

**BEFORE THE KENTUCKY STATE BOARD  
ON ELECTRIC GENERATION AND TRANSMISSION SITING**

**In the Matter of:**

**THE APPLICATION OF KENTUCKY )  
PIONEER ENERGY, LLC FOR A )  
CONSTRUCTION CERTIFICATE TO )  
CONSTRUCT A MERCHANT )  
ELECTRIC GENERATING FACILITY )**

**CASE NO: 2002-00312**

**TESTIMONY OF  
DWIGHT N. LOCKWOOD, P.E., QEP  
VICE PRESIDENT, REGULATORY AFFAIRS  
KENTUCKY PIONEER ENERGY, LLC**

**February 28, 2003**

**Q. Please state your name, position, and business address.**

2 A. My name is Dwight N. Lockwood, P.E., QEP. My business address is Global Energy  
3 Inc., 312 Walnut Street, Suite 2650, Cincinnati, Ohio 45202.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am employed by Global Energy Inc. as the Vice President of Regulatory Affairs.

6 **Q. In that capacity, what are your responsibilities?**

7 A. As a senior manager in the corporation, I oversee and advise the organization on  
8 regulatory matters in the area of environmental, health and safety issues, with special  
9 emphasis and experience in environmental issues. My primary responsibilities have been  
10 to manage the development and negotiation of all permits and certificates necessary for  
11 the approval and construction of this Kentucky Pioneer Energy project and other projects.  
12 My engineering background and experience in the management of large capital projects  
13 also enables me to serve in an interface capacity with engineering firms and suppliers.

14 **Q. Could you give a brief review of you work experience?**

15 A. Yes. I have a graduate degree in Mechanical Engineering, received after serving as a  
16 pilot in the US Navy. I am a Registered Professional Engineer (PE) in three states, a  
17 Qualified Environmental Professional (QEP), which is a certification in the  
18 environmental field comparable to the PE, and am a qualified Environmental  
19 Management Systems Auditor. My employment included twenty years in the oil  
20 industry, in facilities, project management, environmental management and internal  
21 environmental consulting at the headquarters level. I created and ran my own project  
22 management and environmental management consulting business for a few years before  
23 joining Global Energy Inc. where I have been for approximately five years.

Q. Please describe Kentucky Pioneer Energy, LLC.

2 A. Kentucky Pioneer Energy, LLC (“KPE”) is a wholly owned subsidiary of Global Energy  
3 Inc. and is qualified to do business in Kentucky. KPE is proposing to build, own and  
4 operate a synthesis gas fired combined cycle base load power plant having a total  
5 electrical generating capacity of 540 megawatts (net export). The KPE facility will be  
6 located near Trapp in Clark County, Kentucky, on land leased from East Kentucky Power  
7 Cooperative, Inc. (“EKPC”) within its J.K. Smith Generating Station site.

8 Q. What is the purpose of your testimony?

9 A. The purpose of my testimony is to show that KPE’s application and the February 6, 2003  
10 *Review and Evaluation of: A Site Assessment Report For Kentucky Pioneer Energy*  
11 prepared by Jason Associates Corporation for the Kentucky State Board on Electrical  
12 Generation and Transmission Siting (“Board”) provide a sound basis for the Board to  
13 grant KPE the requested Certificate of Construction for the proposed power plant.

14 Q. Could you provide a brief overview of KPE’s Integrated Gasification Combined  
15 Cycle power plant?

16 A. Yes. This project will be the first commercial application of the British Gas/Lurgi  
17 (“BGL”) fixed bed gasification technology in the U.S., though several units of an earlier  
18 version of this technology have been operating in this country and around the world for  
19 several decades. This clean coal technology will convert high sulfur coal and refuse-  
20 derived fuel (“RDF”) into clean synthetic gaseous fuel (“synthesis gas” or “Syngas”).

21 The gasification process operates at extremely high temperatures in a closed and  
22 pressurized gasifier, without stacks or vents, that converts its organic feedstock (Coal and  
23 RDF) into a Syngas of primarily hydrogen and carbon monoxide. The raw Syngas

stream from the gasification process then undergoes various cleanup steps including  
2 scrubbing to remove over 99% of its sulfur content, as well as other contaminants. In  
3 this project, the Syngas product will be fed to two gas turbines (General Electric 7 FA's)  
4 which, together with a single steam turbine, will deliver approximately 540 megawatts of  
5 electrical power to EKPC.

