



## Department of Energy

Argonne Site Office  
9800 South Cass Avenue  
Argonne, Illinois 60439

**MAY 19 2011**

Dr. Eric Isaacs  
Director, Argonne National Laboratory  
President, UChicago Argonne, LLC  
9700 South Cass Avenue  
Argonne, IL 60439

Dear Dr. Isaacs:

SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DETERMINATION FOR  
ARGONNE NATIONAL LABORATORY (ANL)

Argonne Site Office (ASO) has approved the following as a categorical exclusion (CX) under the category of "B 3.6 Siting/construction/operation/decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects". Please note that this is an update to the previously approved CX because of change in the building size from 150,000 gsf to 165,000 gsf.

- Energy Science Building (ASO-CX-237)

Therefore, no further NEPA review is required. However, if any modification or an expansion of the scope is made to the above project, additional NEPA review will be necessary.

Enclosed please find a copy of the approved Environmental Review Form (ERF) for the project. If you have any questions please contact Kaushik Joshi of my staff at (630) 252-4226.

Sincerely,

A handwritten signature in dark ink, appearing to read "Joanna M. Livengood", is written over a circular stamp. The signature is fluid and cursive.

Dr. Joanna M. Livengood  
Manager

Enclosure:  
As Stated

cc: M. Kamiya, ANL/ESQ, 201, w/encl.  
J. Sims, ANL/FMS, 222, w/encl.  
P. Rash, ANL/FMS, 214, w/encl.

## Environmental Review Form for Argonne National Laboratory

Click on the blue question marks (?) for instructions, contacts, and additional information on specific line items.

(?)**Project/Activity Title:** Energy Sciences Building

(?)**ASO NEPA Tracking No.** \_\_\_\_\_ (?)**Type of Funding:** Line item  
B&R Code \_\_\_\_\_

(?)**Identifying number:** ERF-0922 R1 WFO proposal # \_\_\_\_\_ CRADA proposal # \_\_\_\_\_  
Work Project # 03095 ANL accounting # (item 3a in Field Work Proposal) \_\_\_\_\_  
Other (explain) \_\_\_\_\_

(?)**Project Manager:** Jeffrey A. Sims Signature: [Signature] Date: 5/13/11  
(?)**NEPA Owner:** Philip C. Rash Signature: [Signature] Date: 5/13/11  
ANL NEPA Reviewer: M. A. Kamiya Signature: [Signature] Date: 5/13/2011

### I. (?)**Description of Proposed Action:**

This proposed action will construct an approximately 165,000 square foot building on the north side of the Argonne National Laboratory campus. Refer to the attached site map (Attachment #1) showing the proposed building location and ancillary supporting components to the building. This multiple story facility will be uniquely constructed to allow flexible and sustainable research laboratories that foster multi-disciplinary collaboration to meet the scientific operational needs of the 21<sup>st</sup> century. This facility will bring together energy-related scientific disciplines that are presently spread out over the existing Argonne National Laboratory campus.

The multiple story facility will connect to existing utilities around the facility. We anticipate the standard utility connections; domestic water, laboratory and sanitary sewer, site electrical grid, and natural gas. The detailed connections and locations will be finalized in the detailed design process.

The initial work at the site will execute extensive demolition of existing parking lots which will generate recyclable materials. Excavated materials from the building foundation will generate available backfill materials to prepare for the relocated parking areas, berms and other surface structures. Topsoil from the site and existing excess topsoil will be stored, pulverized, and used to provide the final cover on the site grounds.

The storm water from the site will be managed and controlled. Clean storm water from the building roofs will be guided into progressive management units such as grass swales, rain gardens, and bio-swales to encourage the maximum absorption into the ground. The project is expected to reduce the existing non-permeable surfaces which consist of the 223 parking lot. Existing parking areas will supplement the necessary relocated parking areas where the building and quadrangle will be constructed. The storm water from the parking areas and roofs that is not absorbed would be guided to new or existing storm water management units. Other measures may be included in the design to reduce the peak discharges from the site and allow for maximum detention and filtering of storm water.

