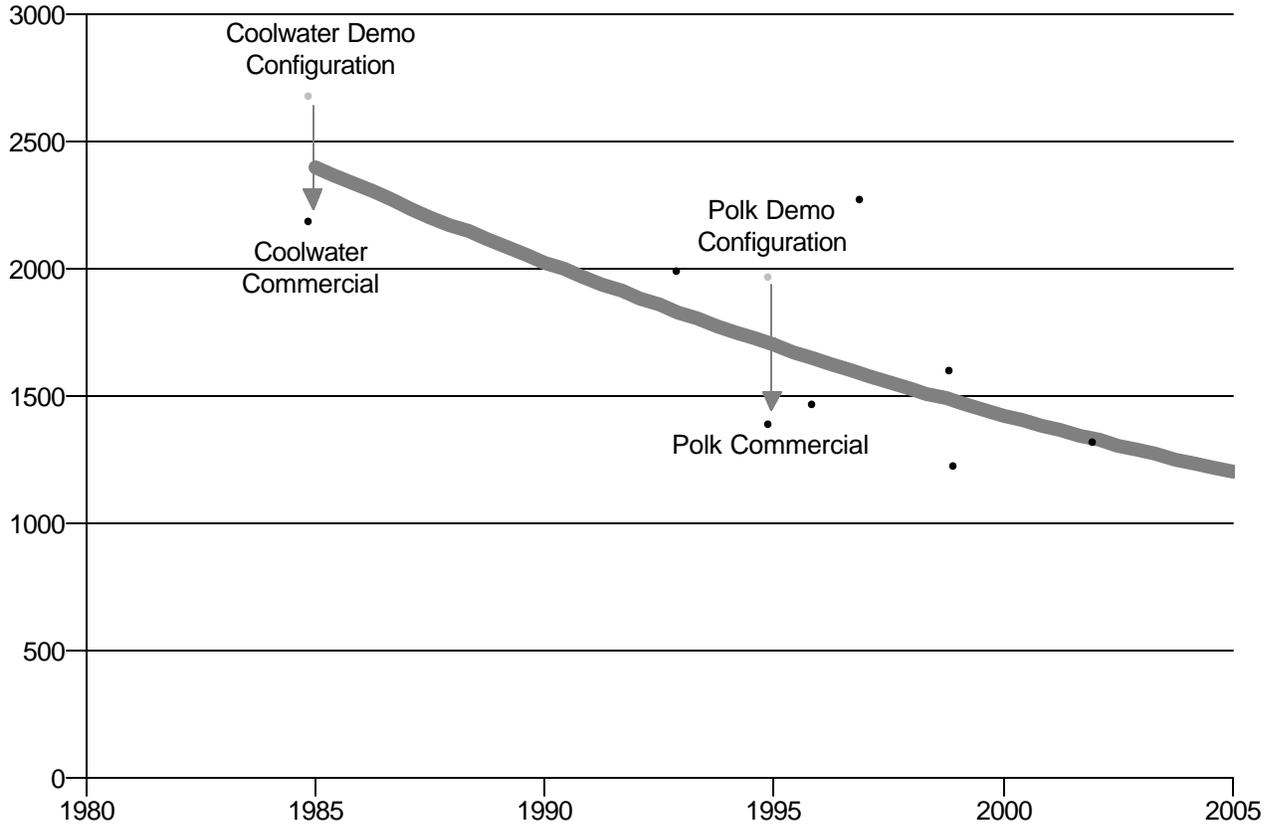


# Fig. 1. Gasification Capital Cost Trends

\$USD/kw for Plants Placed in Operation from 1985 to 2003

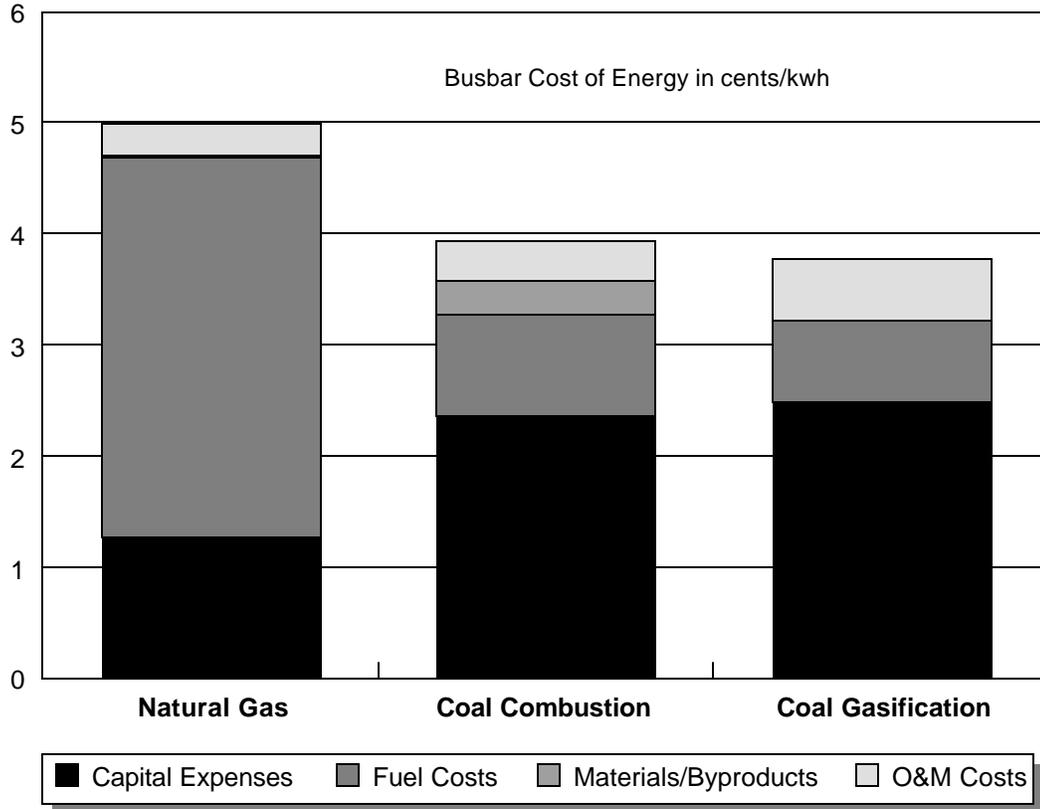


Source: GE Power Systems, PowerGen 2002 Presentation

## Notes About Fig. 1

The capital cost of gasification plants continues to drop as experience from previous plants is used to improve subsequent designs and eliminate unnecessary redundancies. Previous facilities such as Tampa Electric Company's Polk clean coal demonstration plant would be significantly less expensive if rebuilt today.

**Fig 2. Cost of Electricity Comparison**  
 Natural Gas, Coal Combustion, Coal Gasification



Data extrapolated from the U.S. Department of Energy report: "Market-Based Advanced Coal Power Systems," May 1999.

**Data Table for Fig. 2**

	Capital Ex.	Fuel Costs	Matls/Byp.	O&M Costs
<b>Natural Gas</b>	1.27	3.41	0.03	0.28
<b>Coal Combustion</b>	2.36	0.92	0.29	0.37
<b>Coal Gasification</b>	2.48	0.80	-0.06	0.56

All numbers are expressed as cents/kwh.

**Assumptions for Fig. 2**

- Natural Gas:** Natural Gas plant operating at 65% of capacity with fuel costs of \$5.00/Mbtu and capital expenses of \$500/kW.
- Coal Combustion:** Supercritical Pulverized Coal plant operating at 85% of capacity with fuel costs of \$1.25/Mbtu and capital expenses of \$1,200/kW.
- Coal Gasification:** Integrated Gasification Combined Cycle plant operating at 85% of capacity with fuel costs of \$1.25/Mbtu and capital costs of \$1,250/kW.

