

**Final Environmental Assessment for
Computational Research and Theory
Facility Project**
DOE/EA - 1700



**U.S. DEPARTMENT OF
ENERGY**

Lawrence Berkeley National Laboratory
February 2011

**FINDING OF NO SIGNIFICANT IMPACT
FOR THE PROPOSED COMPUTATIONAL RESEARCH AND THEORY FACILITY
PROJECT AT LAWRENCE BERKELEY NATIONAL LABORATORY,
BERKELEY, CALIFORNIA**

AGENCY: U.S. Department of Energy (DOE)

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: The DOE has completed an Environmental Assessment (EA) [DOE/EA-1700] that evaluates the potential impacts of the proposed Computational Research and Theory Facility Project (CRT) at Lawrence Berkeley National Laboratory (LBNL). The action proposed by the DOE is to relocate and consolidate Advanced Scientific Computing Research (ASCR) funded LBNL programs with other LBNL/University of California (UC) Berkeley programs that focus on computational and computer science research in a new facility on the LBNL site. To satisfy the above stated programmatic and space needs, the UC would construct a new building on the LBNL site. The construction of the new building by the UC would be a consequence of the DOE's Proposed Action. The EA has evaluated the impacts of the relocation and consolidation of ASCR funded research, and the construction, operation and eventual decommissioning of the CRT facility.

A draft version of the EA was issued for public comment on September 14, 2010, revised as appropriate based on public comments, and issued as final in February 2011. Based on the analyses reported in the EA, the DOE has determined that the Proposed Action is not a major Federal action that would significantly affect the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969 (42 USC § 4321 et seq.), the Council on Environmental Quality Regulations (CEQ) (40 CFR §§ 1500-1508), or the DOE's NEPA implementing regulations (10 CFR Part 1021). Therefore, the preparation of an Environmental Impact Statement (EIS) is not necessary, and the DOE is issuing this Finding of No Significant Impact (FONSI).

DESCRIPTION OF THE PROPOSED ACTION: The action proposed by the DOE is to relocate and consolidate ASCR-funded LBNL programs with other LBNL/UC Berkeley programs focusing on computational and computer science research in a new facility on the LBNL site. One possible location to accomplish the DOE's need would be the UC's CRT building, which is proposed to be constructed at LBNL. In order to evaluate and disclose the consequences of the Proposed Action, this EA evaluates the impacts from the relocation and consolidation of equipment and personnel and also evaluates the impacts from the construction, operation, and eventual removal of the building and equipment once these reach the end of their useful lives.

PURPOSE AND NEED: The overall purpose of the Proposed Action is to support the DOE Office of Science mission in Computational Research and Theory by operating the National Energy Research Scientific Computing Center (NERSC) as the premier computing user facility

for the research community, and to conduct programmatic and applied research and development in the fields of computational science, computer science, and applied mathematics. The Project need for a new high performance computing space is due to the immediate and projected deficiency in high performance computing space at the Oakland Scientific Facility (OSF), which currently houses NERSC, and to remove the constraints to intellectual exchange and collaboration resulting from the dispersed locations of ASCR-funded LBNL and other related programs and researchers.

ALTERNATIVES CONSIDERED: In addition to the Proposed Action, impacts were also evaluated for other alternatives, including a No Action Alternative; construction of a new building at the Cafeteria (Building 54) Parking Lot Site on LBNL; construction of a new building at the Richmond Field Station (RFS); construction of a new building at the site of the former California Department of Health Services building in Berkeley; and leasing a facility on San Pablo Avenue in Berkeley, California. Alternatives considered but eliminated included expansion of the OSF, alternate construction sites on LBNL, and a reduced size construction alternative. Expansion of OSF was eliminated because OSF would not have the capability to provide adequate power for future needs. One alternate site at LBNL, the Building 25 and 25A site, was eliminated because another project is planned for the site. A second alternate site the Building 51 site, was eliminated because it would not be available in time and there may be subsurface contamination that would have to be removed before the site could be reused. The reduced size alternative was eliminated because it would not meet the purpose and need of the project in that it would reduce the office space by one-half, thereby defeating the objective of consolidating the ASCR funded and related programs and researchers.

