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.

BAXTER JONES

JUNE 19, 2006

EXCELSIOR ENERGY, INC.

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

PREPARED SUPPLEMENTAL TESTIMONY OF

BAXTER JONES

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

A Baxter Jones, Senior Vice President for ICF International (formerly ICF Consulting), 9300 Lee Highway, Fairfax, Virginia 22031.

Q Please describe your educational and professional backgrounds.

A I received my B.S. degree in Biology in 1976 from the Massachusetts Institute of Technology, a 1977 M.S. Degree in Environmental Sciences from the University of North Carolina-Chapel Hill, and in 1980 I received Graduate Training in Toxicology at the Massachusetts Institute of Technology and Harvard University. I have 28 years experience in scientific consulting and project management, including over 23 years of employment with ICF, specializing in human health risk assessment, risk modeling, risk-based priority setting, health benefits analysis, and related regulatory and policy analysis. For over 10 years, I have served as ICF's Program Manager for various projects providing risk assessment and related services to the United States Environmental Protection Agency's Office of Air Quality Planning and Standards (USEPA/OAQPS) in North Carolina. During that time period, I have also directed air quality projects for the US EPA's transportation and policy offices and for several private clients. Generally, during my time at ICF, I have designed and conducted human health risk assessments, developed and applied risk ranking methods, written comprehensive technical guidance documents, directed development of and written documentation for computer-based health risk models, conducted benefits analyses,

written scientific reports and technical background documents, and developed and made presentations at training courses and work shops. My resume is attached as Exhibit BJ-1 to this testimony.

Q Would you please briefly describe the work of your company, ICF?

A ICF offers expertise to public and private clients in the areas of environment, transportation, energy, community development, homeland security, program implementation and evaluation, and strategic communications. Our company is headquartered in Fairfax, Virginia and has over 1,600 staff members located in offices throughout the United States and overseas. ICF has a long and successful history of providing expert services to the US EPA, other federal, state and local agencies, and commercial clients across a wide range of tasks, including risk assessment, air quality management, regulatory support, and technical and policy analysis.

In particular, ICF has provided comprehensive support services to the US EPA over some 30 years. In doing so, ICF has provided a complete range of services for the design, evaluation, and implementation of environmental policies and projects respecting land, air, and water. We provide approximately $30 million worth of support annually for US EPA programs, including hundreds of tasks related to air quality assessment and management. Our staff members working on environmental issues include more than 450 professionals with multi-disciplinary expertise in environmental science, engineering, finance, economics, law, public administration, communications, and occupational safety and health.

ICF has provided technical and programmatic support to US EPA/OAQPS under major mission support contracts since the mid-1980s. These contracts have involved ICF's provision of expertise in areas including risk and exposure assessment, air

quality modeling, toxicology, software development, and environmental monitoring, policy and economic analysis.

ICF also has a long record of addressing environmental and economics issues related to electric utilities and energy markets in engagements for both utility industry and government clients.

Q On whose behalf are you testifying?

A I am testifying on behalf of Excelsior Energy Inc.

Scope and Summary

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

A Included as Exhibit D, Volume I of Excelsior Energy Inc.'s original Petition in this Proceeding, which was filed on December 27, 2005, is ICF's Final Report entitled *Air Quality and Health Benefits Modeling: Relative Benefits Derived From Operation of the MEP-I/II IGCC Power Station.* *See* Exhibit TLO-2 to the Supplemental Testimony of Thomas L. Osteraas. I managed the entire project which culminated in the creation of that Final Report. Excelsior Energy engaged ICF in the project to provide detailed modeling of the health effects and damage costs resulting from air emissions from Excelsior's proposed IGCC power plant, as compared to the anticipated health effects and damage costs which would be associated with an alternative, comparably sized, new state-of-the-art supercritical pulverized coal plant (Alternative SCPC Plant) located in the central part of Minnesota. The Final Report documents ICF's detailed modeling study, and I am available to answer any questions related to it.