6 Gasification process itself is a chemical conversion process, changing the energy  
7 content of the solid feedstock into a gaseous form. The clean manufactured Syngas is  
8 chemically distinct from the feedstock. The resulting Syngas is then used as a fuel in the  
9 gas turbines and performs similarly to natural gas.

10 The most interesting and promising aspect of this technology is its ability to  
11 utilize high sulfur coal without the environmental impacts that are commonly associated  
12 with this energy resource. Stack emissions from the gas turbine using Syngas are  
13 comparable to using natural gas. Additionally, this type of clean coal technology does  
14 not have the ash problems associated with current coal fired generators. Currently, over  
15 100 million tons of ash are disposed in landfills annually. The gasification process does  
16 not produce any fly ash or bottom ash that require slurry ponds or disposal in landfills.  
17 Instead, this clean coal technology produces a vitrified frit (a.k.a. slag) from the  
18 gasification chemical conversion process, and is marketable as an aggregate material for  
19 asphalt paving or structural fill.

20 **Q. Please briefly describe the site location for which you are requesting a Certificate of**  
21 **Construction to build the Integrated Gasification Combined Cycle facility.**

22 **A. EKPC has entered into a long term lease agreement with KPE for use of approximately**  
23 **300 acres within the 3,120 acre J.K. Smith Generation Station site, for construction and**

1 operation of the Integrated Gasification Combined Cycle (“IGCC”) facility. The J.K.  
2 Smith site is located approximately 21 miles southeast of Lexington, 8 miles southeast of  
3 Winchester, and 1 mile west of Trapp, Kentucky. EKPC originally established the  
4 location for the construction and operation of a 1200 MW base load generation facility in  
5 the 1980s, before the project was cancelled in the 1990’s. EKPC has used the J.K. Smith  
6 Generation Station for the location, construction, operation and maintenance of its five  
7 combustion turbines.

8 The 300-acre lease site has been previously disturbed by those prior construction  
9 activities which include: completed initial grading, primary foundations, fire protection  
10 piping, office and support buildings and a rail spur access infrastructure. The freight rail  
11 line owned by CSX connects to the 3.1 mile railroad loop that bounds the 300 acre lease  
12 site. The J.K. Smith Generation Station is accessible via a 1 mile access road and  
13 through a gated perimeter fence off of Kentucky Highway 89 and currently operates five  
14 80 MW natural gas turbines.

15 **Q. What is the impact of the IGCC facility on the scenic surroundings?**

16 **A.** The November 2002 Final Environmental Impact Study (“FEIS”) performed by the  
17 Department of Energy for the KPE’s project at the J.K. Smith Generation Station and the  
18 report provided by Jason Associates (“Jason Report”) for the Siting Board concluded that  
19 the proposed IGCC unit and the stack associated with the turbine are anticipated to have  
20 no or only a negligible impact to the scenic surroundings and are compatible with the  
21 aesthetic and scenic surroundings due to the existing generating facilities on the site.

**Q. What is the impact of the IGCC facility on surrounding property values?**

2 A. As stated in the FEIS and the Jason Report, the proposed IGCC facility will be located  
3 entirely within EKPC's 3,120 acre Smith Generation Station with limited visibility from  
4 outside the property boundary. The proposed IGCC facility will be located mile from  
5 the nearest tract available to a potential buyer (the nearest residence). This distance and  
6 the lengthy history of ownership and operations of combustion turbines at the J.K. Smith  
7 Generation Station should mitigate any possible effect on property values.

8 **Q. What is the impact of the IGCC facility to the pattern and type of development of**  
9 **adjacent property?**

10 A. There will be no impact to the immediate area since the proposed site is entirely within  
11 the Smith Generation Station. The area outside the J.K. Smith site is zoned agricultural  
12 and is predominately used as cropland, pasture, forest, shrub/brush and rangeland.  
13 FEIS and the Jason Report concluded there will be no or negligible impact to the  
14 property surrounding the J.K. Smith Generation Station.

15 **Q. What is the impact of the IGCC facility on the surrounding roads?**

16 A. Construction of the proposed IGCC facility is anticipated to take 30 months and employ  
17 an average of several hundred people with a peak employment of approximately 1,000.  
18 As described in the FEIS, during periods of average construction worker staffing, an  
19 additional 500 to 600 vehicle trips may occur at the beginning and end of shifts. During  
20 periods of operation, an anticipated additional 50 to 60 vehicle trips will occur.  
21 Additionally, it is anticipated that approximately 30 heavy-duty trucks would operate in  
22 the area during the construction phase, adding approximately 8 vehicle trips per  
23 worked to the local roads.