Fig. 3. Flexibility of Coal Gasification

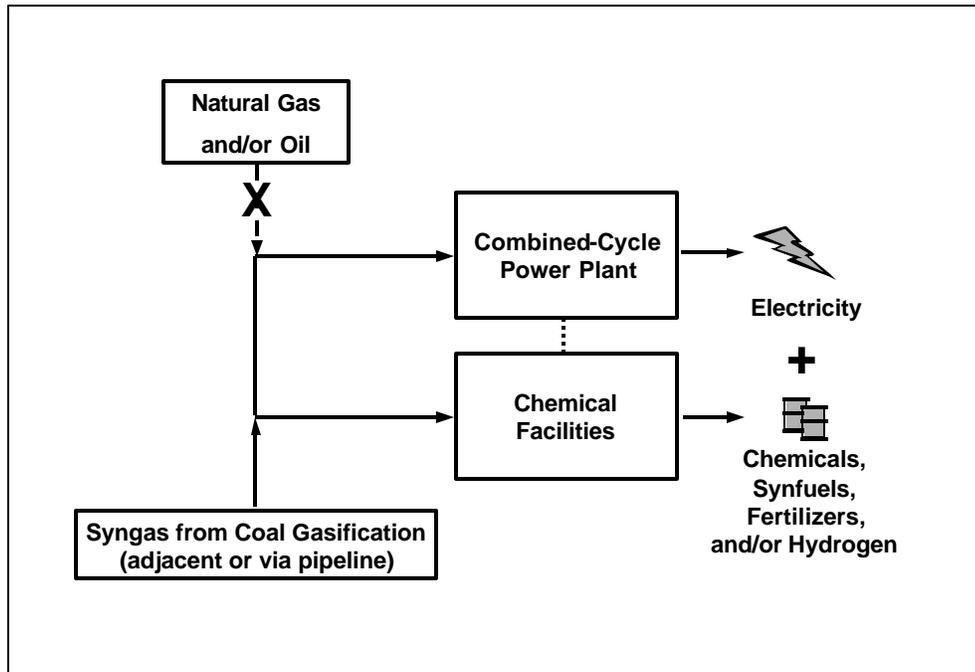
