

# Three cheers (or more) for FutureGen

By Colleen Lehmann

If there was anything you wanted to know about FutureGen, last Tuesday you had ample opportunity to learn.

Officials from the Department of Energy, the FutureGen Alliance, Battelle Engineering, and others associated with the clean-coal power plant project descended on the Douglas County seat, armed with copious amounts of information and scientific data regarding the \$1 billion energy initiative.

The primary purpose of the August 29 event, held at the Tuscola Community Building, was to gather public input and disseminate information as part of the federally-required process to determine how, or if, the plant will negatively impact the environment and society of the area in which it's ultimately sited. The environmental impact statement (EIS) that will be generated for each of the four proposed sites is a requirement of the National Environmental Policy Act (NEPA).

A three-hour open house preceded the more formal presentation that began at 7 p.m. and concluded around 9:30 p.m. During the open house, visitors wandered the first-floor room looking at information panels, video presentations, and talking with experts about the various aspects of the proposed project. One of the more popular exhibits was a small-scale demonstration of the coal sequestration process by geochemist Sallie Greenberg, showing the layers of geological formations through which and into the gasified carbon dioxide byproduct would be injected and stored.

"I thought that was fascinating," said Tuscola resident Kim Higgins.



Photo by Eric Has

A full house was on hand at the Tuscola Community Building last Tuesday night to attend "scoping" meeting intended to gather input on concerns local residents might like to see addressed in the environmental impact statement regarding the proposed FutureGen power plant.

"I've always had an interest in rocks and geology, so that was right up my alley. My question was how they can tell what's down that far under the ground, and she (the demonstrator) gave a really interesting synopsis of the techniques used to determine what is 8,000 or 9,000 feet below the surface."

Mark McKoy of the U.S. Dept. of Energy moderated the formal presentation. He will serve as document manager for the NEPA process, and noted that the primary goal of these public presentations is to determine the major topics to be addressed by the EIS, outside of those already specified in the protocol (see accompanying textbox).

An overview of the plant project, particularly the aspects that make it unique compared to current operations and technologies, was discussed by Scott Klara, deputy director of the

Office of Coal and Power R&D. He noted that coal gasification is not an untested technology--a facility in Tampa, Florida has been doing so for 10 years, and there is another a little closer to home, in Terre Haute, Indiana, that went online in November 1995.

"Converting that coal to hydrogen, which in turn is converted to provide electricity, is what makes this project unique, as does the sequestration aspect. The key to this project is validating emerging technology and leapfrogging to the forefront of providing practical applications for it to industry and private enterprise. We are thinking much broader than just the FutureGen site; the ultimate goal is the broad deployment of near-zero emissions," he said.

Mike Dancison of the FutureGen Alliance concurred, noting "This will create the technology basis to retain coal in the

The environmental impact statement (EIS) will analyze the possible impacts of the FutureGen power plant on environmental and social landscape. Resource areas to be evaluated in the EIS could include, but are not limited to:

Resource area	Potential areas considered
<i>Aesthetics</i> . . . . .	Scenic vistas and resources
<i>Atmospheric resources</i> . . . . .	Regulated air pollutants Toxic/hazardous air pollutants Air quality management plans Unregulated air pollutants Objectionable odors
<i>Geology/hydrologic resources</i> . . . . .	Geologic hazards (esp. active fault lines/zones), Valuable mineral deposits or energy resources, Farmland, Hydrogeology, groundwater availability/use, Groundwater quality
<i>Surface water</i> . . . . .	Navigable waterways, Scenic rivers, Water quality
<i>Floodplains/wetlands</i> . . . . .	Boundaries of 100-year flood hazard area, Flood management plans/ordinances
<i>Biological resources</i> . . . . .	Terrestrial ecosystems, Aquatic ecosystems, Protected species
<i>Cultural resources</i> . . . . .	Archaeological resources, Historic resources, Native American cultural resources
<i>Land use</i> . . . . .	Existing land uses, Zoning, Land use planning

energy mix, and it's important for us to find a site that helps us keep on the fast track to that end. The plant is slated to go online by 2012, and in 2015 we hope to finally establish the viability. See CHEERS page

such plants, with the option for multiple commercial deployments by 2020.

"We're trying to find a spot or site that will allow us to verify how to benefit the whole world by incorporating the sequestration process," he added.

Dr. Robert Finley of the Illinois State Geological Survey explained that the liquid carbon is able to be stored into the rock formation by injecting it into the pore spaces of the sandstone layer. The three layers of shale caprock above that level, which are nonporous, will seal off and contain the CO2.

**More cheers than concerns**

The final portion of the meeting was intended to serve as opportunity for the public to air, for the official record, concerns they'd like to see researched about possible environmental issues. Instead, all those who weighed in--whether in person or by letter read to the group--reiterated support for the plant's siting in Tuscola, and the benefits that would be gained, not only by the community and the state, but by the Alliance.

