

**U. S. DEPARTMENT OF ENERGY
OFFICE OF SCIENCE**

**NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ENVIRONMENTAL EVALUATION NOTIFICATION FORM**

To be completed by "financial assistance award" organization receiving Federal funding. For assistance (including a point of contact), see "Instructions for Preparing SC F-560, Environmental Evaluation Notification Form".

Solicitation/Award No. (if applicable): _____

Organization Name: Lawrence Berkeley National Laboratory

Title of Proposed Project/Research: Construction and Operation of the User Test Bed Facility (UTBF) at the Lawrence Berkeley National Laboratory (LBNL) located in Berkeley, California.

Total DOE Funding/Total Project Funding: Construction approximately \$15.7M and Operations approximately \$1.0 Million a Year

I. Project Description (use additional pages as necessary):

A. Proposed Project/Action (delineate Federally funded/Non-Federally funded portions)

The U.S. Department of Energy (DOE) proposes to construct and operate research and user facilities at LBNL that would accelerate research towards achieving low-energy in commercial buildings. The facilities would consist of a series of coordinated integration test beds (typically small, trailer-sized structures that approximate the composition and conditions of much larger buildings), adjacent to LBNL's Building 90 (B90). Each test bed would be used to address key technical challenges for low-energy buildings. The test beds would not be occupied. Renovations would also be made to some interior space of Building 90 to support the UTBF program.

The LBNL UTBF program would study the science of low-energy integrated building systems in support of the DOE strategic goal to reduce energy use through the improved design and operation of new and existing buildings. The UTBF program would test and monitor test bed building envelopes and fenestrations, and mechanical, heating, cooling, electrical, and lighting systems. The use of test beds would provide researchers with controlled experimental environments with advanced data acquisition and data processing. The results of this research would enable collaboration between scientists, architects, engineers, designers, public utilities, and manufacturers to rapidly advance low-energy integrated building systems.

The proposed action would construct approximately five exterior test beds, each approximately 1,200 – 1,600 square feet. These would include three one-story structures, a one-story structure on a rotational pad (so as to allow it to rotate and track sunlight), and one story, high-bay structure. There would be several types of test beds. Some would provide the flexibility for performing studies with ceilings and floors at varying heights. Another would provide rooftop opening capabilities to study lighting and daylighting applications. All of the test beds would be designed to provide little to no thermal transfer through most envelope components to ensure thermal similarity between the cells.

B90 is a four-story, approximately 90,000 square foot office building in the northwest portion of the LBNL site. The proposed action would reconfigure approximately 5,000 square feet of interior B90 space to support the UTBF program. This interior space would be modified to include a controls room, a visualization/education room, and lab space for building controls, virtual design, lighting, and plug-load

studies. Work would be restricted to demolishing existing interior, non-structural partitions and installing new partitions, doors, finishes and related MEP (mechanical, electrical, plumbing) utilities. None of the program requires wet plumbing.

Site work would include removing eight trailers, providing foundations and utilities (such as, electricity and phones), paving, minor landscaping, and removing mainly pine and eucalyptus trees. The removal of these trees will not affect the views of LBNL from the surrounding, off-site community.

Purpose and need:

The DOE Building Technologies Program (BTP) focuses on research and development, design, and construction of energy efficient and net zero energy buildings. A goal of the BTP is to accelerate the adoption of energy-efficient building equipment and appliances through improved voluntary and regulatory programs. Toward this end, BTP proposes the institution of the National Laboratory Building Technology (NLBT) program to provide state-of-the-art user research facilities. By focusing on component research and development, material science, and integrated system controls, these NLBT facilities would accelerate research towards achieving zero energy homes and buildings. In addition, these NLBT facilities would allow industrial and institutional collaborations, support the development of new technologies, increase the likelihood that these new technologies would successfully enter the market, and reduce the cost of the best available technologies for high performance new and existing buildings.

