

## U.S. Department of Energy Categorical Exclusion Determination Form

Proposed Action Title: ESnet6 Project, Lawrence Berkeley National Laboratory, LB-CX-18-03

Program or Field Office: Berkeley Site Office

<u>Location(s) (City/County/State)</u>: Berkeley, California

## Proposed Action Description:

The U.S. Department of Energy (DOE) proposes a significant upgrade to the Energy Sciences network (ESnet) to replace its current architecture with a next generation system. Under this project, called "ESnet6," computing equipment and networking infrastructure at LBNL and other ESnet-participating institutions (colocation facilities) would also be replaced or updated. ESnet6 equipment is expected to have a lifespan of 7-plus years; preliminary total project cost range is approximately \$145M to 180M.

ESnet provides the high-bandwidth, reliable connections that link scientists at national laboratories, universities, and other research institutions. This enables collaboration on some of the world's most important scientific challenges including those involving energy, biosciences, materials, and the origins of the universe. Funded by the ASCR program within the DOE Office of Science, ESnet is managed and operated by the Scientific Networking Division at Lawrence Berkeley National Laboratory. As a nationwide infrastructure and DOE User Facility, ESnet provides scientists with unrestricted access to unique DOE research facilities and computing resources.

The current ESnet system (ESnet5) is eight years old and inadequate for handling projected increases in data traffic, which continue to predictably grow at an exponential rate. In addition, much of the system's underlying technical components are out of date or at or near their listed "end of life." This includes equipment deployed at ESnet's colocation facilities.

New network hardware and the leasing of additional fiber paths would begin in late 2018 or early 2019. Transition from ESnet5 to ESnet6 would take place between 2019 and 2021. New equipment (hardware and cabling, equipment racks, power supply as needed) would be installed at leased colocation facilities as well as within existing ESnet data centers. No facility construction or structural modification would take place. Existing equipment replaced by ESnet6 would be provided to other institutions for reuse or recycled and disposed of at appropriately licensed facilities.

Although not expected at this time, new fiber optic cable lines may be needed in a single or a few isolated locations to support ESnet6 upgrades. Any such new fiber optic cable would be installed in existing powerline or pipeline rights-of-way and/or added to transmission facilities. In any cases where such installations would be required outside of previously disturbed or developed powerline or pipeline rights-of-way, the lengths of such fiber optic cable courses would not exceed approximately 10 miles. Installation of new fiber optic cable and any supporting infrastructure would be conducted in a manner that does not adversely impact sensitive environmental resources such as jurisdictional wetlands and waters of the United States, historical resources, Native American tribal lands, special-status species habitat, or hazardous waste sites subject to RCRA and CERCLA jurisdiction. Furthermore, such installation activities would be fully subject to applicable local, state, and federal environmental regulations, as well as adherence to LBNL procurement Terms and Conditions, including concomitant NEPA review and approval, if required.

Operationally, ESnet6 is expected to have the same environmental footprint as current operations. Marginal energy use increases to accommodate heavier data traffic would likely be offset by the use of more efficient equipment. Staffing levels would increase slightly, at most. All work would take place in existing facilities designed for networking and research.

## Categorical Exclusion(s) Applied:

B1.7 – Electronic equipment

B1.31 - Installation or relocation of machinery and equipment

B4.7 - Fiber optic cable

B4.12 – Construction of powerlines

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.

those listed in paragraph B(3) 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 describ	es the proposed action.	
LBNL Environmental Planner:	eff Philliber	S-8-18 Date Determined
I concur that the above description accurately describes the proposed action.		
BSO Project Manager:	las man	5/8/18 Date Determined
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.		
BSO NEPA Program Manager:  Sue Fie	Digitally signed by Sue Fields Date: 2018.05.14 16:08:58 -07'00'	Date Determined
Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1 B), 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	5/17/2018
KIR Sirbert		
Peter R. Siebach		