The Energy Sciences Building would support research in energy-related sciences and engineering. Research would involve bench-scale laboratory use of chemicals and materials

including wet chemistry (organic-inorganic and biochemistry) and dry synthesis techniques, glove box techniques, vacuum techniques, chemical fume hoods, instrumentation for analysis and characterization, and scientific tools to support the research. The scientific program would include the following cross-cutting energy-related science and engineering research themes: use-inspired materials and chemical synthesis, solar research, catalysis, and electrochemical energy storage. ESB research would explore fundamental building units that may be used to create novel chemistries and materials for catalysis, light-driven conversions of matter, photovoltaics and energy storage materials. ESB would house energy storage research on anodes, cathodes, electrolytes, and characterization of interfaces by spectroscopic and other electrochemical techniques. Catalysis research would involve bond-specific catalysts either in solution or on tailored supports for energy- and atom-efficient chemical transformations. Solar research would be aimed at more fully understanding the chemistry and physics of turning solar energy efficiently into either electricity or fuel (in the latter case, by mimicking biological materials found in nature). The building would also support application and validation/adaption of bench-scale methodology that extend applications for all science and engineering themes. Imaging (for example, microscopy techniques) and analytical characterization tools (for example, nuclear magnetic resonance, UV-Raman) would support the research efforts.

**II. (?)Description of Affected Environment:**

The multiple story facility will be constructed on a combined developed and undeveloped site at Argonne National Laboratory. The building will be constructed on an existing parking lot located on the northern portion of the site. Existing storm water control systems managing asphalt surface runoff and sheet flow will be modified to use detention systems and improve the storm water releases of the area. No sensitive environmental areas will be impacted by the construction of the facility.

**III. (?)Potential Environmental Effects: (Attach explanation for each “yes” response. See Instructions for Completing Environmental Review Form)**

**A. Complete Section A for all projects.**

1. (?)Project evaluated for Pollution Prevention and Waste Minimization opportunities and details provided under items 2, 4, 6, 7, 8, 16, and 20 below, as applicable. Yes X No \_\_\_\_  
The project has been registered for LEEDS Gold accreditation.
2. (?)Air Pollutant Emissions Yes X No \_\_\_\_  
Minor emissions from cars, light-duty vehicles, and larger earth-moving equipment will occur during construction. Research emissions may emit low levels of hazardous air pollutants or criteria pollutants (i.e., ozone, carbon monoxide, suspended solids, sulfur dioxide, lead, nitrogen oxide as defined by the Clean Air Act. Given the limited quantities of materials used in bench-scale activities (see item 4 below, Chemical Storage/Use”) such emissions would not have a significant impact on the environment. Any research activities involving the use of chemicals in excess of the quantities cited in Item 4 must be coordinated with ESQ Environmental Compliance prior to the start in order to evaluate the potential impact to the environment, the need to conform with applicable air emissions regulations, and to determine if additional NEPA documentation is required. Research activities involving radionuclide air emissions must also coordinate with ESQ Environmental Compliance prior to the start of work. This ERF does not cover radiological emission; if they are

performed in the future additional NEPA coverage is required. The selection of an emergency generator may trigger the need for an air permit. If a new permit is required additional NEPA coverage is also required.

3. (?)Noise

Yes X No     

Construction-type noises will be generated during the construction phase of this project. Excessive noises that would disturb the surrounding buildings are not expected. Large excavation equipment will be operating in the area. Some jack-hammering could be expected. Multiple repetitive noises such as hammering, banging is possible. The activities will follow the appropriate standards in the applicable Argonne hearing protection procedures including any required PPE. Excessive noise is not expected in the operations of the facility.