- | | | |
|--|--------------------------|-------------------------------------|
| | Yes | No |
| B. <u>Would the project proceed without Federal funding?</u> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If "yes", describe the impact to the scope:

II. Description of Affected Environment:

UTBF would be located at LBNL inside B90 and outside in the existing paved areas of B90. Eight trailers outside of B90 would be demolished and removed. The interior of Building 90 is office and conference space constructed of hard walls and moveable partitions. The locations for the test beds were chosen not only for their close proximity to the Building Technology Department in B90, but also because the solar/shading characteristics at this location are ideally suited for the planned building envelope and fenestration studies.

III. Preliminary Questions:

- | | | |
|---|--------------------------|-------------------------------------|
| | Yes | No |
| A. <u>Is the DOE-funded work <i>entirely</i> a "paper study"?</u> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If "Yes", ensure that the description in Section I reflects this and go directly to Section V.

- | | | |
|--|-------------------------------------|--------------------------|
| B. <u>Would the work to be performed include work that would take place <i>outside an existing building</i>?</u> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|

And:

- | | | | |
|----|--|-------------------------------------|-------------------------------------|
| 1. | Threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. | Require the siting, construction or major expansion of waste treatment, storage, or disposal facilities? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. | Disturb hazardous substances, pollutants, or contaminants preexisting in the environment? Lead based paint and asbestos would be encountered during demolition | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. | Adversely affect environmentally-sensitive resources identified in Section IV.A.? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. | Be connected to another existing/proposed activity that could potentially create a cumulatively significant impact? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

6. Have an inherent *possibility* for high consequence impacts to human health or the environment (e.g., Biosafety Level 3-4 laboratories, activities involving high levels of radiation)?

If "No" to Question III.B. and ALL six subsequent questions, ensure the descriptions in Sections I and II reflect this and go directly to Section V.

IV. Potential Environmental Effects:

Attach/insert an explanation for each "Yes" response.

A. Sensitive Resources: Would the proposed action result in changes and/or disturbances to any of the following resources?

- | | | Yes | No |
|-----|---|-------------------------------------|-------------------------------------|
| 1. | Threatened/Endangered Species and/or Critical Habitats | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. | Other Protected Species (e.g., Burros, Migratory Birds) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. | Sensitive Environments (e.g., Tundra/Coral Reefs/Rain Forests) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. | Archaeological/Historic Resources | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. | Important Farmland | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. | Non-Attainment Areas for Ambient Air Quality Standards
LBNL is in Bay Area Air Quality Basin, which is in federal non-attainment for Ozone and state non-attainment for ozone, PM10, and PM2.5. However, operational impacts would be well below significance thresholds and would not be cumulatively considerable contributions, and construction impacts would be sufficiently mitigated by adherence to Bay Area Air Quality Management District construction practices. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. | Class I Air Quality Control Region | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. | Special Sources of Groundwater (e.g. Sole Source Aquifer) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. | Navigable Air Space | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. | Coastal Zones | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. | Areas with Special National Designation (e.g. National Forests, Parks, Trails) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. | Floodplains and Wetlands | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated items or activities?

- | | | Yes | No |
|-----|---|-------------------------------------|-------------------------------------|
| 13. | Natural Resource Damage Assessments | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 14. | Exotic Organisms | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 15. | Noxious Weeds | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 16. | Clearing or Excavation (indicate if greater than one acre) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 17. | Dredge or Fill (under Clean Water Act, Section 404, indicate if greater than ten acres) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 18. | Noise (in excess of regulations) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 19. | Asbestos Removal | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 20. | PCBs | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 21. | Import, Manufacture, or Processing of Toxic Substances | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 22. | Chemical Storage/Use | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 23. | Pesticide Use | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 24. | Hazardous, Toxic, or Criteria Pollutant Air Emissions
Construction and grading activities would result in standard construction-related emissions of criteria pollutants (Particulate matter associated with earth movement, oxides of Nitrogen and reactive organic gasses associated with equipment engines; and diesel exhaust [toxic air contaminant] associated with equipment engines). By following BAAQMD best management practices, these levels are expected to be less than significant. Operation of the project | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

would result in relatively low levels of air emissions of ordinary laboratory chemicals. With the use of fume hoods, HVAC systems, and by following all applicable federal, state, and LBNL practices for handling such chemicals, this would also be expected to be less than significant.

