&D and is approximately 8 acres centrally located within the LLNL site. A detailed description of the Superblock facilities is contained in Appendix A of the 2023 LLNL SWEIS.

**Strategic Deterrence Program:** Previously the Weapons and Complex Integration (WCI) Program works to ensure that the nation's nuclear deterrent remains safe, secure, and reliable.

**Security Category:** The mass limit, material type, and attractiveness of material that can be used within a nuclear facility. The security category sets the security force levels and infrastructure needed to protect the material. DOE Order 474.2A, Nuclear Material Control and Accountability, defines four security categories (Security Category [CAT] I, II, III, and IV). The greatest quantities are included under Security Category I, and lesser quantities are included in descending order under Security CAT II, III, and IV.

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# APPENDIX A
# NEPA AND CEQA CROSSWALK

# A. NEPA AND CEQA CROSSWALK

## A.1 INTRODUCTION

The *National Environmental Policy Act* (NEPA) was one of the first U.S. environmental laws and established the broad national framework for protecting our environment. NEPA was passed in the Senate and House in 1969 and signed into law on January 1, 1970 (Title 42 of the United States Code, 4371-4347, as amended). NEPA was enacted to ensure that all federal agencies consider the environmental effects of their proposed actions prior to making decisions. The range of actions covered by NEPA is broad and includes decisions on permit applications, adopting federal land management actions, and construction of highways and other publicly owned facilities.

Nine months after Congress passed NEPA, California passed a similar measure entitled the *California Environmental Quality Act* (CEQA) (California Public Resource Code 21000 *et sq*). NEPA and CEQA are similar, both in intent and in the review processes they require. CEQA incorporated many of the same stated goals and provisions of NEPA but differs in a few respects. CEQA requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, to mitigate significant environmental impacts to the extent feasible. NEPA does not require that the lead agency implement mitigation measures to reduce environmental impacts caused by the proposed project or legislation. Instead, NEPA only requires that the lead agency show that mitigation measures were considered.

Under NEPA, an Environmental Impact Statement (EIS)/Supplemental EIS (SEIS) is required if the project or action as a whole will produce significant environmental impacts based on context and intensity. CEQA requires each significant effect on the environment resulting from a project to be identified and mitigated if feasible. An Environmental Impact Report (EIR) is required if a proposed project will result in a significant environmental effect that cannot be mitigated to a less-than-significant level. A significant effect under CEQA may not have great enough magnitude to be considered a significant impact under NEPA, thus CEQA has a much narrower scope and a lower threshold to trigger the need for an EIR.

Both NEPA and CEQA require agencies to determine whether a proposed action or project may have a significant impact on the environment, and to determine the appropriate level of environmental review. When NEPA and CEQA apply, agencies must therefore first determine what level of review is required. The agency has the following three NEPA and CEQA options: (1) Categorical Exclusion/Categorical Exemption; (2) Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (or Mitigated FONSI)/Initial Study (IS)) and Negative Declaration (ND) (or Mitigated Negative Declaration (MND)); or (3) EIS/EIR. Table A-1 compares the NEPA and CEQA processes.

**Table A-1. Comparison of NEPA and CEQA Processes (EIS/SEIS versus EIR)**

| NEPA (EIS/SEIS Process) | CEQA (EIR Process) |
|---|---|
| Notice of Intent | Notice of Preparation |
| Scoping | Scoping |
| Draft EIS/SEIS | Draft EIR |
| Draft EIS/SEIS issued for Agency Review | State Clearinghouse Distribution for State Agency Review (if required) |
| Agency Review and Comment | Public and Agency Review and Comment |
| Final EIS/SEIS | Final EIR |
| Consideration and responses to Agency comments in Final EIS/SEIS | Provide proposed responses to public agency comments at least 10 days prior to certification of the EIR |
| If necessary, Mitigation Action Plan | Certify EIR, adopt Findings on Project' Significant Environmental Impacts and Alternatives, Mitigation Monitoring and Reporting Program, and, if necessary, a Statement of Overriding Considerations |
| Agency Decision: Record of Decision | Agency Decision: Notice of Determination |

While there is substantial overlap between NEPA and CEQA, there are some key terminology distinctions between the two laws. For example, NEPA refers to the evaluated activity in an EIS as a proposed action by a federal entity, whereas CEQA refers to the activity as a proposed project undertaken, supported, or permitted by a public agency. Table A-2 outlines and correlates the terminology between the two laws.

**Table A-2. Correlation of NEPA and CEQA Terminology**

| NEPA Terminology | CEQA Terminology |
|---|---|
| Existing Environment | Environmental Setting |
| Cooperating Agency | Responsible Agency |
| Environmental Consequences | Environmental Impacts |
| Environmental Impact Statement | Environmental Impact Report |
| Agency Review | Notice of Completion/Notice of Availability |
| No-Action Alternative | No Project Alternative |
| Notice of Intent | Notice of Preparation |
| Purpose and Need | Project Objectives |
| Proposed Action and Alternatives | Proposed Project and Alternatives |
| Record of Decision | Notice of Determination/Findings/Statement of Overriding Considerations |
| None are specified in NEPA | Threshold of Significance/Significant Impacts |

The CEQA Guidelines allow a state or local agency to use an EIS/SEIS or EA and FONSI if completed before an EIR or ND would otherwise be prepared for the project, if the NEPA review meets CEQA requirements. Section 15221 of the CEQA Guidelines sets forth rules governing use of a NEPA document to satisfy CEQA. It states:

1) When a project will require compliance with both CEQA and NEPA, State or local agencies should use the EIS/SEIS or Finding of No Significant Impact rather than preparing an EIR or Negative Declaration if the following two conditions occur:
   a) An EIS/SEIS or Finding of No Significant Impact will be prepared before an EIR or Negative Declaration would otherwise be completed for the project; and
   b) The EIS/SEIS or Finding of No Significant Impact complies with the provisions of these Guidelines.

2) Because NEPA does not require separate discussion of mitigation measures or growth inducing impacts, these points of analysis will need to be added, supplemented, or identified before the EIS/SEIS can be used as an EIR.

To complete the CEQA analysis, four descriptive categories are used to discuss environmental impacts: Potentially Significant Impact, Less Than Significant With Mitigation, Less Than Significant Impact, and No Impact. These categories have been created and assigned to individual impacts only for the purposes of supporting CEQA requirements and are used here only in a CEQA context. Under NEPA, the significance of environmental impacts determines the need for the NEPA document. Once that decision has been made, specific impacts are not categorized according to level of impact in an EIS/SEIS. The following describes the environmental impact categories used in this document:

- **Potentially Significant Impact**—There is substantial evidence that the impact of the proposed project may be significant and cannot be avoided or reduced to a less-than-significant level.
- **Less than Significant with Mitigation**—Absent mitigation measures or project revisions, the impact of the proposed project would be considered significant.
- **Less Than Significant Impact**—The proposed project would result in an impact, but at a level that is not considered significant.
- **No Impact**—The proposed project would not result in an impact.

For this SEIS, NNSA has prepared Table A-3, which identifies/categorizes the potential CEQA impacts based on the analysis in this SEIS. Table A-3 correlates the NEPA impacts to one of the four descriptive categories discussed above (i.e., (1) Potentially Significant Impact; (2) Less than Significant with Mitigation; (3) Less Than Significant Impact; and (4) No Impact). As shown in Table A-3, all of the potential CEQA impacts are categorized as either “less than significant” or “no impact.” Table A-3 provides CEQA impacts for the No-Action Alternative from the 2023 LLNL SWEIS, and any incremental impacts from the Enhanced Plutonium Facility Utilization.