4. (?)Chemical/ Oil Storage/Use

Yes X No     

Standard construction and operational chemicals will be used on site. Construction industry chemicals such as grease, gasoline, and oil will be used. The materials shall have the appropriate MSDSs and be stored in proper containers and protected from spillage. In addition, an emergency cleanup plan and the construction SWPPP plan shall be in place in case of accidental releases. Operational use of chemicals will be typical of current R&D laboratories and conventional laboratory operations. The work will follow the requirements of the storage/use requirements in the applicable Argonne procedures. The amount of chemicals used in a single experiment, measurement or test will generally limited to 5 gallons of hazardous liquid and 5 pounds of hazardous solid. The storage and use of extremely hazardous chemicals (40 CR 355) will be limited to 1 pound of any single chemical. The production, acquisition, storage or use of chemicals will follow the requirements on Hazardous Materials, Flammable and Combustible Liquids, and Compressed Gases in the applicable LMS or ESH procedures.

5. (?)Pesticide Use

Yes X No     

During the establishment and maintenance of the planting on the work site, herbicides and pesticides may be used to assist in the establishment of the permanent vegetation. Licensed applicators will be used for this work.

6. (?) Polychlorinated Biphenyls (PCBs)

Yes      No X

7. (?) Biohazards

Yes      No X

Biosafety level 1 and 2 materials will be compliant with all applicable federal and state regulations governing the possession, transfer and use of this type of material including the Institutional Biosafety Committee confirmation of the containment level, its review for use, storage and disposal. The National Institutes of Health define bench scale as not production scale and using less than 10 liters of culture. The proposed research must also follow the guidelines in the Argonne Biohazard Control Program Manual and the requirements in ARGPOL-7.7, Biological Safety Policy. The proposed BSL 2 laboratories must undergo an inspection by members of the Institutional Biosafety Committee prior to initiation of research to certify compliance with CDC

and WHO guidelines for biocontainment facilities. Biosafety level 3 is not covered by this ERF. Work at this level would require additional NEPA coverage. Biosafety level 4 work will not be allowed on site under DOE Draft Directive P 434.X.

8. (?)Liquid Effluent (wastewater)

Yes X No     

This facility is a standard office and research facility. It will house both mechanical equipment that requires cooling, experimental facilities/laboratories that will discharge fluids, and personnel working in an office and lab environment. Wastewater discharges will be generated and sent as appropriate to the Argonne National Laboratory's laboratory or sanitary wastewater treatment plants. No process or sanitary sewer water shall be discharged to the stormwater system. Operational discharges from the laboratories will follow the appropriate Argonne standards. Construction stormwater will be managed in accordance with the IEPA Stormwater Pollution Prevention Plan (SWPPP) and the Notice of Intent (NOI). Operational stormwater will be managed where practical on the Argonne property through progressive management units such as bioswales, retention ponds, and bioswales. The stormwater management plan would include LEEDS criteria and incorporate the constructed management units.

9. (?)Waste Management

a) Construction or Demolition Waste

Yes X No     

During the construction of the facility, there will be extensive construction debris and standard waste generated. Per the requirements in LEEDS, the project will establish trash collection areas where all debris can be sorted and recycled materials placed in appropriate containers. Excavated materials such as asphalt, gravel, concrete, will be recycled off site by the construction contractor.

b) Hazardous Waste

Yes X No     

During the operation of the facility, hazardous waste could be generated. These wastes will be managed via the requirements of the Argonne National Laboratory's Waste Handling Procedures Manual.

c) Radioactive Mixed Waste

Yes      No X

None expected.

d) Radioactive Waste

Yes      No X

None expected.

e) PCB or Asbestos Waste

Yes      No X

None expected.

f) Biological Waste

Yes X No     

There is a potential for the generation of BSL 1&2 waste which will be disposed of in compliance with IEPA and CDC regulatory requirements.

g) No Path to Disposal Waste

Yes      No X

h) Nanomaterial Waste

Yes X No     

The proposed activities may generate nanomaterial waste. The waste will be accumulated, managed and documented in accordance with the requirements outlined in WASTE-3.3 (Hazardous Wastes-Disposal Procedures) which describes how to plan and handle project waste, and WASTE-5.4 (Special Guidelines-Management and Packaging of Engineered Nanomaterials for Disposition); and

the successor LMS laboratory-wide documents with equivalent content. Personnel who generate waste and those who prepare waste requisitions are required to complete the required nanomaterial orientation training in accordance with the requirements outlined in applicable LMS procedures.

