

MPUC Docket No. E-6472-/M-05-1993
OAH Docket No. 12-2500-17260-2

BEFORE THE
MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
100 Washington Square, Suite 1700
Minneapolis, Minnesota 55401-2138

FOR THE
MINNESOTA PUBLIC UTILITIES COMMISSION
127 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147

In the Matter of the Petition of Excelsior Energy Inc.
and Its Wholly-Owned Subsidiary MEP-I, LLC For Approval of Terms and
Conditions For The Sale of Power From Its Innovative Energy Project Using
Clean Energy Technology Under Minn. Stat. § 216B.1694 and a
Determination That the Clean Energy Technology Is Or Is Likely To Be a
Least-Cost Alternative Under Minn. Stat. § 216B.1693

**SUPPLEMENTAL TESTIMONY AND EXHIBITS OF
EXCELSIOR ENERGY INC.**

DOUGLAS H. CORTEZ

June 19, 2006

1 EXCELSIOR ENERGY, INC.

2 BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

3 PREPARED SUPPLEMENTAL TESTIMONY OF

4 DOUGLAS H. CORTEZ

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

6 A Douglas H. Cortez. In February of 2006 I retired from Fluor Corporation
7 (Fluor) after 36 years experience in the electric power, petroleum and petrochemical,
8 and related energy industries in research and development, project development and
9 financing, and engineering and construction capacities. I am currently an independent
10 energy consultant advising clients on all aspects of electric power plant planning,
11 development, engineering, design and construction. Because I was one of the leading
12 Fluor executives working on Excelsior's Mesaba Energy Project, Fluor has agreed that
13 I can continue supporting Excelsior's efforts in my capacity as an independent
14 consultant and that I can testify on behalf of Fluor in this proceeding. My business
15 address is Hensley Energy Consulting LLC, 412 North Coast Highway, Suite B346,
16 Laguna Beach, CA 92651.

17 **Q Would you please describe your educational and professional background?**

18 A I received a Bachelor of Science in Chemical Engineering from the University
19 of California at Berkeley, and a S.M. and Sc.D. from Massachusetts Institute of
20 Technology. I am a licensed professional engineer in the State of California. From
21 1973 to 1984, I was employed by Tosco Corporation and responsible for technology
22 licensing and synthetic fuels production development, including coal gasification and
23 cogeneration project development. From 1984 through February of 2006 I was
24 employed by Fluor and held various positions in technology assessment, independent

1 power project development, engineering and construction contract sales, project
2 financing and investments. I was head of Fluor's independent power development
3 company, which developed coal, gas, geothermal and renewable energy power
4 projects in partnership with other IPP companies.

5 I have been active in gasification technology projects continuously for the past
6 28 years. At Fluor, we have studied and designed integrated gasification combined
7 cycle (IGCC) projects using a wide range of fuels and technologies. As an executive
8 responsible for managing Fluor's participation in gasification projects, I have gained
9 experience with most aspects of the IGCC technology. Prior to joining Fluor almost
10 23 years ago, I worked for Tosco Corporation, the largest independent refiner in the
11 U.S. and a developer of synthetic fuels technology. IGCC technology has its
12 technology roots in the petroleum and petrochemical industry where it was developed
13 to convert oil to clean burning gaseous fuels and chemical feedstocks. When I was
14 with Tosco, I managed several development projects where we researched and
15 developed technologies to convert petroleum streams and coal to clean gas and power.
16 We conducted in depth studies of coke gasification based power projects at our
17 refineries in partnership with electric utilities. We also constructed solids gasification
18 research facilities and developed new technologies.

19 As head of Fluor Development Corp., we developed several sub-critical
20 pulverized coal power plants and circulating fluid bed boiler plants during the early
21 1990's. I was responsible for negotiating the power contracts, siting and permitting,
22 and project development and financing. My experience was limited to sub-critical

1 coal power plants since there was little interest in supercritical pulverized coal (SCPC)
2 plants during this period.

3 In addition to my personal experience, I had and continue to have access to
4 Fluor's substantial engineering staff, which has a wide range of experience in all types
5 of gasification plants and technologies. Fluor is one of the world's largest
6 engineering, construction and technical services companies. Fluor has over 50 years
7 of experience providing technology solutions, and engineering, construction and
8 maintenance services to the petroleum refining, petrochemical manufacturing and
9 power generation industries. Some of our staff engineers have considerable
10 experience with SCPC technology including periods of employment with the leading
11 manufacturer of SCPC boilers. Fluor regularly participates in competitive solicitations
12 for new SCPC construction. In preparing my testimony, I have consulted with many
13 members of our professional staff with experience in conventional and advanced fossil
14 power technologies.

15 **Q On whose behalf are you testifying?**

16 **A** I am testifying on behalf of Excelsior Energy Inc.

17 **Q What is the scope of your testimony in this proceeding?**

18 **A** My testimony summarizes two reports prepared under my direction by Fluor at
19 the request of Excelsior Energy Inc. (Excelsior). The first report is Fluor's December
20 2005 Report entitled "Independent Analysis of Generation Technologies for a 600
21 MW Coal-Fired Power Plant in Minnesota," which was filed as Exhibit F in Volume I
22 of Excelsior's December 27, 2005 filing in this docket. The second report is Fluor's
23 December 2005 Addendum to the Report above entitled "Addendum-Economic

1 Analysis of SCPC Plant,” which was filed as Exhibit G in Volume I of Excelsior’s
2 December 27, 2005 filing in this docket. A copy of the Report and Addendum are
3 included in the original Petition, which is appended as Exhibit TLO-2 to the
4 Supplemental Testimony of Thomas L. Osteraas.