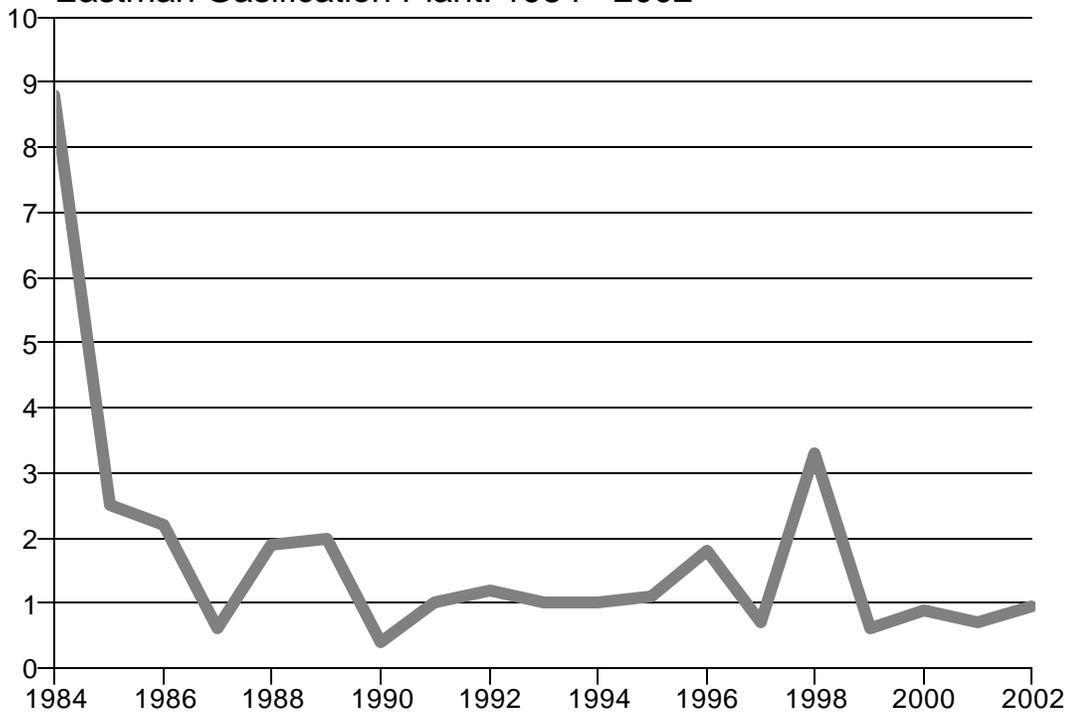
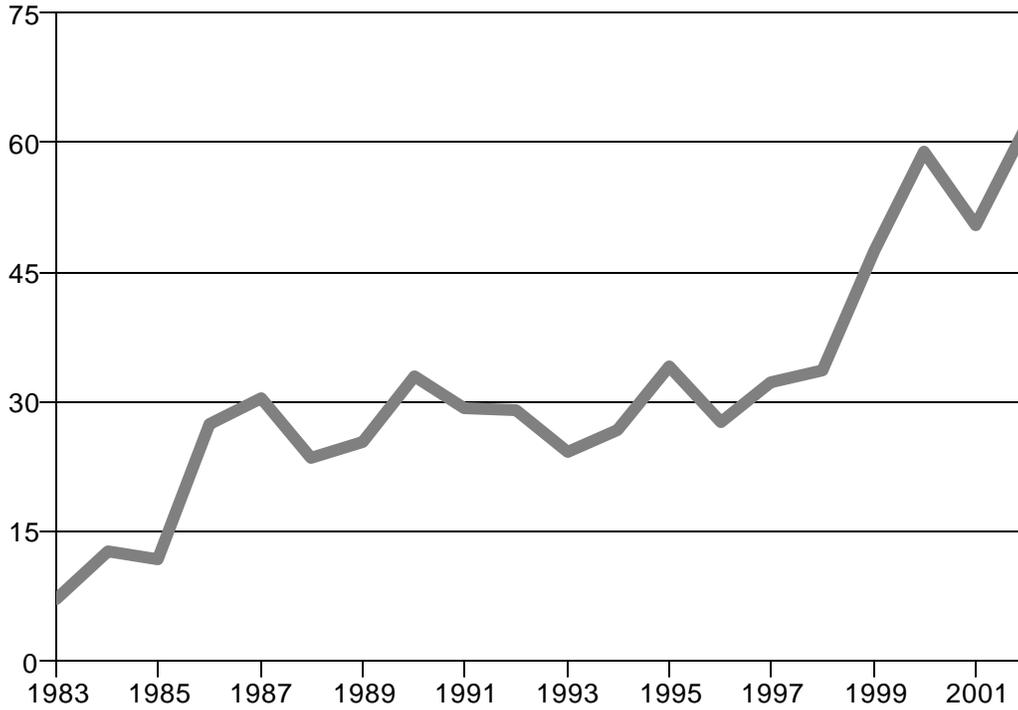


