Grant Round Application for LRC-LXVII (67)

TECHNICAL ADVISOR COMMENTS
LRC-LXVII (67) – B

"Advanced Power Systems Initiative: Lignite Feasibility Study"
Submitted by: University of North Dakota Department of Chemical Engineering
Request for: $400,000; Total Project Costs: $400,000
Project Manager: Steven A. Benson, Ph.D.; Project Duration: 12 months

Description of the Project: Carbon Fuels, LLC proposes to determine the feasibility of constructing a clean advanced lignite-fired power system to produce steam and electricity for the UND campus which would replace the three subbituminous coal-fired stoker boilers on campus. Additionally, a framework would be developed for utilizing the power system for education and for testing new technologies.

Technical Peer Reviewers' Key Comments:
All Reviewers

- Objectives: Clear (2 reviewers); very clear (1 reviewer);
- Achievability: Likely (1 reviewer); most likely (2 reviewers);
- The background of the investigator(s) is: adequate (1 reviewer); exceptional (2 reviewers);
- Scientific contribution is: small (1 reviewer); significant (1 reviewer); very significant (1 reviewer)

Reviewer 09-7
The proposed study will address clean coal technology that can be adapted to ND lignite. A driver for the information is to replace aging subbituminous-fueled boilers producing heat for UND. The study will identify clean coal technologies that may be appropriate for ND lignite. The new plant technology would produce steam for district heating and electricity for UND's needs. **Recommendation: Fund**

Reviewer 09-8
This project has important implications to North Dakota and the continued use of lignite both at the institutional/industrial and utility scale. It is important to the latter sector because of the potential for this facility to have research and development capabilities that are not limited to the industrial sector. The ability to integrate this state-of-the-art facility with education and training of future energy specialists is also worth noting.
Recommendation: Fund

Reviewer 09-9
This project could provide some level of training in energy technology for UND students, but having a dual objective project will undoubtedly raise the required capital investment, thus increasing the cost of electricity and steam products and compromising the reliability of the electricity and steam supply. **Recommendation: Funding may be considered**

Technical Advisor's Recommendation: Fund
The 2009 North Dakota Legislature provided $400,000 for this study. Matching funds are not required; however, the Legislature required the project be approved by the LRC/NDIC via the standard review process. The new energy system to be studied would replace Montana subbituminous coal with North Dakota lignite, and supply all the UND campus' electrical and steam needs not currently met by the aging existing system. In addition, this system would provide R&D opportunities for new lignite emission control systems, while concurrently providing educational opportunities for future energy experts. This new energy system could also provide R&D opportunities for UND's Energy & Environmental Research Center.

Conflict of Interest: None