Q Please briefly summarize the nature of the information reflected in ICF's Final Report for Excelsior Energy.

A In order to quantify benefits associated with reduced emissions of mercury and $PM_{2.5}$ (particulate matter having aerodynamic diameters of 2.5 microns or less) and its precursors, ICF modeled the levels of fine particulate matter and mercury to which populations downwind of the proposed new Mesaba IGCC Power Station would be exposed, also modeled the levels of fine particulate matter and mercury to which populations downwind of the hypothetical, Alternative SCPC Plant in central Minnesota would be exposed, developed comparisons of the quantitative human health impacts and corresponding monetary damages of potential fine particle exposures resulting from emissions by the two plants, and developed qualitative comparisons of the potential impacts of mercury emissions by the two plants.

Q What was the source of the emissions data on which ICF based its models?

A The emissions levels for all pollutants needed to model $PM_{2.5}$ and mercury for the IGCC Power Station and the Alternative SCPC Plant were provided by Excelsior Energy, with that information reviewed and supplemented as necessary by ICF. Emissions information for the hundreds of other sources (i.e., the "background" emissions) located throughout the air modeling grid was taken from publicly available USEPA databases used in recent regulatory analyses.

Q Generally speaking, what sort of modeling methods did ICF apply in this Project?

A ICF used a number of modeling methods and tools, including the Environmental Benefits Mapping and Analysis Program (BENMAP) developed by USEPA/OAQPS and the Regional Modeling System for Aerosols and Deposition (REMSAD) developed

by ICF under contract to USEPA and used by the USEPA in recent regulatory analyses. Both of these modeling tools are publicly available.

Q Has any information respecting Excelsior's proposed IGCC Plant come to your attention which differs from information on which ICF relied in preparing its Final Report?

A I am aware of three matters in the current plan for the IGCC Plant which vary from the assumptions of our study. First, our study reflects the size of each of Mesaba I and Mesaba II to be 531 MW (net), while Excelsior's updated, optimized design is now focused on each plant being a 603 MW power station. Second, the stack parameters used in our study were taken from the Wabash River facility, while Excelsior has since changed those parameters to reflect, among other differences, a lower assumed stack height (for aesthetic considerations). Finally, Excelsior assumed mercury removal from the Project to be approximately 92% (relative to the mercury entering the station in the feed stock), and Excelsior has since lowered its expected removal efficiency to 90%.

Q What impact do these three changes in assumed facts have upon the results of ICF's Final Report?

A In our study, the hypothetical Alternative SCPC Plant was sized at 600 MW for Phase I, based on realistic expectations for that plant. Thus, in order to fairly compare impacts on the basis of equivalent power production between the IGCC Plant and the Alternative SCPC Plant, we adjusted downward the Alternative SCPC Plant results by a factor of 531/600 (after confirming that emissions, air concentrations, and health impacts were essentially linear with power production within the ranges of values of interest. Now that both plants are anticipated to be essentially 600 MW, this downward adjustment is no longer warranted. In fact, the benefits estimates of the IGCC Plant in

comparison to a comparably sized Alternative SCPC Plant (both plants at 603MW) would be greater than stated in the ICF Final Report by a factor of approximately 1.14 (603/531). However, this relatively small adjustment in size assumption would not be expected to materially affect the conclusions of our overall, comparative health risk analysis.

Similarly, we do not find that the adjustment in the stack parameters and the small adjustment in projected mercury removal will have any material effect on the conclusions of our overall health risk analysis.

Q Please briefly summarize the conclusions ICF reached in its Final Report?