## Table A-3. Potential CEQA Impacts Based on Analysis in this SEIS

| CEQA: (○-No Impact, △-Less than Significant Impact, ◇-Less than Significant with Mitigation, and ◆-Potentially Significant Impact). | | | |
|---|---|---|---|
| **Environmental Factors Potentially Affected per CEQA Guidelines** | **No-Action Alternative** | **Enhanced Plutonium Facility Utilization** | **Notes/Relevant Section in SEIS** |
| 1. Aesthetics | | | |
| a. Have a substantial adverse effect on a scenic vista. | ○ | ○ | 4.3.1, 4.3.2 |
| b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway. | ○ | ○ | 4.3.1, 4.3.2 |
| c. Substantially degrade the existing visual character or quality of public views of the site and its surroundings. | ○ | ○ | 4.3.1, 4.3.2 |
| d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. | ○ | ○ | 4.3.1, 4.3.2 |
| 2. Agricultural and Forestry Resources | | | |
| a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. | ○ | ○ | 4.4.1, 4.4.2 |
| b. Conflict with existing zoning or agriculture use, or Williamson Act contract. | ○ | ○ | 4.3.1, 4.3.2 |
| c. Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. | ○ | ○ | 4.4.1, 4.4.2 |
| d. Result in the loss of forest land or conversion of forest land to non-forest use. | ○ | ○ | 4.4.1, 4.4.2 |
| e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use, or conversion of forest land to non-forest use. | ○ | ○ | 4.4.1, 4.4.2 |
| 3. Air Quality | | | |
| a. Conflict with or obstruct implementation of the applicable air quality plan. | ○ | ○ | 4.6.1, 4.6.2 |
| b. Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. | △ | ○ | 4.6.1, 4.6.2 |
| c. Expose sensitive receptors to substantial pollutant concentrations. | ○ | ○ | 4.6.1, 4.6.2 |
| d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. | ○ | ○ | 4.6.1, 4.6.2 |
| 4. Biological Resources | | | |
| a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. | △ | ○ | 4.8.1, 4.8.2 |

| CEQA: (○-No Impact, △-Less than Significant Impact, ◇-Less than Significant with Mitigation, and ◆-Potentially Significant Impact). | | | |
|---|---|---|---|
| **Environmental Factors Potentially Affected per CEQA Guidelines** | **No-Action Alternative** | **Enhanced Plutonium Facility Utilization** | **Notes/Relevant Section in SEIS** |
| b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. | △ | ○ | 4.8.1, 4.8.2 |
| c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. | △ | ○ | 4.8.1, 4.8.2 |
| d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. | △ | ○ | 4.8.1, 4.8.2 |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. | ○ | ○ | 4.8.1, 4.8.2 |
| f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. | ○ | ○ | 4.8.1, 4.8.2 |
| 5. Cultural Resources | | | |
| a. Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5. | ○ | ○ | 4.9.1, 4.9.2 |
| b. Cause a substantial adverse change in the significance of an archeological resource pursuant to § 15064.5. | ○ | ○ | 4.9.1, 4.9.2 |
| c. Disturb any human remains, including those interred outside of formal cemeteries. | ○ | ○ | 4.9.1, 4.9.2 |
| 6. Energy | | | |
| a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. | ○ | ○ | 4.12.1, 4.12.2 |
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency. | ○ | ○ | 4.12.1, 4.12.2 |
| 7. Geology and Soils | | | |
| a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:<br>o Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Refer to Division of Mines and Geology Special Publication 42.)<br>o Strong seismic ground shaking. | △ | ○ | 4.4.1, 4.4.2 |

| CEQA: (○-No Impact, △-Less than Significant Impact, ◇-Less than Significant with Mitigation, and ◆-Potentially Significant Impact). | | | |
|---|---|---|---|
| **Environmental Factors Potentially Affected per CEQA Guidelines** | **No-Action Alternative** | **Enhanced Plutonium Facility Utilization** | **Notes/Relevant Section in SEIS** |
| o Seismic-related ground failure, including liquefaction.<br>o Landslides. | | | |
| b. Result in substantial soil erosion or the loss of topsoil. | △ | ○ | 4.4.1, 4.4.2 |
| c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. | ○ | ○ | 4.4.1, 4.4.2 |
| d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property. | N/A | N/A | 4.4.1, 4.4.2 |
| e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of water. | N/A | N/A | 4.4.1, 4.4.2 |
| f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. | △ | ○ | 4.9.1, 4.9.2 |
| 8. Greenhouse Gas (GHG) Emissions | | | |
| a. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. | △ | ○ | see GHG discussion below this table |
| b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. | △ | ○ | see GHG discussion below this table |
| 9. Hazards and Hazardous Materials | | | |
| a. Create a significant hazard to the public or the environment throughout the routine transport, use or disposal of hazardous materials. | △ | △ | 4.13.1, 4.13.2 |
| b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. | △ | △ | 4.13.1, 4.13.2, 4.16 |
| c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. | ○ | ○ | 4.10.1, 4.10.2, 4.13.1, 4.13.2 |
| d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to public or the environment. | ○ | ○ | 4.13.1, 4.13.2<br>Neither the Livermore Site nor Site 300 are on the Cortese List |
| e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? | N/A | N/A | |

| CEQA: (○-No Impact, △-Less than Significant Impact, ◇-Less than Significant with Mitigation, and ◆-Potentially Significant Impact). | | | |
|---|---|---|---|
| **Environmental Factors Potentially Affected per CEQA Guidelines** | **No-Action Alternative** | **Enhanced Plutonium Facility Utilization** | **Notes/Relevant Section in SEIS** |
| f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. | △ | ○ | 4.13.1, 4.13.2, 4.16 |
| g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. | △ | ○ | 4.16.1, 4.16.2 |
| 10. Hydrology and Water Quality | | | |
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. | ○ | ○ | 4.5.1, 4.5.2 |
| b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. | ○ | ○ | 4.5.1, 4.5.2 |
| c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:<br>o Result in substantial erosion or siltation on- or off-site;<br>o Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;<br>o Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or<br>o Impede or redirect flood flows. | ○ | ○ | 4.5.1, 4.5.2 |
| d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation. | ○ | ○ | 4.5.1, 4.5.2 |
| e. Conflict or obstruct implementation of a water quality control plan or sustainable groundwater management plan. | ○ | ○ | 4.5.1, 4.5.2 |
| 11. Land Use and Planning | | | |
| a. Physically divide an established community. | ○ | ○ | 4.2.1, 4.2.2 |
| b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. | ○ | ○ | 4.2.1, 4.2.2 |
| 12. Mineral Resources | | | |
| a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. | ○ | ○ | 4.4.1, 4.4.2 |
| b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. | ○ | ○ | 4.4.1, 4.4.2 |

| CEQA: (○-No Impact, △-Less than Significant Impact, ◇-Less than Significant with Mitigation, and ◆-Potentially Significant Impact). | | | |
|---|---|---|---|
| **Environmental Factors Potentially Affected per CEQA Guidelines** | **No-Action Alternative** | **Enhanced Plutonium Facility Utilization** | **Notes/Relevant Section in SEIS** |
| 13. Noise | | | |
| a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. | △ | ○ | 4.7.1, 4.7.2 |
| b. Generation of excessive groundbourne vibration or groundbourne noise levels. | ○ | ○ | 4.7.1, 4.7.2 |
| c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels. | N/A | N/A | N/A |
| 14. Population and Housing | | | |
| a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). | ○ | ○ | 4.10.1, 4.10.2 |
| b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. | ○ | ○ | 4.10.1, 4.10.2 |
| 15. Public Services | | | |
| a. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services: fire protection, police protection, schools, parks, other public facilities. | ○ | ○ | 4.10.1, 4.10.2 |
| 16. Recreation | | | |
| a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. | ○ | ○ | 4.10.1, 4.10.2 |
| b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. | ○ | ○ | 4.10.1, 4.10.2 |
| 17. Transportation and Traffic | | | |
| a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. | △ | ○ | 4.11.1, 4.11.2 |

