

## U.S. Department of Energy Environmental Documents Available on \$278 million NO $\nu$ A project

*at DOE's Fermilab and in northern Minnesota*

The U.S. Department of Energy (DOE) has completed its environmental review of the \$278 million NO $\nu$ A project at its Fermi National Accelerator Laboratory in Batavia, IL and at a site in St. Louis County, MN, near the U.S.–Canadian border. The Environmental Assessment and the accompanying Finding of No Significant Impact are available to interested citizens.

The NO $\nu$ A Project will upgrade the existing Neutrinos at the Main Injector (NuMI) facility at Fermilab. The NuMI facility generates a beam of neutrinos and sends it straight through the earth from Fermilab to an existing neutrino detector in a mine in Soudan, MN. The NO $\nu$ A Project (NuMI Off-Axis Electron Neutrino ( $\nu_e$ ) Appearance Experiment) includes the construction of two new particle detectors that will study neutrinos traveling slightly off the NuMI-Soudan beam axis. The smaller of the two NO $\nu$ A detectors (“Near detector”) will be located in an underground cavern at Fermilab, adjacent to the existing NuMI tunnel, and the larger one (“Far detector”) will be located in St. Louis County, MN, approximately 45 miles northwest of the existing detector at Soudan.

For the Fermilab site, DOE's Environmental Assessment evaluated the impacts of the following activities:

- upgrading the existing Fermilab accelerator complex;
- excavating a new underground cavern at approximately 345 feet below grade adjacent to an existing tunnel (conventional civil construction and mining techniques would remove about 1,000 cubic yards of rock);
- building a new 222-ton “Near Detector” to monitor the neutrino beam as it leaves the Fermilab vicinity; and
- constructing an above-ground, 90-ton prototype detector in an existing Fermilab facility.

At the proposed new “Far Detector” facility in St. Louis County, near the Ash River in northern Minnesota, DOE’s Environmental Assessment evaluated the impacts of the following activities::

- construction of a new building (approximately 25,000 square feet), which will extend 40 feet below the existing grade into granite rock and house an upto-20,000-ton detector;
- disruption of an existing wetland along an existing road (mitigated by permanently preserving other Minnesota wetlands); and
- improvement of an existing logging road to facilitate all-weather access.

The building will be designed to soften any visual disruption for those visiting nearby Voyageurs National Park; and any Native American artifacts unearthed during construction will be preserved.

The excavation, construction and assembly will begin as early as 2009 and continue through 2013. Following testing of components, sustained operations are scheduled to start in 2013 and continue through at least 2019. Following that, the facilities will be decommissioned over several years.

The NO $\nu$ A, experiment is designed to answer fundamental questions in neutrino physics, including:

- Can we observe the oscillation of muon neutrinos to electron neutrinos?
- What is the ordering of neutrino masses?
- What is the symmetry between neutrinos and antineutrinos?

NO $\nu$ A is the only proposed experiment that can determine the neutrino mass ordering, and it will be one of the best experiments for addressing the first question, and for starting humans on the road to answering the third one.

*Information about the science of the NO $\nu$ A project is available at:*  
<http://www.fnal.gov/pub/neighbors/nova/NOvA-science.pdf>

*The Environmental Assessment may be viewed on-line at:*  
<http://www.fnal.gov/pub/neighbors/nova/NOvA-final-EA.pdf>

*Copies of the Environmental Assessment (DOE/EA-1295) are also available for review at:*

Batavia Public Library  
10 S. Batavia Avenue  
Batavia, IL

Warrenville Public Library District  
28W751 Stafford Place

Warrenville, Illinois

University Librarian's Office  
499 Wilson Library  
309 19th Avenue South  
Minneapolis, Minnesota

Municipal Building  
600 4th Street  
International Falls, Minnesota

Fermi National Accelerator Laboratory  
Library  
Wilson Hall, 3<sup>rd</sup> Floor  
Kirk Road and Pine Street  
Batavia, Illinois

*For further information regarding the DOE NEPA process, contact:*

Peter R. Siebach  
NEPA Compliance Officer  
U.S. Department of Energy  
Chicago Office (STS)  
9800 S. Cass Avenue  
Argonne, IL 60439  
Telephone: 630/252-2007  
E-Mail: [peter.siebach@ch.doe.gov](mailto:peter.siebach@ch.doe.gov)

Sally C. Arnold  
Document Manager  
U.S. Department of Energy  
P.O. Box 500  
Kirk Road and Pine Street  
Batavia, IL 60510-0500  
Telephone: 630/840-2239  
E-mail: [sally.arnold@ch.doe.gov](mailto:sally.arnold@ch.doe.gov)The

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DOE News Media Contact: Brian J. Quirke 630-252-2423  
e-mail [brian.quirke@ch.doe.gov](mailto:brian.quirke@ch.doe.gov)