A. With respect to fine particulate matter, our Final Report estimates that the net present value of mortality cost savings for residents of Minnesota associated with Phase I and Phase II of Excelsior's IGCC Power Stations, as compared to the Alternative SCPC Plant, will be approximately $12 million in 2010 and $24 million in 2012, respectively (all costs stated in 2004 dollars). Further, for residents of the United States as a whole, the net present value of mortality cost savings associated with Phase I and Phase II of Excelsior's IGCC Power Stations, as compared to the Alternative SCPC Plant, are estimated to be approximately $50 million in 2010 for Phase I and $99 million in 2012 after completion of Phase II.

Similarly, our Final Report estimates that, as compared with the Alternative SCPC Plant, the IGCC Power Station's greater reductions in fine particulate matter will yield morbidity cost reductions for Minnesota residents of approximately $1 million in 2010 for Phase I and approximately $2 million in 2012 after completion of Phase II. Meanwhile, total reduction in morbidity costs for residents of the United States as a

whole, as achieved after completion of Phases II, is estimated to be approximately $6.6 million in 2012.

With respect to mercury deposition, ICF's Final Report reflects that the Excelsior IGCC Power Station, as compared with the Alternative SCPC Plant, will yield reductions in (i) total mercury deposited to soils and surface waters, (ii) the expected geographical areas subject to specified levels of mercury deposition, (iii) the total human population within impacted areas, (iv) the number of women of childbearing age within impacted areas, (v) the number and surface areas of lakes within impacted areas, and (vi) the estimated annual harvest of selected fish species within impacted areas. The reduced mercury deposition associated with the IGCC Plant is expected to contribute to the overall health benefits of that Plant compared with the Alternative SCPC Plant.

Thus, ICF's analysis and conclusions reflect significant health impact and cost benefits attributable to Excelsior's proposed IGCC Plant, as compared to the Alternative SCPC Plant.

Q. Are there any parts of ICF's Final Report that you would like to further supplement or clarify at this time?

A. Not at this time.

Q. Does this conclude your prepared supplemental testimony?

A. **Y**es.

EXHIBITS

EXHIBIT NO. ____ (BJ-1)

Resume

BAXTER JONES
Senior Vice President, ICF International

EDUCATION

Graduate Training in Toxicology, Massachusetts Institute of Technology and Harvard University, 1980
M.S., Environmental Sciences, University of North Carolina-Chapel Hill, 1977
B.S., Biology, Massachusetts Institute of Technology, 1976

EXPERIENCE SUMMARY

Mr. Jones has 28 years experience in scientific consulting and project management specializing in human health risk assessment, risk modeling, risk-based priority-setting, health benefits analysis, and related regulatory and policy analysis. For the past 10 years, he has served as ICF's Program Manager for three contracts (> $10 million) to provide risk assessment and related services to US EPA's Office of Air Quality Planning and Standards in Research Triangle Park, NC. In addition, he has directed air quality projects over the past decade for EPA's transportation and policy offices and several private clients. Overall, Mr. Jones has served as contract manager for six large mission support contracts with EPA (> $50 million combined) and many smaller contracts with a broad range of government and private clients. He has personally directed hundreds of assignments totaling more than $20 million of contractor support, mostly related to risk assessment and modeling. During his 23-year tenure at ICF, he has designed and conducted risk assessments, developed and applied risk ranking methods, written comprehensive technical guidance documents, directed development of and written documentation for computer-based risk models, conducted benefits analyses, written many scientific reports and technical background documents, and developed and made presentations at training courses and workshops.