Fig. 4: Forced Outage Rate (%)

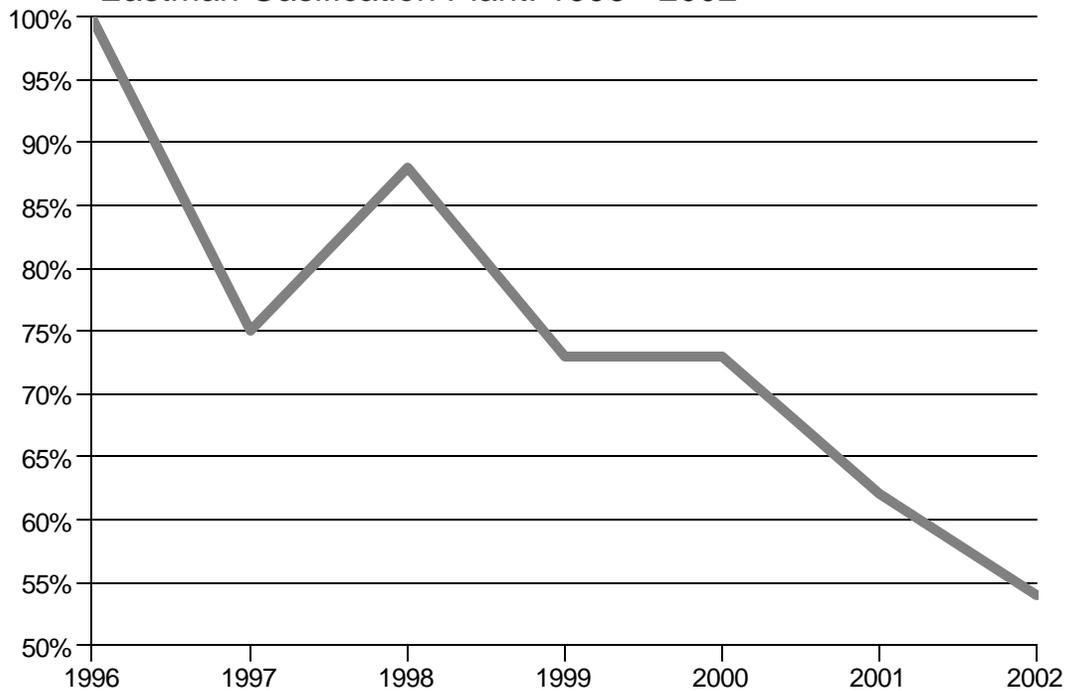
Eastman Gasification Plant: 1984 - 2002



**Fig. 5: Days Between Gasifier Switches**  
 Eastman Gasification Plant: 1983 - 2002

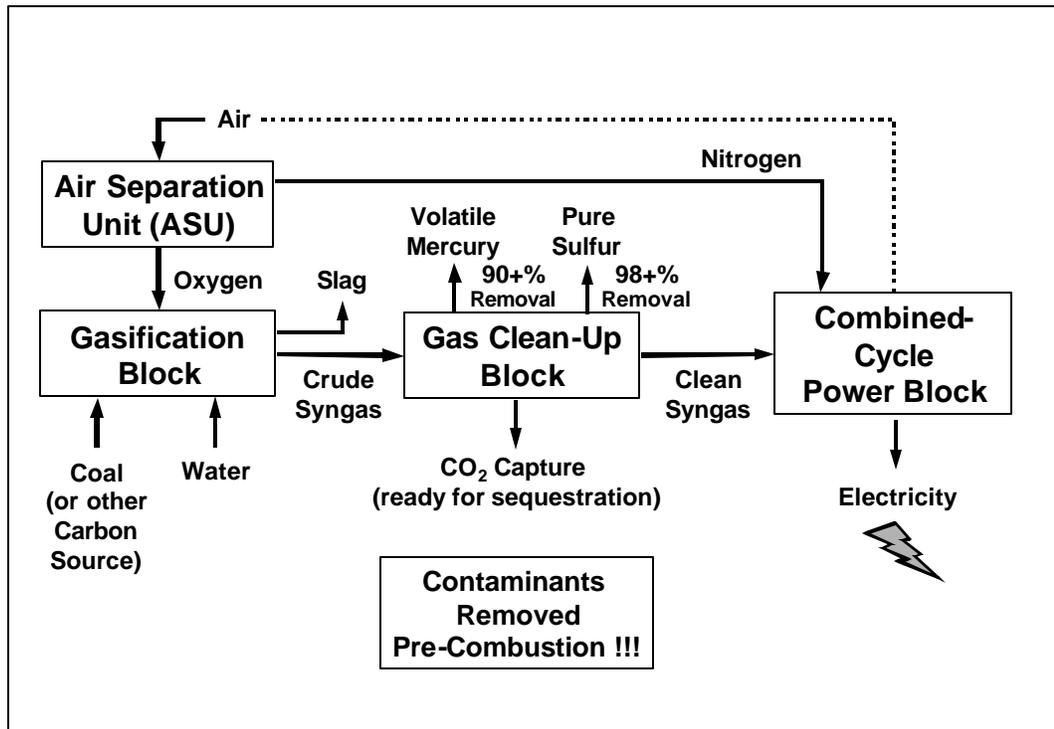


**Fig. 6: Maintenance Costs\***  
 Eastman Gasification Plant: 1996 - 2002



\*All costs have been normalized to 1996.

Fig. 7. Syngas Contaminants Removed Prior to Combustion





## Gasification Technologies Council

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June 16, 2003

Mr. Keith R. Miles  
U.S. Department of Energy  
National Energy Technology Laboratory  
PO Box 10940  
MS 921-107  
Pittsburgh, PA 15236

Via email: [miles@netl.doe.gov](mailto:miles@netl.doe.gov)

Dear Mr. Miles:

The Gasification Technologies Council wishes to submit comments on the proposed FutureGen demonstration project in response to the request for information (68 Federal Register 19521, April 21, 2003).

The Council is the trade association of the gasification industry. Its members provide technologies (gasification, industrial gas, gas cleanup and conditioning, sulfur removal, power generation and others), as well as equipment and services that form the core of today's gasification-based power, fuels and chemicals plants in the U.S. and around the world. Council members are involved in plants that account for more than 95% of world synthesis production and use.

The Council commends the Department of Energy for proposing this bold initiative which recognizes that coal gasification must provide the technological foundation for the U.S. electricity industry if coal is to have a long-term future in U.S. power generation.