10. (?)Radiation

Yes X No     

There is a potential to use sealed radioactive sources for experiments and calibration of equipment. During the operation of the facility, radiation generating instruments (e.g., X-ray diffraction machines, electron microscopes, and other machine-based sources of radiation) could be utilized. All work will be performed following the appropriate Argonne radiation safety and transportation regulations to ensure safety and to make certain that radiation exposures are reduced to levels that are as low as reasonably achievable (ALARA).

11. (?)Threatened Violation of ES&H Regulations or Permit Requirements

Yes      No X

12. (?)New or Modified Federal or State Permits

Yes X No     

Since the site is larger than 1 acre, a SWPPP and NOI are required to control the flow of stormwater and prevent erosion. This is a permit required from the Illinois EPA and it must be received before the project begins. We may need a modification of our NPDES permit to reflect the addition of sources to our existing stormwater, laboratory and sanitary sewer systems. The SWPPP includes an erosion control measures which is required during the construction phase of the project. Upon completion of the project the building will be incorporated into the site-wide Stormwater Pollution Prevention Plan (SWPPP).

An air permit may be required depending on the size of the emergency generator selected. If the unit is larger than 1500 hp, a construction permit will be required for that equipment.

Steam use for the building was calculated to evaluate the effects on the Central Heating Plant emissions. Under the Prevention of Significant Deterioration/New Source Review (PSD/NSR) requirements emission increases in excess of threshold levels are required to obtain a PSD/NSR permit, which can take several years and involve significant cost in modeling and preparation. The evaluation showed there would a minor increase of air emissions (see attached calculation). This FMS program will evaluate new construction and demolition of existing buildings so the final increase or decrease in emissions can be determined. The calculations require that total net emission changes be evaluated over a five-year period. The regulations also require that projects that have a "reasonable possibility" to emit 50% of the threshold limits must be documented (PSD/NSR thresholds: CO 100, PM 15, NOX40, SO2 40, VOC 40, tons/yr). If other heating sources are considered such as natural gas an analysis of requirements would be required.

13. (?)Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste

Yes      No X

14. (?)Public Controversy

Yes      No X

15. (?)Historic Structures and Objects

Yes X No     

The main project area is located adjacent to the Argonne Main Campus Historical District with a parking area being put in place east of 94<sup>th</sup> in the historic district and therefore will not directly affect any historic structures or objects. The Illinois Historic Preservation Agency reviewed and approved the project's visual effects on the district (see attached letter). They concurred that our proposal to photograph the 200 Historic District using large frame format will properly record the area. The Illinois Historic Preservation Agency should be notified of the long term plans that the Laboratory has for the area. The extension of the campus quadrangle south by future projects will impact the Main Campus Historical District.

16. (?)Disturbance of Pre-existing Contamination

Yes      No X

17. (?)Energy Efficiency, Resource Conserving, and Sustainable Design Features

Yes X No     

Argonne will seek LEEDs Gold certification for the facility. The latest modern energy saving systems, components, part, and materials will be used to attain that level. In addition, the planned process of constructing the facility to combine related departments now scattered about the Laboratory will eliminate driving between facilities. The new ESB facility is expected to reduce energy use from the existing Building 212 that it is replacing and it will be demolished once the ESB Facility is completed. Many sustainable design features may be used such as energy efficient lights and windows, and porous asphalt.

**B. For projects that will occur outdoors, complete Section B as well as Section A.**

18. (?)Threatened or Endangered Species, Critical Habitats, and/or other Protected Species

Yes      No X

19. (?)Wetlands

Yes      No X

There are no wetlands in the construction area of the site set aside for the ESB facility. However, adjacent to the site to the northeast is a small storm water swale with some wetland characteristics which will be protected during the construction. If this area is modified or removed in the future it will require a DOE determination and new NEPA coverage.