| CEQA: (○-No Impact, △-Less than Significant Impact, ◇-Less than Significant with Mitigation, and ◆-Potentially Significant Impact). | | | |
|---|---|---|---|
| **Environmental Factors Potentially Affected per CEQA Guidelines** | **No-Action Alternative** | **Enhanced Plutonium Facility Utilization** | **Notes/Relevant Section in SEIS** |
| b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) (Criteria for Analyzing Transportation Impacts). | △ | ○ | 4.11.1, 4.11.2 |
| c. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). | ○ | ○ | 4.11.1, 4.11.2 |
| d. Result in inadequate emergency access. | ○ | ○ | 4.11.1, 4.11.2 |
| 18. Tribal Cultural Resources | | | |
| a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | ○ | ○ | 4.9.1, 4.9.2 |
| i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or | ○ | ○ | 4.9.1, 4.9.2 |
| ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ○ | ○ | 4.9.1, 4.9.2 |
| 19. Utility and Service Systems | | | |
| a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. | △ | △ | 4.12.1, 4.12.2 |
| b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. | △ | ○ | 4.12.1, 4.12.2 |
| c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments. | △ | ○ | 4.12.1, 4.12.2 |
| d. Generate solid waste in excess or State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. | △ | ○ | 4.12.1, 4.12.2 |
| e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste. | ○ | ○ | 4.12.1, 4.12.2 |

| CEQA: (○-No Impact, △-Less than Significant Impact, ◇-Less than Significant with Mitigation, and ◆-Potentially Significant Impact). | | | |
|---|---|---|---|
| **Environmental Factors Potentially Affected per CEQA Guidelines** | **No-Action Alternative** | **Enhanced Plutonium Facility Utilization** | **Notes/Relevant Section in SEIS** |
| Wildfire | | | |
| a. Substantially impair an adopted emergency response plan or emergency evacuation plan. | ○ | ○ | |
| b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. | ○ | ○ | |
| c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. | ○ | ○ | |
| d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. | ○ | ○ | |
| Mandatory Findings of Significance | | | |
| a. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. | ○ | ○ | |
| b. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.). | ○ | ○ | |
| c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly. | ○ | ○ | |

Source: AEP 2024.

### *Greenhouse Gases*

Table A-4 presents the estimated GHG emissions from all activities under both alternatives at LLNL. The Enhanced Plutonium Facility Utilization project would increase the total annual LLNL GHG emissions by approximately 644 metric tons per year, which is 0.4 percent over the No-Action Alternative.

**Table A-4. Estimated Annual Site-wide GHG Emissions for the Alternatives**

| Type of GHG Emissions[a] | $CO_2e$ Emissions (metric tons/year) | |
|---|---|---|
| | No-Action Alternative | Enhanced Plutonium Facility Utilization |
| Scope 1[b] and 2 | 138,241 | 114 (0.08% increase over the No-Action Alternative) |
| Scope 3[c] | 19,567 | 530 (2.7% increase over the No-Action Alternative) |
| Total | 157,808 | 644 (0.4% increase over the No-Action Alternative) |

a. Estimated increase in Scope 1 and 2 emissions are based on change in the building areas (i.e., square footage). Estimated increase in Scope 3 emissions are based on change in personnel at LLNL (USAF 2020).

b. Scope 1 and 2 emissions include, for example, natural gas boilers and furnaces, fleet vehicles, fugitive emissions of refrigerants, indirect emissions from electricity consumption.

Scope 3 emissions include indirect GHG emissions from sources not owned or directly controlled by LLNL. Examples include emissions from employee travel and commuting and contracted solid waste disposal

For GHG emissions, LLNL activities would account for less than 0.05 percent of total regional (Bay Area) emissions for both alternatives. For radiological emissions, there would be no additional radiological air emissions over the No-Action Alternative.

## A.2 REFERENCES

AEP 2024 Association of Environmental Professional (AEP). "2024 California Environmental Quality Act (CEQA) Statute and Guidelines." Available online: https://www.califaep.org/docs/2024_CEQA_Statute_and_Guidelines_Handbook.pdf (accessed January 2022).

# APPENDIX B
# PUBLIC NOTICES

# Notice of Intent

2678 **Federal Register** / Vol. 90, No. 7 / Monday, January 13, 2025 / Notices

recommendations on any EM program components.

*Tentative Agenda:*

- Presentation to the Board
- Administrative Activities
- Public Comments

*Public Participation:* The meeting is open to the public. The EM SSAB, Portsmouth will make every effort to accommodate persons with physical disabilities or special needs. If you require special accommodations due to a disability, please contact Greg Simonton in advance of the meeting. The Department of Energy will hear oral public comments during the meeting. A 15-minute public comment period will take place at the end of the agenda. Individual oral comments are to be limited to two minutes per speaker. Written statements may be filed either before or after the meeting. Written comments submitted by 5 p.m. EST on Friday, February 21, 2025, will be included in the minutes. Please submit written comments to Greg Simonton with ''Public Comment'' in the subject line. The Deputy Designated Federal Officer is empowered to conduct the meeting in a fashion that will facilitate the orderly conduct of business.

*Minutes:* Minutes will be available by writing or calling Greg Simonton, Federal Coordinator, U.S. Department of Energy, Portsmouth/Paducah Project Office, P.O. Box 700, Piketon, OH 45661, Email: *greg.simonton@pppo.gov* or by Phone: (740) 897–3737, Minutes will also be available at the following website: *https://www.energy.gov/pppo/ports-ssab/listings/meeting-materials.*

*Signing Authority:* This document of the Department of Energy was signed on January 7, 2025, by David Borak, Committee Management Officer, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on January 7, 2025.

**Jennifer Hartzell,**

*Alternate Federal Register Liaison Officer, U.S. Department of Energy.*

[FR Doc. 2025–00476 Filed 1–10–25; 8:45 am]

BILLING CODE 6450–01–P

## DEPARTMENT OF ENERGY

### National Nuclear Security Administration

### Notice of Intent To Prepare a Supplemental Environmental Impact Statement for Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory in Livermore, California

**AGENCY:** National Nuclear Security Administration, Department of Energy.

**ACTION:** Notice of intent.

**SUMMARY:** The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the United States (U.S.) Department of Energy (DOE), announces its intent to prepare a Supplemental Environmental Impact Statement (SEIS) for Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory (LLNL or Laboratory) in Livermore, California (DOE/EIS–0547–S1), tiered from the 2023 LLNL Site-Wide Environmental Impact Statement (SWEIS) (2023 LLNL SWEIS)(DOE/EIS–0547). The Record of Decision (ROD) for the 2023 LLNL SWEIS was published on February 20, 2024. The ROD implemented the Proposed Action Alternative in the SWEIS and is the baseline for this SEIS. NNSA will prepare the SEIS and will analyze the potential environmental impacts of enhanced plutonium facility utilization, other reasonable alternatives that may be identified, and the baseline operations as discussed in the 2023 LLNL SWEIS. The purpose of this Notice is to invite public participation in the SEIS process and to encourage public involvement on the scope, any environmental issues, and alternatives that NNSA should consider in the draft SEIS.

**DATES:** NNSA invites other Federal agencies, Native American Tribes, State and local governments, industry, other organizations, and members of the public to review and submit comments on the scope and alternatives of the LLNL SEIS through February 12, 2025. Comments received after this date will be considered to the extent practicable. NNSA will hold one virtual public scoping meeting. The date of the meeting will be provided in a future notice posted on the following website: *https://www.energy.gov/nnsa/nnsa-nepa-reading-room.* NNSA will hold the meeting no earlier than 15 days from the posting of the notice. Public scoping meeting dates and details will also be announced in local media outlets.

**ADDRESSES:** Written and oral comments will be given equal weight and NNSA will consider all comments received or postmarked by the end of the comment period in preparing the draft SEIS. Comments received or postmarked after the comment period will be considered to the extent practicable. Written comments on the scope of the SEIS or requests for information related to the SEIS should be sent to: Alan Chen, NEPA Document Manager, National Nuclear Security Administration, Livermore Field Office, 7000 East Avenue, L–293, Livermore, CA 94550–9234 or email to: *LLNLSEIS@nnsa.doe.gov.* Before including your address, phone number, email address, or other personally identifiable information in your comment, please be advised that your entire comment—including your personally identifiable information—may be made publicly available. If you wish for NNSA to withhold your name and/or other personally identifiable information, please state this prominently at the beginning of your comment. You may also submit comments anonymously.