Model Development, Evaluation, and Documentation for the Total Risk Integrated Methodology (TRIM). Mr. Jones has led a multidisciplinary ICF team since 1998 in wide-ranging scientific and technical support for the development, testing, evaluation, and documentation of TRIM, which is a mass-conserving, multimedia fate, transport, exposure, and risk model for air pollutants. Under Mr. Jones' direction, ICF has assisted in algorithm and methods development, software development and maintenance, four case study applications of TRIM.FaTE addressing mercury, dioxins, and PAHs, auditing of all algorithms and parameter values, and extensive model documentation (including peer review and comment response support). He directed preparation of the *TRIM.FaTE Evaluation Report, Vol. 2* (2005), *TRIM.FaTE Users Guide* (2003), two major versions of the two-volume *TRIM.FaTE Technical Support Document* (2002 and 1999), *TRIM.FaTE Evaluation Report, Vol. 1* (2002), *TRIM.Expo Technical Support Document* (1999), and *TRIM Status Report* (1999). From 2001 through 2005, he managed analytical and documentation tasks for the TRIM.FaTE mercury test case, including model parameterization and application to a chlor-alkali facility, steady-state analysis, sensitivity analysis, comparison with monitoring data, and an in-depth comparison with another Agency model, 3MRA.

Residual Risk Analysis for Air Toxics. Since 1997, Mr. Jones has provided oversight to ICF's extensive technical support to EPA's residual risk assessment program. He was the main contractor who assisted EPA in writing the 1999 *Residual Risk Report to Congress*, he designed and carried out detailed air pathway exposure modeling, risk characterization, and uncertainty analyses for the chromium electroplating residual risk assessment, and he directed ICF's initial screening analyses of the residual risks for nine other industry source categories, including gasoline distribution, shipbuilding, halogenated solvents, and polymers and resins.

Air Pollutant Risks from Power Plants. Mr. Jones recently managed two projects, one for a private energy company and one for the city of Gainesville, Florida, in which ICF assessed risks from fine particles and mercury from power plant emissions. He directed detailed modeling of health effects and damage costs resulting from air emissions from an IGCC power plant compared with a conventional coal plant alternative. Using data bases and methods generally consistent with EPA's CAIR and CAMR regulatory impact analyses, ICF applied REMSAD to perform the nationwide air dispersion/chemistry modeling of $PM_{2.5}$ and mercury, and used BENMAP to assist with the modeling of health effects and health damage costs related to inhalation of fine particles.

Risk Characterization for Air Toxics Emitted from Mobile Sources. Mr. Jones managed a project for EPA to prepare a national-level exposure and risk characterization for air toxics (including benzene, 1,3-butadiene, and diesel particulates) emitted from on-road mobile sources under various emission control scenarios. Under Mr. Jones' direction, ICF drafted text detailing the analysis of sources, emissions, and exposure; evaluated and summarized dose-response information for six substances of concern; developed and applied spreadsheets to perform individual and population risk calculations; and wrote risk characterization text. As part of this project, he directed a detailed quantitative assessment of variability and uncertainty in the exposure and risk estimates.

Residual Risk Assessment for Chromium Electroplating. Mr. Jones managed and played a hands-on technical role in the residual risk assessment of six chromium electroplating source categories. Under Mr. Jones= direction, ICF identified and worked with EPA to resolve numerous project planning and scoping issues, developed and implemented a series of health risk screening methodologies (analyzing more than 100 facilities total), developed and implemented a refined health risk methodology, developed and applied a detailed approach for analysis of variability and uncertainty, implemented a multimedia (air, surface water, and soil, based on ISCST and IEM2 modeling) ecological risk screening methodology, and wrote a comprehensive risk characterization report.

Technical Guidance Development for Risk Assessment and Management. Since joining ICF in 1983, Mr. Jones has assisted EPA and others in developing risk assessment and related guidance documents. He has developed guidance approaches and options, written and edited text, created flowcharts and other graphics, managed document preparation, coordinated peer reviews and response to review comments, and managed development of related data bases and software tools. Key guidance documents to which he has made major contributions include *TRIM.FaTE Users Guide* (2003), *Risk Management Framework for Hazardous Materials Transportation* (2001), *Guidance Manual for Superfund Hazard Ranking System* (1992), *Risk Assessment Guidance for Superfund*, Parts A, B, and C (1991, 1989), and *Superfund Public Health Evaluation Manual* (1986). Beginning in 2004, he has contributed to development of the three-volume *Air Toxics Risk Assessment Reference Library*.