20. (?)Floodplain

Yes      No X

21. (?)Landscaping

Yes X No     

With the construction of the facility, the existing landscape will be completely removed. Some large native hardwoods exist on the periphery of the site. These trees will be saved where practical.

Native trees and shrubs will be designed into the landscape plan as part of the project. Native deep rooted grass species may be planted where appropriate in bioswales, and other storm water units. Native vegetation is preferred based on its drought tolerance, erosion control features and low maintenance.

22. (?)Navigable Air Space

Yes      No X

23. (?)Clearing or Excavation

Yes X No \_\_\_\_

The construction of the facility will result in an extensive amount of excavation activities. The entire site is approximately 6 acres. Not all the site will see extensive excavation activities. The building foot print will be about .9 acres. The removal of the existing parking lot, new parking lot installations, utility installations, and the establishment of the northern section of the campus quadrangle will cover the remaining acreage. The volume of excavated materials is estimated at 20,000 CY. However, much of the excavated topsoil will be recycled on the site and the clay materials will be recycled off-site. Asphalt and concrete will be recycled off site. Gravel not recycled on the work site will be stored in the Laboratory's gravel storage area. Most likely, additional topsoil from the Laboratory's soil storage pile will be used. The site in general is an open asphalt parking lot and grass covered area. Scattered trees exist on the site. Most trees in the area will be removed. However, large native trees will be saved where practical. The building will be incorporated into the site wide Storm water Pollution Prevention Protection Plan.

24. (?)Archaeological Resources

Yes X No \_\_\_\_

Much of the project area has been previously disturbed. A large parking lot presently occupies much of the site. In addition, an existing road covers part of the site. The Illinois Historic Preservation Agency (IHPA) reviewed and concurred with our assessment that the proposed excavation of the site did not require additional fieldwork and that the project can proceed. However, northeast of the site southwest of the intersection of 94<sup>th</sup> Street and Northgate, a section of land appears not to be disturbed. It may be disturbed during the construction of some of the buildings in the area. Therefore a Cultural Resources Survey shall be executed to investigate the area. The IHPA and Argonne records indicate that portions of the project area require investigation for historic properties. A survey of these areas will be performed before any excavation occurs in this area. The IHPA must review and approve the survey results before the project can proceed. Prior to the start of detailed design, this survey should be completed.

25. (?)Underground Injection

Yes \_\_\_\_ No X

26. (?)Underground Storage Tanks

Yes \_\_\_\_ No X

27. (?)Public Utilities or Services

Yes \_\_\_\_ No X

28. (?)Depletion of a Non-Renewable Resource

Yes \_\_\_\_ No X

**C. For projects occurring outside of ANL complete Section C as well as Sections A and B.**

29. (?)Prime, Unique, or Locally Important Farmland

Yes \_\_\_\_ No \_\_\_\_

30. (?)Special Sources of Groundwater (such as sole source aquifer)

Yes \_\_\_\_ No \_\_\_\_

31. (?)Coastal Zones

Yes \_\_\_\_ No \_\_\_\_

32. (?)Areas with Special National Designations (such as National Forests, Parks, or Trails)

Yes \_\_\_\_ No \_\_\_\_

33. (?) Action of a State Agency in a State with NEPA-type Law

Yes \_\_\_\_ No \_\_\_\_

34. (?) Class I Air Quality Control Region

Yes \_\_\_\_ No \_\_\_\_

**IV. Subpart D Determination: (to be completed by DOE/ASO)**

Are there any extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal?

Yes \_\_\_\_ No X

Is the project connected to other actions with potentially significant impacts or related to other proposed action with cumulatively significant impacts?

Yes \_\_\_\_ No X

If yes, is a categorical exclusion determination precluded by 40 CFR 1506.1 or 10 CFR 1021.211?