1           The FEIS concluded, and the Jason Report agreed, that the location of the  
2 proposed IGCC facility is conducive with local traffic patterns. Based upon the traffic  
3 patterns analyzed in the area by the Kentucky Department of Transportation, the increase  
4 of traffic associated with either the construction phase or operation phase of the IGCC  
5 project would flow in opposite directions of existing heavy flows of traffic and would not  
6 compound any existing traffic congestion during commuting periods. Additionally, due  
7 to the fact that typical construction shifts begins and ends comparatively early in the day,  
8 the majority of traffic from construction workers will occur outside of normal commuting  
9 periods.

10           However, the FEIS did conclude that increased traffic would negatively impact  
11 the roads in Trapp and at the intersection of Highway 89 and the access road as  
12 construction traffic enters and leaves Highway 89. The lack of traffic control at this  
13 intersection will likely result in minor congestion. However, any impact from the  
14 increase in traffic is expected to be mitigated by the Kentucky Department of  
15 Transportation's analysis and recommendations. KPE will fully cooperate with the  
16 Kentucky Department of Transportation and expects to accept its recommendations to  
17 mitigate any impact from the increase in traffic.

18 **Q.   What is the anticipated impact from noise levels expected as a result of construction**  
19 **and operation of the IGCC facility?**

20 **A.**   As described in the FEIS and the Jason report, construction activities on the proposed  
21 IGCC facility are estimated to last approximately 30 months. A conservative estimate of  
22 construction site noise was developed in the FEIS by assuming an average of 20 heavy  
23 equipment operating in the same area over a 10-hour workday, and nighttime

1 construction is not anticipated. The noise levels under this model used in the FEIS are  
2 estimated to be 90 to 92 dBA at 100 feet from the worksite, 71 dBA at 1,000 feet, 61  
3 dBA at 2,500 feet, 50 dBA at 1 mile, and approximately 44 dBA at 1.5 miles. Actual  
4 levels are anticipated in the FEIS to be less due to terrain and vegetation effects and  
5 anticipated to be similar to or less than background noise levels at locations beyond the  
6 EKPC property. The Jason report concurs with this assessment.

7 During the operation phase, noise levels immediately adjacent to the turbines and  
8 certain areas near the gasifiers are expected to be 155 dBA and 95 dBA respectfully.  
9 However, enclosures for this equipment and these areas will provide significant noise  
10 reduction. The studies cited in the FEIS show that operational noise levels are anticipated  
11 to be approximately 62 dBA at the perimeter of the lease site, 56.5 dBA at the EKPC  
12 property boundary, 53.4 dBA at the closest structure outside the EKPC property, and  
13 44.7 dBA in the community of Trapp. The noise levels outside EKPC's property  
14 boundary are considered compatible with rural residential land uses.

15 Increase rail and vehicle traffic during the operation phase is also anticipated to  
16 have minor effects on noise levels. The FEIS and the Jason Report both concluded that  
17 the additional rail traffic will not have a significant effect on existing noise levels along  
18 the mainline tracks. Vehicle traffic during the operational phase is also not anticipated to  
19 have an impact on noise levels along Highway 89. The additional amount of traffic  
20 based on the anticipated workforce will be less than 80 vehicles at any shift change  
21 period. The FEIS and the Jason Report concluded that this small increment of additional  
22 traffic would have little or no impact on baseline highway traffic noise conditions  
23 currently experienced in the area.

1 **Q. What is the economic impact of the IGCC facility upon the affected region?**

2 A. During peak construction, the IGCC will employ an average of 600 employees and  
3 upwards to 1,000 employees. The FEIS estimates that this employment would also  
4 create approximately 690 additional indirect jobs during the construction phase. The  
5 construction phase would result in approximately \$56.7 million in direct new income and  
6 \$53.2 million in indirect income to the region of interest.

7 During the operational phase, the IGCC facility would employ 120 workers onsite  
8 in Clark County and would result in approximately \$5.6 million in direct income and  
9 \$6.4 million in indirect income on an annual basis going forward.