Information related to the virtual public scoping meeting, including internet and telephone access details, and instructions on how to participate will be available at the following website: *https://www.energy.gov/nnsa/nnsa-nepa-reading-room* and announced in local media outlets.

**FOR FURTHER INFORMATION CONTACT:** For additional information about this Notice, please contact Alan Chen, NEPA Document Manager, National Nuclear Security Administration, Livermore Field Office, 7000 East Avenue, L–293, Livermore, CA 94550–9234; telephone: 833–778–0508; or email to: *LLNLSEIS@nnsa.doe.gov.*

**SUPPLEMENTARY INFORMATION:**

#### Background

The Nuclear Security Enterprise is currently performing the highest throughput of work in over 30 years, which includes plutonium (Pu) research and development (R&D). As the weapons in the Nation's nuclear stockpile continue to age beyond their original design lifetime, an increased amount of experimental data developed through Pu R&D is necessary to continue NNSA's science-based stewardship of the nuclear weapons stockpile. NNSA has a need for additional R&D space or enhanced utilization of existing R&D space due to new and evolving international security concerns. This enhanced utilization is critical to NNSA's Stockpile Stewardship and Management Program

(SSMP), to preventing the spread and use of nuclear weapons worldwide, and to many other areas that may impact national security and global stability.

The LLNL Plutonium Facility has been in operation since the 1960s. Its mission is to support the nuclear weapons program through research in the physical, metallurgical, and chemical properties of Pu, including aging, dismantlement, and disposition in support of stockpile stewardship, as well as fabrication, testing, and assembly of plutonium device parts in support of experimental activities. The Pu Facility is part of the LLNL Superblock, which includes several supporting R&D facilities within the 770-acre laboratory site in Livermore, California (Livermore Site). The Livermore Site is situated about 50 miles east of San Francisco in southeastern Alameda County.

**Mission**

The 21st century presents a growing set of challenges that are the focus of the Laboratory's mission as an NNSA national security laboratory. National security policies require DOE, through NNSA, to maintain the U.S. nuclear weapons stockpile and the Nation's core competencies in nuclear weapons. NNSA has the mission to maintain and enhance the safety, security, and effectiveness of the nuclear weapons stockpile. The 2022 Nuclear Posture Review stated that an effective, responsive, and resilient nuclear weapons infrastructure is essential to the U.S. capacity to adapt to shifting requirements, and to support the sustainment of its nuclear forces to protect the homeland, assure allies, deter adversaries, and hedge against adverse developments.

LLNL's defining responsibility is ensuring the safety, security, and reliability of the Nation's nuclear deterrent. LLNL's mission is broader than stockpile stewardship and also includes missions that respond to national security and global security concerns that range from nuclear proliferation and terrorism to energy shortages and climate change. The Laboratory's science and engineering capabilities are applied to these challenges. Programs at LLNL support DOE; NNSA; the Department of Defense; the Department of Homeland Security; other Federal, State and local agencies; private and academic sponsors; and other scientific institutions.

The Strategic Deterrence Program (previously the Weapons and Complex Integration or WCI Program in the 2023 LLNL SWEIS) at LLNL works to ensure that the Nation's nuclear deterrent remains safe, secure, and reliable. The program accomplishes this through the SSMP—an ongoing effort to apply a science-based fundamental understanding of nuclear weapons performance—from the development of enhanced warhead surveillance tools that detect the onset of problems to manufacturing capabilities that produce critical components and the use of high-performance computational capabilities.

**Purpose and Need for Agency Action**

As U.S. nuclear weapons continue to age beyond their original design lifetime, an increased amount of experimental data developed through Pu R&D is necessary to continue the science-based stewardship of the nuclear weapons stockpile. NNSA has a need for additional R&D space due to new and evolving international security concerns. NNSA is constrained in Pu R&D space, and the Pu Facility R&D capabilities at LLNL could be better optimized in support of mission areas including designs of the nuclear explosives package for Life Extension Programs, Modification Programs, and Alteration programs, as well as certifications of weapons as they enter the stockpile. There is a need to perform enhanced utilization of Pu R&D operations at the LLNL Plutonium Facility from Security Category (CAT) III operational levels to CAT II operations.

The LLNL Pu Facility was originally built and operated as a Security CAT I facility and is the only immediately available facility with the capacity and capability to conduct this required Security CAT II work. Increasing Pu R&D floorspace through construction of a new Security CAT I or II facility could take decades, while re-establishment of Security CAT II operations at the LLNL Plutonium Facility may take approximately five years.

By the end of 2012, NNSA removed excess Pu inventories as part of the De-Inventory Project, resulting in the LLNL Pu Facility operating at Security CAT III operational levels as this appeared to be an effective level of support for that time. However, the limitations of Security CAT III operations at LLNL are now insufficient for NNSA's Pu R&D requirements. NNSA will be able to fulfill its current and potential future national security requirements in a timely manner by enhancing the utilization of the LLNL Pu Facility to Security CAT II operational levels.

**Requirements To Fulfill DOE NEPA Compliance**

The SEIS will be prepared pursuant to the *National Environmental Policy Act* (NEPA) of 1969, as amended (42 U.S.C. 4321 *et seq.*), the Council on Environmental Quality's NEPA regulations (40 CFR parts 1500 through 1508), the DOE NEPA Implementing Procedures (10 CFR part 1021), and NNSA policy document NAP 451.1, *National Environmental Policy Act Compliance Program.* The DOE regulations (10 CFR 1021.314, *Supplemental Environmental Impact Statements*) require preparation of a supplement to an EIS if there are substantial changes or significant new circumstances and information relevant to environmental concerns. The SEIS will be prepared in the same manner as a draft or final EIS and will provide the public with an analysis of the potential environmental impacts from reasonable alternatives. The SEIS would utilize the 2023 LLNL SWEIS for baseline data for ongoing Security CAT III operations.

The NEPA process allows for all interested agencies (Federal, State, and local), Native American Tribes, public interest groups, local businesses, and members of the general public to participate in the environmental review process. Although the scoping process is optional for an SEIS per 10 CFR 1021.314(d), NNSA has decided to include scoping to inform interested members of the public.

**Preliminary Alternatives**

The NEPA public scoping process is an opportunity for the public to assist NNSA in determining a reasonable range of alternatives and potential environmental issues for analyses. NNSA welcomes specific comments or suggestions on the content of these alternatives, or on other alternatives that could be considered. A preliminary set of alternatives and environmental issues for evaluation in the SEIS are identified below. Additionally, during the development of the SEIS, NNSA may consider other alternatives that are reasonable and that fulfill the purpose and need for agency action.

**Proposed Action Alternative (Enhanced Plutonium Facility Utilization)**

The SEIS would continue ongoing operations at the LLNL Superblock and would add several new actions to support the enhanced Pu facility utilization. These include: (1) increasing the amount of fissile materials for R&D activities, (2) upgrading the security categorization of the LLNL Pu Facility from Security CAT III to Security CAT II, (3) conducting infrastructure construction activities, (4) increasing materials shipments and waste generation/shipments during operations, and (5) adding operational

and security personnel to support Security CAT II operations.

**No Action Alternative (Continuing Present Operations)**

The No Action Alternative would continue current facility (CAT III) operations at the Superblock as described in the 2023 LLNL SWEIS.

**Other Potential Reasonable Alternatives**

NNSA welcomes input on alternatives to be analyzed in the SEIS that the public thinks are reasonable and that fulfill the purpose and need for agency action. Alternatives that NNSA will not consider as reasonable are closure of the Superblock and transfer of current missions/operations from Superblock to other NNSA sites, as those actions would be inconsistent with the purpose and need defined by NNSA. NNSA will identify the environmentally preferrable alternative from the list of alternatives analyzed in the SEIS.

**Preliminary Environmental Analysis**

The following issues have been identified for analysis in the SEIS. The list is tentative and intended to facilitate public comment on the scope of the SEIS. It is not intended to be all-inclusive, nor does it imply any predetermination of potential impacts. The NNSA specifically invites suggestions for the addition or deletion of items on this list.