5 **Q What was the purpose of the Report entitled “Independent Analysis of**
6 **Generation Technologies for a 600 MW Coal-Fired Power Plant in Minnesota”?**

7 A Excelsior requested that Fluor prepare an independent report on coal power
8 generation technologies that compares the plant cost and performance of the 600 MW
9 Mesaba Energy Project Unit I, which utilizes IGCC technology, with a hypothetical
10 600 MW grassroots SCPC plant located near Monticello, Minnesota. This report
11 provides an overview of total plant cost and performance data for the two
12 technologies, in each case including all anticipated costs relating to specific plant
13 locations in Minnesota, using appropriate Minnesota labor rates and cost data.
14 Estimates of the Engineering, Procurement and Construction (EPC) cost and
15 Operating and Maintenance (O & M) cost are provided for each technology.

16 **Q Has there been a rise in certain core commodity costs that impact power plant**
17 **construction in recent years?**

18 A Yes, and the Report demonstrates in Figure 1 the 20% to 70% increase in those
19 costs since September 2003 for cement, nonferrous wire and cable, steel mill products
20 and steel pipe and tube.

1 **Q How do the cost estimates included in the Report address these recent escalation**
2 **in commodity costs?**

3 A The cost estimates in the Report are based on commodity costs as of the third
4 quarter of 2005 and therefore include the recent escalation of costs since September
5 2003 through the third quarter of 2005.

6 **Q What was the purpose of the Addendum entitled “Addendum-Economic Analysis**
7 **of SCPC Plant”?**

8 A The Addendum contains Fluor’s economic analysis of the hypothetical SCPC
9 plant based on investor-owned utility (IOU) ownership used to arrive at an estimated
10 capital cost and cost of electricity for the 600 MW SCPC plant.

11 **Q What is the reason for analyzing the costs of a SCPC plant based on ownership**
12 **by an investor-owned utility?**

13 A Excelsior asked for the analysis so that the cost of electricity from a utility-
14 owned self-build baseload SCPC power plant with a full suite of environmental
15 controls necessary to make the SCPC emission profile as close as possible to that of an
16 IGCC plant could be compared with the cost of electricity to a utility under the power
17 purchase agreement from Excelsior’s baseload plant employing IGCC technology.
18 Although current Federal and State regulations may allow a SCPC plant to be
19 permitted without the full suite of environmental controls that Excelsior requested
20 Fluor to consider in building up its cost estimate for the SCPC plant, Excelsior
21 believes that Minnesota permitting authorities would require such controls (including
22 wet scrubbers, selective catalytic reduction, electrostatic precipitators and fabric filters

1 and mercury removal technologies that attempt to achieve 90% mercury removal)
2 before permitting a new SCPC unit.

3 **Q Are there any large SCPC plants operating on PRB coal with the full suite of**
4 **environmental control equipment that Fluor considered in preparing the cost**
5 **estimates included in the Report?**

6 A No.

7 **Q What are Fluor's qualifications to prepare the Report and Addendum?**

8 A As described above, Fluor Corporation is one of the world's largest, publicly
9 owned engineering, procurement, construction, and maintenance services
10 organizations and is consistently rated as one of the world's safest contractors. Over
11 the past six years, Fluor has ranked No. 1 four times on FORTUNE magazine's
12 America's Most Admired Companies list in the "Engineering, Construction" category.
13 Engineering News Record magazine ranks Fluor among the top three in their Top
14 Design Build Firms list and Top 100 Contractors by New Contracts list. In recent
15 years, Fluor has built coal-fired and natural gas-fired power projects with a total
16 capacity of more than 120,000 MW. Fluor has constructed more new power plants in
17 the United States than any other single EPC firm.

18 **Q What was your role in the preparation of the Report and Addendum?**

19 A I supervised the Fluor team which prepared both documents. The team
20 included a number of experienced EPC cost engineers and engineers experienced with
21 the procurement of the equipment, and construction of, pulverized coal and IGCC
22 power plants. The Fluor team which prepared the two documents has extensive
23 professional experience in estimating capital and operating costs for, constructing, and

1 operating power plants. I either personally performed or directly reviewed and
2 supervised the analysis for, and drafting of, the two documents.

3 **Q What is your experience with the preparation of the type of analysis and cost**
4 **estimates contained in the Report and Addendum?**

5 A In the course of my career I have participated in the preparation of dozens of
6 similar analyses for baseload power plant construction projects in the United States.

7 **Q Describe the data used for the analyses described in the Report and Addendum.**

8 A The data included cost information from Fluor's proprietary internal cost
9 database (containing cost information from the many baseload power plant projects for
10 which it served as EPC contractor), labor surveys, heat and material balances for
11 selected fuel types, winterization adjustments to accommodate construction in
12 Northern Minnesota, actual cost data for the Wabash IGCC plant, and vendor quotes
13 for major equipment and systems for Mesaba's IGCC design. Pricing estimates based
14 on this data were further validated through the application of Fluor's proprietary
15 estimating software programs by Fluor's experienced EPC cost engineers and
16 crosschecked against recent detailed EPC estimates for similar projects.

17 **Q Based on your 36 years as a power plant EPC contract engineer, are the data,**
18 **software, and crosschecking protocols used in preparing the Report and**
19 **Addendum the types of data, software, and crosschecking protocols customarily**
20 **relied upon by EPC contract engineering firms and utilities in the United States**
21 **to prepare power plant construction budgets, and estimates of capital and**
22 **operating costs?**

23 A Yes.

1 **Q** Based on your professional experience are cost estimates for power plants
2 prepared using the quality of data, estimating software and crosschecking
3 protocols you have described reliable?

4 **A** Yes

5 **Q** Does this conclude your prepared supplemental testimony?

6 **A** Yes.