No fewer than six politicians--federal and state,

Republican and Democrat--pledged their unwavering support for bringing the project to Illinois, and cited the state's rich coal reserves, geological superiority, access to necessary utilities, proximity to world-class university research facilities, strong work ethic, and quality of life as elements worthy of consideration.

Jack Lavin of the Department of Commerce and Economic Opportunity noted Illinois' ongoing research into coal gasification, pointing to four other such projects, worth a combined total of \$5.7 billion, currently being explored in addition to FutureGen.

Much of that research is being done in southern Illinois, and Glenn Poshard, president of Southern Illinois University at Carbondale and a former congressman, was in attendance to underscore the longevity of interest in and commitment to coal-related research endeavors.

Letters of support were submitted for the record from the Clean Air Task Force, the Indiana Office of Coal Development, the Indiana Office of Energy and Defense, and the Kentucky Office of Energy, all



Photo by Eric Hastings

**Mark McKoy, environmental manager for the U.S. Department of Energy, served as moderator for the FutureGen public scoping meeting last Tuesday at the Tuscola Community Building. McKoy will be the document manager for the National Environmental Policy Act (NEPA) process, which requires that an environmental impact statement (EIS) be done on federal actions that may affect the quality of the environment.**

recognizing FutureGen's potential impact in meeting the world's energy needs for the future in an environmentally friendly way.

On the technical side of things--Mike Branahan of the Illinois Dept. of Natural Resources said preliminary studies of the proposed plant's impact on any identified endangered species "shows that overall there doesn't appear to be any major threats with this project. We pledge our support in any way that is consistent with our goals of minimizing the impact to our natural resources."

Don Sutton of the EPA's Bureau of Air offered his agency's assistance in bringing the project to the Land of Lincoln, and Brad Richards of the Illinois Oil

and Gas Association said the technology that will result from the FutureGen initiative, "will be extremely valuable to our industry in helping to recover the estimated four billion barrels of oil left to be produced in Illinois."

The mayors of Tuscola and Arcola, Dan Kleiss and Larry Ferguson, were united

**How does it all work?**

Confused as to just what the process is for converting sulfur-laden coal into the world's cleanest fossil fuel? According to a publication produced by the U.S. Dept. of Energy and the National Energy Technology Laboratory, the FutureGen project will integrate already-in-use technologies with cutting-edge advances to produce power in a near-zero emissions facility.

The coal gasification process would combine coal, oxygen and steam to produce a synthetic gas. After passing through a conversion reactor, the composition of the synthetic gas would be shifted to produce additional hydrogen, the product stream of this consisting mainly of hydrogen, steam and carbon dioxide.

After these gas components are separated, the hydrogen would be used to generate electricity, in a gas turbine or fuel cell; could be utilized as a feedstock for chemical plants or petroleum refineries; or may be used as a transportation fuel.

The steam would be condensed, treated and recycled into the gasifier, or added to the plant's cooling water circuit. Finally, the carbon dioxide from the process would be sequestered by being injected into deep underground geologic formations, closely monitored to verify the permanence of carbon dioxide storage.

Generally speaking, carbon dioxide can be stored in a layer of permeable rock-- characterized by interconnected pores allowing fluids to flow and accumulate--that has a thick layer of impermeable rock above it. These types of formations have, for millions of years, trapped crude oil and natural gas, so the idea is to use technology to store this plant byproduct by mimicking a phenomenon that has occurred naturally in these geologic formations.

in their support of the plant's coming to Douglas County, as was county board member Don Munson and Tuscola city council members Judy Landeck and Boyd Henderson.

"Tuscola will be marking its sesquicentennial this coming summer, lauding the

pioneer spirit of our founders. Please help us celebrate our forefathers, and become pioneers yourselves by giving us a truly wonderful birthday gift," Landeck said, referring to the Alliance's timeline of announcing a final site in September 2007.

A similar meeting was held in Mattoon Thursday, August 31 at Riddle Elementary School. The two Texas sites--Odessa and Heart of Brazos, held scoping meetings the week before. While there will be additional opportunities for public input throughout the NEPA process, comments related directly to suggestions for the EIS will still be accepted until September 13, 2006. (See Journal entries for contact information.)

**About the Tuscola site:**

The proposed Tuscola site is a 208-acre parcel of flat farmland located 1.5 miles west of the city. It is situated along the CSX railroad, and about three miles from I-57. The primary injection site for sequestration is a 10-acre parcel of land located 11.5 miles from the plant site, just a few miles outside the city of Arcola in a rural agricultural area. Tuscola's proposed injection target is the Mt. Simon sandstone, a saline-bearing formation expected to be between 4,000 and 6,000 feet deep at the proposed injection sites.

--Source: U.S. Dept. of Energy and the National Energy Technology Laboratory