1. Potential effects on the public and workers from exposures to radiological and hazardous materials during normal operations, construction, reasonably foreseeable accidents, and intentional destructive acts.
2. Impacts on water resources, including floodplains and wetlands.
3. Impacts on air quality, climate, and greenhouse gases.
4. Impacts to plants and animals and their habitat, including species which are federally- or State-listed as threatened or endangered, or of special concern.
5. Impacts on soil.
6. Impacts to cultural resources such as those that are historic and paleontological.
7. Socioeconomic impacts to affected communities.
8. Environmental justice, including impacts to minority and low-income populations.
9. Potential impacts on land use and applicable plans and policies.
10. Impacts from traffic and transportation of radiological and hazardous materials and waste to and from the LLNL Site.
11. Materials and waste management activities.
12. Impacts on visual aesthetics and noise levels from the Superblock on the surrounding communities and ambient environment.
13. Impacts to community services, including fire protection, police protection, schools, and solid waste disposal in landfills.
14. Impacts from use of utilities, including water and electricity consumption, fuel use, sewer discharges, and resource conservation.
15. Impacts from site contamination, characterization, and remediation.
16. Unavoidable adverse impacts due to natural phenomena (*e.g.,* floods, earthquakes, etc.).
17. Environmental compliance and inadvertent releases.
18. Short-term uses and long-term productivity.
19. Irreversible and irretrievable commitment of resources.
20. Cumulative effects of past, present, and future operations.
21. Mitigation commitments.

**SEIS Process**

The SEIS scoping process is intended to involve all interested agencies (Federal, State, and local), Native American Tribes, public interest groups, local businesses, and members of the general public. Interested parties are invited to participate in the SEIS process and to refine the preliminary alternatives and environmental issues that are reasonable. An SEIS scoping meeting will be scheduled, and all interested parties will be invited to assist the NNSA in refining alternatives and defining the scope of the SEIS analyses.

Following the scoping process announced in this Notice, and after consideration of comments received during scoping, NNSA will prepare a Draft SEIS. NNSA will announce the availability of the Draft SEIS in the **Federal Register** and local media outlets. NNSA will hold one or more public hearings for the Draft SEIS. Any comments received on the Draft SEIS will be considered and addressed in the Final SEIS. NNSA will then issue a ROD no sooner than 30 days after publication by the Environmental Protection Agency of a Notice of Availability of the Final SEIS.

**Relationship to Existing and Other NEPA Analyses**

The following references provide previous NEPA analyses; these are related to Plutonium Facility operations:

- The ROD for the 2023 LLNL SWEIS (DOE/EIS–0547; 89 FR 12831) for continued operations of LLNL was issued in February 2024. This was the conclusion of a process involving detailed analysis, public involvement, and document preparation. In particular, the 2023 SWEIS analyzed Superblock operations at Security CAT III operations and Hazard Category 2 levels.
- In 2011, NNSA prepared a Supplement Analysis (SA) (DOE/EIS–0348–SA–03) to the 2005 LLNL SWEIS (DOE/EIS–0348; DOE/EIS–0236–S3) which stated the ongoing De-Inventory Project would decrease the amount of Special Nuclear Material (SNM) in long-term storage onsite and continue the transfer of Security Category I/II SNM from LLNL to receiver sites through the end of 2012.
- In 2008, NNSA completed the Complex Transformation Supplemental Programmatic EIS (DOE/EIS–0236–S4) which stated that NNSA would continue on-going activities to transfer Security CAT I/II SNM from LLNL under the No Action Alternative and phase out Security CAT I/II operations at LLNL by the end of 2012.
- In 2007, NNSA completed a Supplement Analysis and an amended ROD (72 FR 51807) on the Storage and Disposition of Weapons-Usable Fissile Materials EIS (DOE/EIS–0229, DOE/EIS–0229–SA–04), which analyzed consolidating storage of surplus, non-pit weapons usable plutonium from LLNL, Los Alamos National Laboratory, and Hanford to Savannah River Site.
- The 2005 LLNL SWEIS (DOE/EIS–0348) and its corresponding ROD (70 FR 71491) analyzed the impacts of continued operations at LLNL, including Superblock operations at Security CAT I levels (NNSA 2005).
- In 2024, NNSA completed an SA (DOE/EIS–0426–SA–01) and an amended ROD (89 FR 61104) on the SWEIS for the Continued Operation of the DOE/NNSA Nevada National Security Site (NNSS) and Off-Site Locations in the State of Nevada. NNSS provides Pu target material shipments to and from the LLNL Superblock for R&D experiments.

**EIS Preparation and Schedule**

NNSA expects to issue the Draft SEIS by the end of summer 2025.

**Signing Authority**

This document of the Department of Energy was signed on this 16th day of December 2024, by Jill Hruby, Under Secretary for Nuclear Security and NNSA Administrator, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with

requirements of the Office of the Federal Register, the undersigned DOE **Federal Register** Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on January 7, 2025.

**Treena V. Garrett,**

*Federal Register Liaison Officer, U.S. Department of Energy.*

[FR Doc. 2025–00451 Filed 1–10–25; 8:45 am]

BILLING CODE 6450–01–P

## DEPARTMENT OF ENERGY

### Federal Energy Regulatory Commission

### Combined Notice of Filings #1

Take notice that the Commission received the following electric rate filings:

*Docket Numbers:* ER09–1100–000.
*Applicants:* Baltimore Gas and Electric Company.
*Description:* Formal Challenge of the Maryland Office of People's Counsel and Maryland Public Service Commission to Baltimore Gas and Electric's 2024 Formula Rate Annual Update.
*Filed Date:* 12/30/24.
*Accession Number:* 20241230–5405.
*Comment Date:* 5 p.m. ET 1/21/25.
*Docket Numbers:* ER25–464–001.
*Applicants:* Southwest Power Pool, Inc.
*Description:* Tariff Amendment: Amended Tariff Revisions to the NRIS Interconnection Service Product to be effective 2/1/2025.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5128.
*Comment Date:* 5 p.m. ET 1/27/25.
*Docket Numbers:* ER25–858–000.
*Applicants:* LRE Interconnection Manager, LLC.
*Description:* 205(d) Rate Filing: Assignment and Assumptions of Co-Tenancy Interests in Shared Facilities to be effective 1/7/2025.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5036.
*Comment Date:* 5 p.m. ET 1/27/25.
*Docket Numbers:* ER25–859–000.
*Applicants:* PJM Interconnection, L.L.C.
*Description:* 205(d) Rate Filing: Amendment to ISA, SA No. 6671; Queue No. AF1–038 to be effective 3/8/2025.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5041.
*Comment Date:* 5 p.m. ET 1/27/25.
*Docket Numbers:* ER25–860–000.
*Applicants:* AEP Texas Inc.
*Description:* 205(d) Rate Filing: AEPTX–STEC (Palafox) 1st Amended Facilities Development Agreement to be effective 12/9/2024.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5062.
*Comment Date:* 5 p.m. ET 1/27/25.
*Docket Numbers:* ER25–861–000.
*Applicants:* PJM Interconnection, L.L.C.
*Description:* 205(d) Rate Filing: Amendment to ISA, Service Agreement No. 7008; Queue No. AG1–191 to be effective 3/7/2025.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5065.
*Comment Date:* 5 p.m. ET 1/27/25.
*Docket Numbers:* ER25–862–000.
*Applicants:* Antelope Valley BESS, LLC.
*Description:* 205(d) Rate Filing: Certificates of Concurrence for Shared Facilities Common Ownership Agreements to be effective 1/7/2025.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5070.
*Comment Date:* 5 p.m. ET 1/27/25.
*Docket Numbers:* ER25–863–000.
*Applicants:* Northern States Power Company, a Wisconsin corporation.
*Description:* 205(d) Rate Filing: 2025–01–06 NSPW–RFMU SISA to be effective 1/7/2025.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5154.
*Comment Date:* 5 p.m. ET 1/27/25.
*Docket Numbers:* ER25–864–000.
*Applicants:* PJM Interconnection, L.L.C.
*Description:* 205(d) Rate Filing: Original GIA, SA No. 7454; Project Identifier No. AE2–048 to be effective 12/6/2024.
*Filed Date:* 1/6/25.
*Accession Number:* 20250106–5169.
*Comment Date:* 5 p.m. ET 1/27/25.