The No Action Alternative was also evaluated to provide a baseline for comparison of the impacts of the Proposed Action against the impacts that would occur, if the DOE does not relocate the ASCR-funded and other related programs and researchers. Under the No Action Alternative, NERSC would remain at the OSF, and a new building would not be constructed. However, the No Action Alternative fails to meet the project purpose and need because the OSF would have neither adequate space to accommodate two future supercomputing systems at one time nor have adequate mechanical space and electrical service capacity to handle the computing facility growth projected for NERSC.

ENVIRONMENTAL IMPACTS: The EA assessed direct, indirect, and cumulative impacts of the Proposed Action and alternatives on the following resources, each of which is discussed more fully below:

- Air Quality,
- Biological Resources,
- Construction Traffic Accidents,
- Cultural Resources,
- Greenhouse Gases,
- Geology and Soils,

- Hazards, Human Health, and Accidents,
- Noise,
- Population and Housing, Socioeconomics, and Environmental Justice,
- Public Services,
- Transportation and Traffic,
- Utilities and Waste Management,
- Water Resources, and
- Visual Resources.

The Proposed Action would result in minor impacts to some of the environmental resources and no impact to two of the environmental resources. Certain standard project features (SPFs) that are a part of the Proposed Action are also discussed in the EA.

Air Quality

Potential air quality impacts would be minor under the Proposed Action. Construction activities associated with the CRT facility would generate fugitive dust emissions from site grading, building construction, hauling of equipment, hauling soil to and from the site, and construction worker commuting. These emissions would be temporary and would be further reduced by LBNL SPF AQ-1a, which is included in the Proposed Action and would require basic, enhanced, and optional control measures to minimize the generation of fugitive dust. This measure would reduce the fugitive dust emissions to acceptable levels. In addition, construction activities for the CRT facility would generate criteria pollutants (ROG, NO_x, PM₁₀, PM_{2.5}, CO, and SO₂). Emissions would not exceed de minimis levels for any of the criteria pollutants. Traffic generated by the Proposed Action would not result in substantial CO concentrations or cause a CO hotspot. Once constructed, the Proposed Action would result in operational emissions from the staff vehicle trips to and from the site, boiler operations, emergency generator testing, and general area sources. Operational emissions associated with the day-to-day activities of the proposed CRT facility would not exceed de minimis levels for ROG, CO, NO_x, SO_x, or PM₁₀. PM_{2.5} emissions would not exceed Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) thresholds of significance. Projects that generate emissions below de minimis levels do not substantially contribute – individually or cumulatively – to San Francisco Bay Area Air Basin criteria air pollutants or to any current nonattainment status in the air basin.

Biological Resources

The environmental impacts to biological resources would be minimal. There are no wetlands or other features such as designated Critical Habitat potentially subject to the jurisdiction of regulatory agencies, such as the United States Army Corps of Engineers or the United States Fish and Wildlife Service (USFWS), present on the Proposed Action

site. The Proposed Action site is not within or contiguous to any USFWS designated Critical Habitat for any species, including the Alameda whipsnake. In support of that determination, informal consultation with the USFWS verified that there would be no potentially adverse impacts to the Alameda whipsnake. The project has been designed with a minimum setback of at least 24 meters (80 feet) from Cafeteria Creek (to the east of the project site). In addition, construction-phase Best Management Practices and SPFs would minimize the potential for accidental discharges of fill or other materials into jurisdictional waters and sensitive habitats in the surrounding area. The vegetation types that would be removed from the Proposed Action site are common throughout the Oakland-Berkeley hills and are predominantly non-native species. The utility improvements would be constructed within LBNL road rights of way and on the substation site where biological resources are not present.

Construction Traffic Accidents:

The Proposed Action would not change the physical characteristics of the street network on the site or along the designated truck route on public roads. Construction traffic generated by the Proposed Action would be controlled by the LBNL Site Construction Coordinator and would be maintained below impact thresholds with respect to local traffic and pavement conditions. There would not be a considerable increase in construction truck traffic; therefore, no substantial increase in potential for traffic accidents compared to existing conditions.

Cultural Resources:

Under the Proposed Action, impacts to Cultural Resources would be minor. The DOE and the California State Historic Preservation Officer have determined that no archaeological resources or historic properties would be affected by the Proposed Action. However, if archaeological resources were discovered during construction, LBNL SPFs CUL-3 and CUL-4, which are included in the Proposed Action, would require measures (as appropriate), including work stoppage, oversight by accredited cultural resources professionals, and Native American tribal notification and involvement.