- 25. Liquid Effluents: Quantity and characteristics of effluent would not noticeably change as a result of this action.
- 26. Underground Injection
- 27. Hazardous Waste
- 28. Underground Storage Tanks
- 29. Radioactive Mixed Waste
- 30. Radioactive Waste
- 31. Radiation Exposure
- 32. Surface Water Protection
- 33. Pollution Prevention Act
- 34. Ozone Depleting Substances
- 35. Off-Road Vehicles
- 36. Biosafety Level 3-4 Laboratory

C. Other Relevant Information: Would the proposed action involve the following?

- | | | Yes | No |
|-----|--|-------------------------------------|-------------------------------------|
| 37. | Potential Violation of Environment, Safety, or Health Regulations/Permits Siting/Construction/Major Modification of Waste Recovery, or Waste Treatment, Storage, or Disposal Facilities | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 38. | Disturbance of Pre-existing Contamination: Lead based paint and asbestos | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 39. | New or Modified Federal/State Permits | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 40. | Public Controversy | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 41. | Environmental Justice | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 42. | Action/Involvement of Another Federal Agency (e.g. license, funding, approval) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 43. | Action of a State Agency in a State with NEPA-type law: A California Environmental Quality Act (CEQA) review would be conducted and a construction permit from the Regional Water Quality Control Board may be required. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 44. | Public Utilities/Services | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 45. | Depletion of a Non-Renewable Resource | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 46. | Extraordinary Circumstances | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 47. | Connected Actions | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 48. | Exclusively Bench-top Research | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

V. Financial Assistance Award Organization Concurrence:

A. Organization Official (Name and Title): Jeff Philliber, LBNL Environmental Planner

Signature: /s/ Date: 6-16-11
e-mail: JGPhilliber@lbl.gov

B. Optional Concurrence (Name and Title): _____
Signature: _____ Date: _____
e-mail: _____ Phone: _____

Remainder to be completed by SC

VI. SC Concurrence/Recommendation/Determination:

A. SC Office of Acquisition and Assistance or Office of Safety, Technical & Infrastructure Services:

Name and Title: Rick Chapman, General Engineer
Signature: /s/ Date: 6/16/11
e-mail: Rick.chapman@bso.science.doe.gov

B. SC NEPA Team Review:

Is the project/activity appropriate for a determination or a recommendation to the Head of the Field Organization by the NEPA Compliance Officer (NCO) under Subpart D of the DOE NEPA Regulations?

Yes No

Specific classes of action from Appendices A-D to Subpart D (10 CFR 1021): B1.4, B1.5, B1.7, B1.15, B1.16, B1.23, B1.31, B2.2, B3.6

Name and Title: Kim Abbott, NEPA Program Manager
Signature: /s/ Date: 6/16/11
e-mail: kim.abbott@bso.science.doe.gov

C. SC ISC Counsel (if necessary):

Name and Title: _____
Signature: _____ Date: _____
e-mail: _____

D. SC ISC Field Office NEPA Compliance Officer:

The preceding pages are a record of documentation required under DOE Final NEPA Regulation, 10 CFR 1021.400.

- Action may be categorically excluded from further NEPA review. I have determined that the proposed action meets the requirements for Categorical Exclusion referenced above.
- Action requires approval by Head of the Field Organization. Recommend preparation of an Environmental Assessment.
- Action requires approval by Head of the Field Organization or a Secretarial Officer. Recommend preparation of an Environmental Impact Statement.

Comments/Limitations if necessary:

Print Name Gary S. Hartman
Signature: /s/ Date: 6/17/2011
ORO NEPA Compliance Officer