The filings are accessible in the Commission's eLibrary system (*https://elibrary.ferc.gov/idmws/search/fercgensearch.asp*) by querying the docket number.

Any person desiring to intervene, to protest, or to answer a complaint in any of the above proceedings must file in accordance with Rules 211, 214, or 206 of the Commission's Regulations (18 CFR 385.211, 385.214, or 385.206) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *https://www.ferc.gov/docs-filing/efiling/filing-req.pdf*. For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

The Commission's Office of Public Participation (OPP) supports meaningful public engagement and participation in Commission proceedings. OPP can help members of the public, including landowners, environmental justice communities, Tribal members and others, access publicly available information and navigate Commission processes. For public inquiries and assistance with making filings such as interventions, comments, or requests for rehearing, the public is encouraged to contact OPP at (202) 502–6595 or *OPP@ferc.gov*.

Dated: January 6, 2025.

**Carlos D. Clay,**

*Acting Deputy Secretary.*

[FR Doc. 2025–00447 Filed 1–10–25; 8:45 am]

BILLING CODE 6717–01–P

## DEPARTMENT OF ENERGY

### Federal Energy Regulatory Commission

### Combined Notice of Filings

Take notice that the Commission has received the following Natural Gas Pipeline Rate and Refund Report filings:

**Filings Instituting Proceedings**

*Docket Numbers:* RP25–342–000.
*Applicants:* Gulf South Pipeline Company, LLC.
*Description:* 4(d) Rate Filing: Cap Rel Neg Rate Agmt (Osaka 46428 to EDF 58753) to be effective 1/1/2025.
*Filed Date:* 1/3/25.
*Accession Number:* 20250103–5146.
*Comment Date:* 5 p.m. ET 1/15/25.
*Docket Numbers:* RP25–343–000.
*Applicants:* Gulf South Pipeline Company, LLC.
*Description:* 4(d) Rate Filing: Cap Rel Neg Rate Agmt (Osaka 46428 to EDF 58759) to be effective 1/4/2025.
*Filed Date:* 1/3/25.
*Accession Number:* 20250103–5161.
*Comment Date:* 5 p.m. ET 1/15/25.

Any person desiring to intervene, to protest, or to answer a complaint in any of the above proceedings must file in accordance with Rules 211, 214, or 206 of the Commission's Regulations (18 CFR 385.211, 385.214, or 385.206) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is

## Notice of Change

51732 **Federal Register** / Vol. 90, No. 220 / Tuesday, November 18, 2025 / Notices

**DOE Evaluation**

DOE will review the Notice and Supplement in accordance with its CIC Procedures.[2] Consistent with the CIC Procedures, this notice addresses Commonwealth's existing authorization to export LNG to countries with which the United States has not entered into a free trade agreement (FTA) requiring national treatment for trade in natural gas and with which trade is not prohibited by United States law or policy (non-FTA countries), granted in DOE/FECM Order no. 5238–A.[3] If no interested person protests the change in control and DOE takes no action on its own motion, the proposed change in control will be deemed granted 30 days after publication in the **Federal Register**. If one or more protests are submitted, DOE will review any motions to intervene, protests, and answers, and will issue a determination as to whether the proposed change in control has been demonstrated to render the underlying authorizations inconsistent with the public interest.

**Public Comment Procedures**

Interested persons will be provided 15 days from the date of publication of this notice in the **Federal Register** to move to intervene, protest, and answer Commonwealth's Notice and Supplement.[4] Protests, motions to intervene, notices of intervention, and written comments are invited in response to this notice only as to the change in control described in the Notice and Supplement. All protests, comments, motions to intervene, or notices of intervention must meet the requirements specified by DOE's regulations in 10 CFR part 590, including the service requirements.

Filings may be submitted using one of the following methods:

(1) Submitting the filing electronically at *fergas@hq.doe.gov;*

(2) Mailing the filing to the Office of Regulation, Analysis, and Engagement at the address listed in the **ADDRESSES** section; or

(3) Hand delivering the filing to the Office of Regulation, Analysis, and Engagement at the address listed in the **ADDRESSES** section.

For administrative efficiency, DOE prefers filings to be filed electronically. All filings must include a reference to "Docket No. 19–134–LNG" in the title line, or "Commonwealth LNG Change in Control" in the title line. Filings must be submitted in English to be considered.[5]

*For electronic submissions:* Please include all related documents and attachments (*e.g.,* exhibits) in the original email correspondence. Please do not include any active hyperlinks or password protection in any of the documents or attachments related to the filing. All electronic filings submitted to DOE must follow these guidelines to ensure that all documents are filed in a timely manner.

The Notice, Supplement, and any filed protests, motions to intervene, notices of intervention, and comments will be available electronically on the DOE website at *www.energy.gov/fecm/regulation.*

Signed in Washington, DC, on November 13, 2025.

**Amy R. Sweeney,**

*Director, Office of Regulation, Analysis, and Engagement, Office of Resource Sustainability.*

[FR Doc. 2025–20043 Filed 11–17–25; 8:45 am]

BILLING CODE 6450–01–P

[2] 79 FR 65541 (Nov. 5, 2014).

[3] Commonwealth's Notice and Supplement also applies to the company's existing authorization to export LNG to FTA countries in the same docket. DOE will respond to that portion of the filing separately pursuant to the CIC Procedures, 79 FR 65542.

[4] Intervention, if granted, would constitute intervention only in the change in control portion of these proceedings, as described herein.

[5] Executive Order 14224 of March 1, 2025, *Designating English as the Official Language of the United States,* 90 FR 11363 (Mar. 6, 2025).

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**DEPARTMENT OF ENERGY**

**National Nuclear Security Administration**

**Notice of Change in the Process for the Site-Wide Environmental Impact Statement for Continued Operation of Sandia National Laboratories, New Mexico and for the Supplemental Environmental Impact Statement for Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory**

**AGENCY:** National Nuclear Security Administration, Department of Energy.

**ACTION:** Notice.

**SUMMARY:** The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the United States (U.S.) Department of Energy (DOE), announces it will not perform certain National Environmental Policy Act (NEPA) activities previously indicated in the *Notice of Intent To Prepare a Site-Wide Environmental Impact Statement* (SWEIS) *for Continued Operation of Sandia National Laboratories, New Mexico* (SNL/NM) *in Albuquerque, New Mexico* (SNL/NM NOI) and the *Notice of Intent To Prepare a Supplemental Environmental Impact Statement* (SEIS) *for Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory* (LLNL) *in Livermore, California* (LLNL NOI). Due to intervening regulatory changes, NNSA will not publish a draft SNL/NM SWEIS or a draft LLNL SEIS or hold additional public hearings for the LLNL SEIS. When NNSA publishes the final SNL/NM SWEIS and the final LLNL SEIS, NNSA will publish its Records of Decision (RODs) for both at the same time as the final documents.