Greenhouse Gases:

The impact from the Proposed Action's greenhouse gas emissions (GHG) would be minor. The construction and operation of the CRT facility would generate GHG emissions, which would contribute to potential cumulative impacts on global climate. The Proposed Action's direct (Scope 1) emissions of 635 Metric Tonne Carbon Dioxide Equivalent (MTCO_{2e}) would not exceed the threshold of 25,000 MTCO_{2e} proposed by the CEQ. The threshold CEQ proposed does not determine whether the impact of a project would be substantial; however, the proposed threshold suggests that a project that generates emissions below this number does not represent a major emitter of GHGs, and thus the Proposed Action would not qualify as a major emitter. The new GHG thresholds adopted by the BAAQMD on June 2, 2010, do not apply to this project as the project review was commenced much before the District's adoption of the thresholds. Furthermore, the CRT facility incorporates features that would substantially lessen its

contribution to GHG emissions and global climate change. In compliance with the UC Policy, the Proposed Action incorporates numerous design features that are also consistent with State of California Assembly Bill 32 goals and strategies, and with GHG reduction measures suggested in the BAAQMD guidelines. These features would reduce the Proposed Action's GHG emissions by substantially more than 29 percent compared to "business-as-usual" emissions that would result in the absence of these design features.

Geology and Soils:

Impacts related to geology and soil would be minor under the Proposed Action. The Proposed Action site is located within the Earthquake Fault Zone defined for the Hayward fault by the State of California pursuant to the Alquist-Priolo Earthquake Fault Zoning Act. However, a fault investigation did not identify any active fault traces at the CRT building site. Although conformance to the highest seismic provisions does not guarantee the prevention of structural damage in the event of a maximum credible earthquake, structures built in compliance with the seismic requirements may reasonably be expected to avoid collapse or loss of life in a major earthquake.

Hazards, Human Health, and Accidents:

Potential impacts of hazardous materials, hazardous waste, and other hazards would be minor. There is no known existing subsurface contamination at the Proposed Action site. Except as discussed below, the CRT facility operations would not involve the routine use, storage, or transport of hazardous materials. A non-chemical treatment system would be used to control scaling in the facility's cooling towers. The only hazardous materials on site would be battery acid in batteries used to provide backup power to operate the computers in the event of a power outage, and about 1,000 gallons of diesel. Compliance with applicable federal, state, and local regulations would minimize exposure to hazards during operation.

Noise:

Noise impacts from construction, as well as operation of the Proposed Action, are expected to be minimal. With respect to the construction phase of the Proposed Action, calculations demonstrate that noise from CRT construction activities would not exceed City of Berkeley Noise Ordinance limits for almost the entire duration of project construction. The project's operational traffic would not make an appreciable difference to those existing noise levels along roadways that would provide access to the project site. Also, other sources of operational noise associated with the Proposed Action (cooling towers and air handling units) would not add to the noise levels experienced by any nearby sensitive receptors (most notably, the Nyingma Institute on Hearst Avenue) because noise levels generated by the Proposed Action's stationary equipment would meet the City's ordinance limits at the LBNL property line with the Institute. The operation of the CRT facility would therefore neither violate community noise standards for stationary source noise nor substantially increase the existing levels of noise at the nearest sensitive receptors.

Population and Housing, Socioeconomics, and Environmental Justice:

There would be no impacts to population and housing due to the Proposed Action. The proposed CRT facility would accommodate approximately 300 employees. Approximately 250 employees would be UC LBNL staff. Of those, 70 would be relocated from OSF, 165 would be relocated from within the LBNL site, and 15 could be new staff. Approximately 50 of the 300 employees would be UC Berkeley staff and students relocated from the Berkeley campus. The increase of 135 employees would not add substantially to the total population within the Bay Area. Given the distance between the LBNL site and the OSF, it is unlikely that many, if any, of the staff relocating from OSF would relocate their place of residence for commuting purposes. In addition, the Proposed Action would not result in environmental effects or human health risks that could affect minority or low-income populations in the surrounding area.

Public Services:

There would be no impact to public services under the Proposed Action. The CRT facility would be built to all currently applicable codes and would provide emergency access as required under applicable laws and regulations. Furthermore, the increase of 135 employees to the LBNL site under the Proposed Action would represent a small percent of the average daily population of around 4,515 at the LBNL site. Based on the historic average of calls for police services (approximately 10 calls per year), 135 additional employees associated with the Proposed Action would not cause a noticeable increase in the number of calls for police services.

