



U.S. Department of Energy
Categorical Exclusion Determination Form

Proposed Action Title: Building 59 Upgrade and NERSC Upgrades, Installation, and Operation LB-CX-16-01
Program or Field Office: Berkeley Site Office
Location(s) (City/County/State): Lawrence Berkeley National Laboratory Berkeley California

Proposed Action Description:

The U.S. Department of Energy (DOE) proposes to upgrade Bldg. 59 ("Wang Hall," or "CRT") at LBNL and install and operate new high-performance computing systems. The purpose of the building upgrade would be to accommodate increased high-performance computing system(s); the purpose of the increased high-performance computing system is to meet the exponentially increasing needs of scientists for complex simulation and data analysis.

Building 59 upgrades would increase the capacity of building electrical, water, and cooling systems beyond levels originally anticipated for the facility, as shown below. The upgrades would be necessary to simultaneously operate the proposed new NERSC-9 and existing (though not yet fully operational) NERSC-8 high-performance computing systems¹.

BUILDING 59	Approved Capacity	Proposed Action	Total Proposed Capacity
Peak Power ^a (electrical)	17 MW	10.5 MW	27.5 MW
Avg. Water Use ^a	32 MGY	16.6 MGY	55 MGY
Cooling Towers	5	2	7

^a Figures are approximate; based on best current estimates.

Two new cooling towers would be installed on an existing concrete foundation beside four cooling towers and space reserved for an approved but not yet built fifth cooling tower. The cooling tower foundation is adjacent to the southeast (exterior) corner of Bldg. 59. The proposed upgrade would also install new equipment inside of Bldg. 59, including a second 1.25 MW backup generator (or multiple smaller generators with equivalent combined capacity) and additional electrical substations, heat exchangers, water pumps, air handling units, UPS panel, and exhaust fans. There would be no change to the building exterior or its occupancy.

Proposed building upgrades are planned to take place between 2017 and 2019 and would involve up to 40 workers and 3 trucks per day. Construction equipment would include delivery and light construction vehicles, a crane, whisper generators, and hand-held tools. Due to the logistical problems with maneuvering a crane around Building 59 and nearby slopes and trees, it is possible a helicopter would be used to deliver certain large pieces of equipment.

The proposed action would include the purchase, installation and operation of NERSC upgrades under LBNL's National Energy Research Scientific Computing Center (NERSC) program, which is the DOE Office of Science's production computing facility. At full operation, the proposed NERSC upgrades would increase NERSC computing capacity by 20—30 times over the currently fully-operating system (NERSC-7). Installation of NERSC upgrades would take approximately 1-month and would require up to 20 workers and 3 trucks per day. The proposed new system is anticipated to be fully operational in 2020. Given the rapid advance of computer technology, it is assumed that future generations of NERSC supercomputers could be installed in the years following the installation and operation of NERSC-9. It is not possible to anticipate what energy, cooling, and other requirements such successor computing systems might have; however, under this proposed action, they would be limited to total energy use of 27.5 MW. If and when NERSC the systems are retired, they are offered for reuse by third parties and to the original vendor. If not accepted, the systems are recycled as e-waste.

¹ In order to operate seamlessly while regularly upgrading high performance computing systems, Building 59 was constructed to accommodate simultaneous operation of two systems. This allows the current generation high performance computing system to continue to operate while the next generation to be installed and phased into operation. Currently, NERSC-7 is operating while NERSC-8 is being installed and phased in. NERSC-8 is partially operational and will be fully operational by mid-2016.

Categorical Exclusion(s) Applied:

- B1.5 - Existing steam plants and cooling water systems
- B1.15 - Support buildings
- B1.31 - Installation or relocation of machinery and equipment
- B1.7 - Electronic equipment

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

The proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

I concur that the above description accurately describes the proposed action

LBNL Environmental Planner:

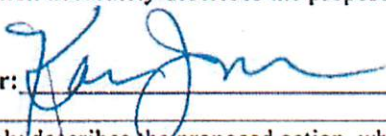


Date Determined

4/7/16

I concur that the above description accurately describes the proposed action.

BSO Federal Project Director:



Date Determined:

4/7/2016

The above description accurately describes the proposed action, which reflects the requirements of the CX cited above. Therefore, I recommend that the proposed action be categorically excluded from further NEPA review and documentation.

Berkeley NEPA Program of Contact:

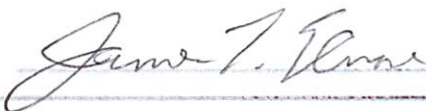


Date Determined:

4/7/2016

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:



Date Determined:

4/8/16