10 **Q. Will the IGCC facility be located upon a site that has existing generating facilities  
11 capable of generating ten megawatts (10MW) or more of electricity?**

12 A. Yes. EKPC currently has five gas fired turbine generators capable of generating 80  
13 megawatts each.

14 **Q. Will the KPE's power plant meet all local planning and zoning requirements?**

15 A. Yes. Both the FEIS and the Jason Report concluded that the KPE project is exempt from  
16 the approval of the local zoning and planning commission.

17 **Q. How will the load from the addition of the IGCC affect the transmission grid?**

18 A. Under the long term wholesale agreement with EKPC, EKPC will purchase and receive  
19 100% of the electrical power generated by the KPE IGCC facility at the facility's busbar.  
20 EKPC will be responsible for the transmission of the electric power. In support of KPE's  
21 application for a certificate of construction, EKPC provided a integrated multi-phased  
22 study of future J.K. Smith transmission requirements. Based upon the results of load  
23 flow studies and economic analysis, EKPC formulated an optimum integrated

transmission plan to support future generation facilities at the J.K. Smith contained in the  
2 *Transmission Planning Conclusions and Recommendations for Future JK Smith,*  
3 *Generation Combustion Turbine Units 4 and 5, Kentucky Pioneer Energy Unit* (June 7,  
4 2000). In phase 2 of the integrated plan, which includes the addition of KPE's IGCC  
5 facility, EKPC has recommended certain improvements. The Board is currently  
6 reviewing those recommendations with EKPC.

7 **Q. Will the exhaust stack of the IGCC facility be at least one thousand (1000) feet from**  
8 **the property boundary of any adjoining property owner and two thousand (2000)**  
9 **feet from any residential neighborhood, school, hospital, or nursing home facility?**

10 A. Yes. The 300-acre lease site for the IGCC facility is entirely enclosed within EKPC's  
11 3,120 acre Smith Generation Station. The conceptualized layout of the IGCC facility  
12 anticipates the exhaust stack to be approximately ,000 feet from the boundary of the  
13 lease area. Additionally, the lease boundary is approximately 1,500 feet from the nearest  
14 property boundary of the J.K. Smith Generation Station with any adjacent property.  
15 Therefore, the anticipated distance from a proposed exhaust stack to any adjoining  
16 property is approximately 2,500 feet. There are no neighborhoods, schools, hospitals or  
17 nursing homes within 2,000 feet of the site for the IGCC facility.

18 **Q. What are the mitigating measures that have been recommended to reduce the**  
19 **impact of the IGCC on the region of interest?**

20 A. The Jason Report identified and recommended several mitigating measures to effectively  
21 mitigate the impact of the IGCC on the region of interest. KPE concurs with these  
22 recommendations and accepts and agrees to implement these recommended mitigating  
23 measures, as the situation requires.

**Q. Please describe KPE's environmental compliance history?**

2 A. Kentucky Pioneer Energy LLC, has complied and will continue to comply with all  
3 applicable environmental regulations and has not received any penalties or fines for  
4 environmental compliance violations.

5 **Q. What is KPE's recommendation for the Siting Board?**

6 A. The Siting Board should award KPE the requested Certificate of Construction on the  
7 condition of the acceptance of the mitigating measures recommended by the Jason  
8 Report.

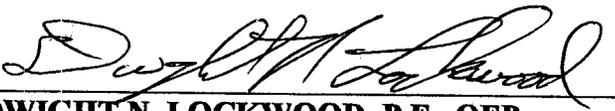
9 **Q. Does this conclude your testimony?**

10 A. Yes, it does.

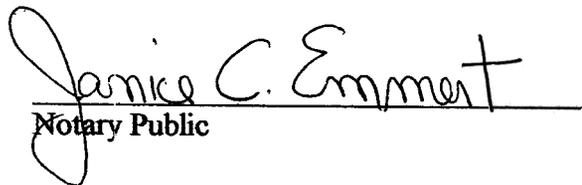
**VERIFICATION**

**STATE OF OHIO** )  
**COUNTY OF HAMILTON** ) **SS:**

The undersigned, **Dwight N. Lockwood, P.E., QEP**, being duly sworn, deposes and says he is Vice President, Regulatory Affairs for Kentucky Pioneer Energy, LLC, that he has personal knowledge of the matters set forth in the foregoing testimony and exhibits, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

  
**DWIGHT N. LOCKWOOD, P.E., QEP**

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 27<sup>th</sup> day of February, 2003.

 (SEAL)  
Notary Public

My Commission Expires:  
\_\_\_\_\_



**JANICE C. EMMERT**  
Notary Public, State of Ohio  
My Commission Expires 02-18-08