**FOR FURTHER INFORMATION CONTACT:** For additional information about this Notice, please contact Lynn Alexander, NEPA Compliance Officer, National Nuclear Security Administration; telephone: 202–302–0141; or email at: *NEPA@nnsa.doe.gov.*

**SUPPLEMENTARY INFORMATION:** Consistent with Executive Order (E.O.) 14154, *Unleashing American Energy,* and with the *National Environmental Policy Act of 1969,* as amended (42 U.S.C. 4321 *et seq.*), the Council on Environmental Quality (CEQ) repealed its NEPA regulations and required agencies to revise their NEPA implementing procedures (90 FR 10610, February 25, 2025, *Removal of National Environmental Policy Act Implementing Regulations;* effective April 22, 2025). Accordingly, DOE issued new DOE NEPA Implementing Procedures on June 30, 2025, and removed most of the previous DOE NEPA implementing procedures from 10 CFR part 1021, *National Environmental Policy Act Implementing Procedures,* in an Interim Final Rule on July 3, 2025 (90 FR 29676, *Revision of National Environmental Policy Act Implementing Procedures*). DOE's amended NEPA regulations rescind process-oriented requirements (which are now outlined in the DOE NEPA Implementing Procedures document issued June 30, 2025) and retain DOE's Categorical Exclusions and emergency procedures. The regulatory update and new DOE NEPA Implementing Procedures align with E.O. 14154 and significantly streamline NEPA processes by focusing on statutory requirements while retaining meaningful review of potential environmental impacts. Neither NEPA nor the new DOE NEPA Implementing Procedures require NNSA to publish draft environmental documents for public comment, hold public hearings on a draft environmental document, or wait for 30 days after issuance of a final environmental impact statement to publish a ROD. While NNSA indicated in the SNL/NM NOI that it would

publish a draft of the SWEIS for Continued Operation of SNL/NM (DOE/EIS–0556) for public comment, consistent with NEPA and with DOE's new DOE NEPA Implementing Procedures, with respect to SNL/NM, NNSA will not issue a draft SNL/NM SWEIS for public comment or wait 30 days between the final SWEIS and issuance of the ROD. While NNSA indicated in the LLNL NOI that it would publish a draft of the LLNL SEIS for Enhanced Plutonium Facility Utilization at LLNL in Livermore, California (DOE/EIS–0547–S1) for public comment, consistent with NEPA and DOE's new DOE NEPA Implementing Procedures, NNSA will not issue a draft LLNL SEIS for public comment, hold a public hearing on a draft, or wait 30 days between the final LLNL SEIS and issuance of the ROD.

**NEPA Activity Already Conducted on the SWEIS for Continued Operation of SNL/NM**

NNSA is preparing the SNL/NM SWEIS pursuant to the requirements of NEPA. In the SNL/NM NOI (April 21, 2023; 77 FR 24607) NNSA invited all interested agencies (Federal, state, and local), Native American Tribes, public interest groups, local businesses, and members of the general public to provide comments on the scope of the environmental impact statement, environmental issues, and other potential alternatives that NNSA should consider in the SNL/NM SWEIS. NNSA held two public scoping meetings regarding the SNL/NM SWEIS in May 2023 and collected comments from the interested parties for 45 days. NNSA has considered and incorporated comments received during the public scoping period and expects to publish the final SNL/NM SWEIS and simultaneous publication of its ROD in late 2025.

**NEPA Activity Already Conducted on the SEIS for Enhanced Plutonium Facility Utilization at LLNL**

In the LLNL NOI (January 13, 2025; 90 FR 2678), NNSA announced its intent to prepare the LLNL SEIS and invited all interested agencies (Federal, state, and local), Native American Tribes, public interest groups, local businesses, and members of the general public to provide comments on the scope of the environmental impact statement, environmental issues, and other potential alternatives that NNSA should consider in the LLNL SEIS. NNSA held a public scoping meeting regarding the LLNL SEIS in January 2025 and collected comments from the interested parties for 45 days. NNSA has considered and incorporated comments received during the public scoping period and expects to publish the final LLNL SEIS and simultaneous publication of its ROD in early 2026.

**Signing Authority**

This document of the Department of Energy was signed on October 2, 2025, by Brandon M. Williams, Under Secretary for Nuclear Security and NNSA Administrator, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on November 14, 2025.

**Treena V. Garrett,**

*Federal Register Liaison Officer, U.S. Department of Energy.*

[FR Doc. 2025–20208 Filed 11–17–25; 8:45 am]

BILLING CODE 6450–01–P

## DEPARTMENT OF ENERGY

### Federal Energy Regulatory Commission

### Sunshine Act Meetings

The following notice of meeting is published pursuant to section 3(a) of the government in the Sunshine Act (Pub. L. 94–409), 5 U.S.C. 552b:

**AGENCY HOLDING MEETING:** Federal Energy Regulatory Commission.

**TIME AND DATE:** November 20, 2025, 10:00 a.m.

**PLACE:** Room 2C. 888 First Street NE, Washington, DC 20426.

**STATUS:** Open to the public.

**MATTERS TO BE CONSIDERED:** Agenda * Note—Items listed on the agenda may be deleted without further notice.

**CONTACT PERSON FOR MORE INFORMATION:** Debbie-Anne A. Reese, Secretary. Telephone (202) 502–8400.

For a recorded message listing items Stricken from or added to the meeting, call (202) 502–8627.

This is a list of matters to be considered by the Commission. It does not include a listing of all documents relevant to the items on the agenda. All public documents, however, may be viewed online at the Commission's website at *https://elibrary.ferc.gov/eLibrary/search* using the eLibrary link.

1130TH—MEETING

[Open; November 20, 2025, 10:00 a.m.]

| Item No. | Docket No. | Company |
|---|---|---|
| | **Administrative** | |
| A–1 | AD26–1–000 | Agency Administrative Matters |
| A–2 | AD26–2–000 | Customer Matters, Reliability, Security and Market Operations |
| A–3 | AD06–3–000 | Market Update |
| A–4 | AD07–13–019 | FY2025 Report on Enforcement |
| | **Electric** | |
| E–1 | ER25–2258–001 | System Energy Resources, Inc. |
| E–2 | ER22–24–002 | System Energy Resources, Inc. |
| E–3 | ER24–3032–000 | Pacific Gas and Electric Company |
| E–4 | ER10–1391–003 | San Diego Gas & Electric Company |
| E–5 | ER24–2776–000 ER24–2776–001 | Southern California Edison Company |
| E–6 | EL25–111–000 | EDF power solutions Development, Inc. |

# APPENDIX C
# AGENCY COMMENTS ON THE DRAFT LLNL SEIS AND NNSA RESPONSES

# C. AGENCY COMMENTS ON THE DRAFT LLNL SEIS AND NNSA RESPONSES

## C.1 INTRODUCTION

Consistent with DOE's NEPA Implementing Procedures (DOE 2026), after preparation of the Draft LLNL SEIS, NNSA sought the comments of any Federal agency that has jurisdiction by law or special expertise with respect to any environmental impact involved. Accordingly, the Draft LLNL SEIS was issued in mid-January 2026 to the USEPA Region 9 and California's State Clearinghouse for a 30-day review and comment period. The comment period ended on February 18, 2026. This appendix contains the comments that were received from the USEPA Region 9, as well as NNSA's responses. NNSA considered the comments received and made changes to the LLNL SEIS based on these comments.

REGION 9
SAN FRANCISCO, CA 94105

February 17, 2026

Alan Chen
NEPA Document Manager
Department of Energy, National Nuclear Security Administration
7000 East Avenue, L–29
Livermore, California 94550-9234

Subject: The EPA's Comments on the Draft Supplemental Environmental Impact Statement for the Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory (DOE/EIS–0547–S1), Alameda County, California

Dear Alan Chen:

The U.S. Environmental Protection Agency has reviewed the Draft Supplemental Environmental Impact Statement for the Enhanced Plutonium Facility Utilization at Lawrence Livermore National Laboratory pursuant to the National Environmental Policy Act and our NEPA review authority under Section 309 of the Clean Air Act. The CAA Section 309 requires the EPA to review and comment on the environmental impact on any proposed federal action subject to NEPA's environmental impact statement requirements and to make its comments public.

The National Nuclear Security Administration is proposing to increase amounts of fissile materials for research and development activities, upgrade the security categorization at the existing plutonium facility, construct 75 new facilities (approximately 3.3 million square feet), increase material and waste generation storage and shipments during operations, and add operational and security personnel to support Security Category II operations.

The EPA provided comments and recommendations on the programmatic Draft Site-Wide EIS for Continued Operations of the Lawrence Livermore National Laboratory (LLNL) on January 18, 2023, the Final Site-Wide EIS on December 4, 2023, and the Notice of Intent to Prepare a Supplemental EIS on March 3, 2025. We provide the following comments and recommendations for this Draft Supplemental EIS to improve the clarity of the air quality impact assessment and to reduce impacts from fugitive dust.