Our comments focus on five areas:

1. Source of Public Sector Share of Funding for FutureGen

The April 21 request for information was silent regarding the source of the estimated \$800 million public sector share of funding needed for the project. The members of the Gasification Technologies Council feel strongly that, whatever the source of funding, the integrity of existing DOE gasification-based research, development and demonstration projects and programs must not be diminished or compromised in any way. Much of the work that has been done (and is continuing) in the fossil energy gasification- and advanced turbine-related R&D programs will provide the technological and engineering basis for important elements of FutureGen. The same is true of demonstration projects

under the Clean Coal Power Initiative. We would strongly oppose diverting any resources from these important efforts (which have involved significant private sector participation) in order to provide funding for the FutureGen plant.

In addition, the FutureGen plant should not be eligible for any investment, production, or other tax credits authorized for clean coal technologies plants under pending or future legislation.

## 2. Composition of, and Participation on, the Government Steering Committee

The April 21 Federal Register request for information made reference to a “Government Steering Committee” that will provide guidance to the industry consortium that will design, build and operate the FutureGen demonstration plant

The Gasification Technologies Council urges that the Secretary of Energy provide for participation on the Steering Committee by the GTC and other trade associations and research organizations representing important industrial sectors involved in the effort. The GTC represents the overwhelming majority of the technology and service providers who will be called upon to develop, design, build, and operate the FutureGen facility. Thus, GTC participation will provide an important source of information, views and perspectives based upon a wealth of technical, operational and project development experience.

## 3. Status of “Base” Technologies Used in the FutureGen Project

The request for information addressed the status of technologies that will be incorporated into the plant: “The initial FutureGen plant configuration will incorporate cutting edge technologies to address scaling and integration issues for coal-based, zero emissions energy plants.” This issue is at the heart of the FutureGen concept and needs to be thoroughly discussed prior to major commitments in the design of the plant.

Because the plant’s basic need will be a steady, reliable supply of synthesis gas, the GTC recommends that the base platform technologies for the FutureGen project should have been previously proven at commercial scale to help insure the overall success and ultimate potential of the effort.

These proven platform technologies should be adaptable enough to enable application of a number of new technologies that can be coupled with them or used in parallel with them (on-stream or slip-streams) to fulfill the advanced technology requirement of the FutureGen program. If the base platform technologies are themselves new or require significant scale-up (perhaps more than 3:1), it dramatically increases the odds that the overall project will not succeed and/or that it will not be capable of sustained operation to enable the sequestration of a million metric tons or more per year of carbon dioxide (a primary criterion of the project).

#### 4. Criteria for Selection of Technology, Equipment & Service Providers for FutureGen Project

With significant public and private sector funds at risk in the project, the GTC recommends that criteria be established, and strictly adhered to, for selection of technology and service providers for FutureGen that will help insure the overall success of the project and will enhance the ultimate commercialization potential for the developed FutureGen technologies.

These criteria should include a requirement that technology and service providers selected have a proven track record of successful innovation, commercialization, and operational performance. As applicable to their particular scopes of work, the selected providers should have demonstrated the ability to take new concepts or ideas and successfully scale them up, commercialize and market them, and operate them safely and reliably.

In addition, the selection process should specifically require fair and open competition for technology selection and licensing, product offtake/sale, coal supply, O&M and other services required for the project. To avoid possible (or perceived) conflict of interest companies who are members of the FutureGen consortium and their subsidiaries/affiliates should generally not be suppliers of services, technology or equipment.

#### 5. Makeup of the Consortium

The Department has set a threshold for minimum industry participation in the FutureGen consortium: companies representing at least one-third of U.S. coal production and one-fifth of U.S. coal-fired power generation. If coal producers and power generators are to eventually embrace and deploy the technologies demonstrated in FutureGen, it would seem desirable, once a consortium is selected, for the Department and the original consortium members to encourage other partners to join with a goal of having a majority of coal production and coal using power generation represented in the consortium.

The Gasification Technologies Council strongly supports the FutureGen project. We have offered these recommendations in the hopes that they will contribute to the ultimate success of the effort. We look forward to a long-term productive relationship with the DOE as this important project moves forward and offer our continuing advice and guidance on the matter.

Sincerely,

James M. Childress  
Executive Director