Transportation and Traffic:

The Proposed Action would not substantially impact area transportation and traffic levels. Construction could result in temporary and minor impacts related to truck trips, material staging, construction worker commute trips, and parking. Traffic impacts were analyzed at project specific and cumulative levels; the latter analysis was based on a comprehensive examination of other current, planned, and pending projects in the area. Intersection delay and Level of Service (LOS) results for AM and PM peak hours under the Near-Term No Project and With Project conditions show the traffic associated with the CRT facility would not cause an exceedance of locally established significance thresholds for traffic impacts.

Utilities and Waste Management:

Impacts to utilities and waste management would be minor. There is sufficient treatment capacity at East Bay Municipal Utility District's (EBMUD) wastewater treatment plant to accommodate wastewater from the Proposed Action. EBMUD has also indicated that it can provide projected water service to LBNL from its existing supply sources. Therefore, EBMUD can meet the demands for water supply and wastewater treatment associated with the Proposed Action. The existing LBNL storm water drainage facilities have adequate capacity to service existing and future development in the area. The design features include a series of subsurface hydromodification vaults that would be sized to hold peak storm flows and release storm water discharge at a rate no greater than

the pre-development condition. The electricity for the Proposed Action would be routed through the Grizzly Peak substation and transmission facilities within the LBNL site.

Water Resources:

Impacts to water resources from the Proposed Action would be minor. Since the Proposed Action would not involve groundwater withdrawal or intrusion, it would not result in any effects on groundwater supplies. Due to the steep slope and relatively clay-rich soils, the site is not an area of significant groundwater recharge under existing conditions, so the potential for new, impervious surface created by the Proposed Action to interfere with groundwater recharge would be low. Furthermore, the Proposed Action would infiltrate storm water to the maximum extent practicable. Groundwater flow paths that do exist at the site are unlikely to be affected, as the building would extend a maximum of 25 feet below the ground surface, above the level at which groundwater is typically observed near the site. A wide array of construction-phase storm water best management practices (BMPs) would be employed to minimize the potential for accidental discharges of fill or other materials into surface waters and to comply with National Pollutant Discharge Elimination System requirements. Active management of construction-related stormwater flows from development sites is a part of LBNL standard contract specifications on all construction projects undertaken by the UC.

Visual Resources:

There would be minimal impact on visual resources as a result of the Proposed Action. The facility to be developed under the Proposed Action would be largely screened by intervening topography, vegetation, and structures. From off-site viewpoints, the facility would appear as an incremental addition to the currently developed hillside. Due to surrounding topography, structures, and vegetation, the building would not be prominently visible from many off-site locations. Intervening topography would obstruct views of the building from locations in Strawberry Canyon to the southeast of the project.

DETERMINATION: Based on the analyses of the EA, and after careful consideration of all public and agency comments, the DOE has determined that the Proposed Action does not constitute a major Federal action that would significantly affect the quality of the human environment within the context of NEPA. Therefore, preparation of an EIS is not required.

PUBLIC AVAILABILITY OF EA AND FONSI: The EA, FONSI, and EA references may be reviewed and copies of the documents obtained from:

U.S. Department of Energy
Berkeley Site Office
Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90-1023
Berkeley, CA 94720
Phone: (510)-486-7909

The EA and FONSI may also be reviewed at the City of Berkeley Public Library:

Library Director
Berkeley Public Library
Central Branch
2090 Kittredge
Berkeley, CA 94704

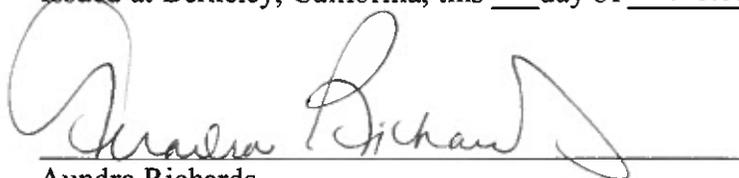
The document and references can also be viewed on the following website:

<http://www.lbl.gov/Community/CRT/index.html>

INFORMATION ON THE NEPA PROCESS: For further information on the NEPA process, contact:

Gary S. Hartman
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box 2001, SE-32
Oak Ridge, Tennessee 37831
Phone: (865) 576-0273

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Aundra Richards
Site Manager
U.S. Department of Energy
Berkeley Site Office