***Fugitive Dust***

Children are more vulnerable to pollutants due to differences in behavior and biology, which can lead to greater exposure and/or unique windows of susceptibility during development.[1] As such, the EPA has dust-related concerns for sensitive receptors at schools and parks close to the Project area, including Arroyo Seco Elementary School, Jackson Avenue Elementary School, Almond School Livermore, Tex Spruiell Park, Big Tree Park, Robert Livermore Park, and Bruno Canziani Neighborhood Park. Noting the Proposed Action also requires demolition of about 150 facilities (approximately 1,170,000 square feet) that have the potential to release radioactive fugitive dust or other hazardous constituents, the EPA recommends adding the following best management practices into the Final SEIS to ensure that fugitive dust emissions are minimized:

- Describe and implement dust control measures in a Decontamination, Decommissioning, and Demolition Plan, like watering frequency and application methods or speed limit controls in the construction area.
- Appoint an on-site dust control monitor to limit construction actions or implement dust control procedures during high wind events if soil is exposed, and when earth-moving or demolition construction activities occur.
- Consider the use of a receptor grid dispersion model for the Proposed Action to analyze potential emission levels and their corresponding exposure impacts to sensitive receptors near the Project area.
- Discuss possible impacts to children and those living in the area from potential exposure to harmful emissions levels identified on and/or near the Project site.

***Diesel Emissions***

The Draft SEIS states that a stationary emergency diesel generator at the Superblock for heating new office buildings would be added, but it is unclear what the size and efficiency of this generator would be (p. 4-8). The EPA recommends the Final SEIS clarify this information. We further recommend using Tier 4-compliant or equivalent diesel emission controls (e.g. diesel particulate filters).

***Radiological Emissions***

The Radiological Air Emissions Section states that there would be no additional emissions from enhanced plutonium utilization and operations. (p. 4-9). We note that the Draft SEIS also states that the project would increase the amount of fissile material for research and development operations at the Plutonium Facility. It is not clear how increased fissile material shipments, storage, and waste generation during operational activities would not increase the radiological emissions potential (p. 1-1, 1-2). We recommend the Final SEIS clarify how the conclusion was reached that no additional emissions would occur during the operational phase of the Proposed Action. This may include a description of the specific methods or safeguards that would be employed to avoid radiological releases or undue exposure as well as any fenceline monitoring procedures that could support the conclusion.

[1] EPA's Protecting Children's Environmental Health website. https://www.epa.gov/children

The EPA appreciates the opportunity to review and provide comments on this Draft EIS. If you have any questions, please contact me at (415) 947-4167 or the lead reviewer, Erick Dzeketey, at (415) 972-3582 or dzeketey.erick@epa.gov.

Sincerely,

JEAN PRIJATEL

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Jean Prijatel
Manager
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## C.2 COMMENTS AND NNSA RESPONSES

**Comment 1**: The USEPA recommends adding the following best management practices into the Final SEIS to ensure that fugitive dust emissions are minimized:

- Describe and implement dust control measures in a DD&D Plan, like watering frequency and application methods or speed limit controls in the construction area.
- Appoint an on-site dust control monitor to limit construction actions or implement dust control procedures during high wind events if soil is exposed, and when earth-moving or demolition construction activities occur.
- Consider the use of a receptor grid dispersion model for the Proposed Action to analyze
- potential emission levels and their corresponding exposure impacts to sensitive receptors near the Project area.
- Discuss possible impacts to children and those living in the area from potential exposure to harmful emissions levels identified on and/or near the Project site.

**Response**: The Final LLNL SEIS analyzes the total estimated annual emissions for the No-Action Alternative and Enhanced Plutonium Facility Utilization from construction, demolition, and operational activities (see Section 4.6). Fugitive emissions from the construction of 75 new projects (totaling approx. 3.3 million square feet) and DD&D of 150 facilities (totaling approx. 1.2 million square feet) were analyzed in the 2023 LLNL SWEIS and are not further analyzed in this SEIS. Under the Enhanced Plutonium Facility Utilization project, emissions would remain below the *de minimis* thresholds. Therefore, the general conformity rules would not apply, and these activities would not expose sensitive receptors to substantial pollutant concentrations. As a result, no mitigation would be required; however, with respect to fugitive dust, NNSA identified the following BMPs that would be implemented to reduce these already-limited effects:

- All people responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust would take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions might include using water to control dust from building construction and demolition, road grading, or land clearing.

In addition, NNSA will describe and implement any additional specific dust control measures in project-specific plans related to construction and DD&D. As appropriate, those measures could include details regarding watering frequency and application methods; speed limit controls in the construction area; appointment of an on-site dust control monitor to limit construction actions or implement dust control procedures during high wind events if soil is exposed, and when earth-moving or demolition construction activities occur. Because emissions would remain below the *de minimis* thresholds, NNSA does not think that more detailed modelling (such as a grid receptor model) is necessary to analyze the potential emission levels, and their corresponding exposure impacts to sensitive receptors or children near the Project area.

**Comment 2**: The Draft SEIS states that a stationary emergency diesel generator at the Superblock for heating new office buildings would be added, but it is unclear what the size and efficiency of this generator would be (p. 4-8). The USEPA recommends the Final SEIS clarify this information.

The USEPA further recommends using Tier 4-compliant or equivalent diesel emission controls (e.g. diesel particulate filters).

**Response**: Section 4.6.2 of the Final LLNL SEIS has been revised to state that the stationary emergency diesel generator would only be used to maintain Superblock security systems during an electrical outage (page 4-8). That emergency diesel generator would not be used to heat the new office building. Rather, heating for the new office building would be supported by either natural gas or electric heat pumps. Because only conceptual design has been completed for the Enhanced Plutonium Facility Utilization Project, NNSA has not determined the exact size and efficiency of the emergency generator. Based on conceptual design information, the emergency diesel generator is likely to be in the range of approximately 250 kW – 750 kW. The typical emergency diesel generator operates at a 35-45 percent electrical efficiency. Specific diesel emission controls would be determined during detailed design.

**Comment 3**: The Radiological Air Emissions Section states that there would be no additional emissions from enhanced plutonium utilization and operations. The USEPA notes that the Draft SEIS also states that the project would increase the amount of fissile material for research and development operations at the Plutonium Facility. It is not clear how increased fissile material shipments, storage, and waste generation during operational activities would not increase the radiological emissions potential (p. 1-1, 1-2). The USEPA recommends that the Final SEIS clarify how the conclusion was reached that no additional emissions would occur during the operational phase of the Proposed Action. This may include a description of the specific methods or safeguards that would be employed to avoid radiological releases or undue exposure as well as any fenceline monitoring procedures that could support the conclusion.

**Response**: The radiological emissions, as described in the SEIS No-Action Alternative (which is based on the 2023 LLNL SWEIS), are from LLNL operations associated with tritium operations and Site 300 operations. The SEIS focuses on Plutonium Facility activities. All exhaust from the gloveboxes and laboratory areas is filtered through multiple stages of HEPA filters; this exhaust is continuously sampled and monitored for radioactive contamination prior to release from the facility. Releases from the Plutonium Facility are below detectable levels. An increase in plutonium R&D activities would not have any measurable increase in radiological releases. Before construction and DD&D activities, appropriate sampling and surveys would be conducted on surfaces, and depending on the results of radiological surveys, specific measures would be developed during the planning process. During construction and DD&D activities, NNSA implements a variety of measures to minimize potential releases, including negative pressure containment, the use of HEPA filtration, dust suppression (e.g., water misting, foams, or surfactants keep materials damp so dust cannot become airborne), and fixatives/stabilizers (which are special coatings that are sprayed on contaminated surfaces to “lock down” particles before cutting or demolition). For specific information on monitoring of radiological emissions from LLNL, please refer to Section 4.6.5 of the 2023 LLNL SWEIS, which contains details regarding air effluent monitoring of atmospheric discharge points to evaluate LLNL’s compliance with local, state, and federal laws and regulations and to ensure that human health and the environment are protected.