Yes \_\_\_\_ No \_\_\_\_

Can the project or activity be categorically excluded from preparation of an Environment Assessment or Environmental Impact Statement under Subpart D of the DOE NEPA Regulations?

Yes X No \_\_\_\_

If yes, indicate the class or classes of action from Appendix A or B of Subpart D under which the project may be excluded. Appendix B. 6 "Siting/construction/operation/decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects."

If no, indicate the NEPA recommendation and class(es) of action from Appendix C or D to Subpart D to Part 1021 of 10 CFR.

**ASO NEPA Coordinator Review: Kaushik N. Joshi**

Signature: KN Joshi

Date: 5-17-2011

**ASO NCO Approval of CX Determination:**

The preceding pages are a record of documentation that an action may be categorically excluded from further NEPA review under DOE NEPA Regulation 10 CFR Part 1021.400. I have determined that the proposed action meets the requirements for the Categorical Exclusion identified above.

Signature: Peter R. Siebach  
Peter R. Siebach  
Acting Argonne Site Office NCO

Date: 5/17/2011

**ASO NCO EA or EIS Recommendation:**

Class of Action: \_\_\_\_\_

Signature: \_\_\_\_\_  
Peter R. Siebach  
Acting Argonne Site Office NCO

Date: \_\_\_\_\_

**Concurrence with EA or EIS Recommendation:**

CH GLD: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**ASO Manager Approval of EA or EIS Recommendation:**

An \_\_\_\_\_ EA \_\_\_\_\_ EIS shall be prepared for the proposed \_\_\_\_\_ and

\_\_\_\_\_ shall serve as the document manager.

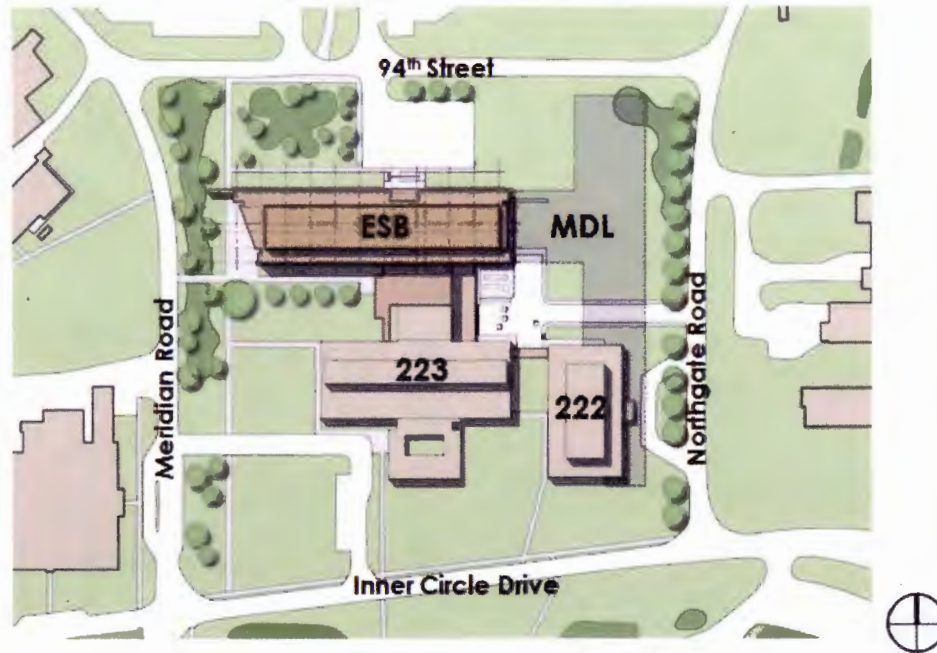
Signature: \_\_\_\_\_

Dr. Joanna M. Livengood  
Manager

Date: \_\_\_\_\_

## Site Plan – Energy Sciences Quad

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Argonne National Laboratory – Energy Sciences Building