Other Air Quality Projects for EPA. In earlier projects for EPA, Mr. Jones managed multimedia risk modeling (using ISC and IEM2M) for a chloralkali facility for MACT support, developed and applied a hazard-based ranking method for air toxics, directed ICF support for the first *Great Waters Report to Congress* (and contributed to the second and third reports), managed public comment assistance for the Clean Air Act section 112(j) and 112(g) rulemakings, performed a survey of state air toxics risk assessment methods, directed ICF's assistance for a Science Advisory Board workshop on assessing benefits of reductions in hazardous air pollutant exposures, and contributed to ICF's support for the *Mercury Study Report to Congress* and *Urban Air Toxics Report to Congress*.

Risk-based Ranking of Drug Residues in Imported Aquaculture Products. Currently managing a multi-year project begun in 2001 to assist US Food and Drug Administration's Center for Veterinary Medicine in developing, collecting data for, and applying a risk-based ranking approach to drug and chemical residues in aquaculture food products imported to the U.S. Mr. Jones is the lead developer

of the risk-based ranking approach, which is based on toxicity and exposure assessment principles and methods. The methodology is being applied to potentially thousands of drug/country/aquaculture product combinations to assist FDA in setting priorities for monitoring, methods development, and further data collection.

Risk Ranking Workshop. Mr. Jones was an invited participant and presenter at a five-day "Pellston workshop" sponsored by the Society for Environmental Toxicology and Chemistry (SETAC) to develop principles and guidelines for chemical ranking and scoring. Presented overview of how to review and compare risk-based ranking systems at the plenary session. As a member of the overall framework subcommittee, had lead role in developing (1) fundamental principles for chemical ranking and scoring and (2) a systematic classification of chemical ranking and scoring approaches. Mr. Jones is a contributing author to the 1997 SETAC book, *Chemical Ranking and Scoring: Guidelines for Relative Assessments of Chemicals*.

Risk Ranking System Comparisons, major industry trade association. In two projects for a major industry trade association, Mr. Jones analyzed in detail six different hazard- or risk-based chemical ranking systems. The systems reviewed included the EPA/OPPT use cluster scoring system, European Union IPS scoring system for setting risk assessment priorities, Canadian ARET methodology for identifying candidates for virtual elimination, and University of Tennessee CHEMS multi-purpose scoring system. In both projects, Mr. Jones directed ICF's staff in analyzing the systems, summarizing them in a common format, developing side-by-side comparison tables and graphics, and preparing detailed critiques of strengths and weaknesses.

Chemical Industry Extramural Research Program Support. Initiated and provides oversight for a long-term ICF project with an industry trade association to provide technical, managerial, data base, communications, and workshop planning assistance to panels responsible for setting research priorities, identifying research projects, selecting sources to perform individual projects, and monitoring progress of the projects.

REACH Analyses. Under contract to a US chemical industry association, Mr. Jones directed a detailed review and analysis of the European Commission's May 2003 proposal to adopt a new European chemicals policy, known as REACH (Registration, Evaluation, and Authorization of Chemicals). There were three main areas of investigation in the project: (1) review of proposed REACH protocols for ecological toxicity and human health effects testing of chemicals and comparison to internationally accepted OECD test guidelines; (2) estimation of the costs for a company to comply with the proposed risk assessment requirements of REACH (i.e., develop the Chemical Safety Report); and (3) estimation of the costs for a company to comply with the proposed socioeconomic analysis provisions of REACH.

Cost Analyses of California Legislative Proposals on Biomonitoring and Analytical Methods. For a US chemical industry association, Mr. Jones led a project to analyze the likely industry and government costs if two bills introduced in the 2004 California legislative session were to be enacted. One bill imposed a new biomonitoring program for specified chemicals to be funded by a fee on chemical manufacturers. The other bill required development of analytical test methods for essentially all chemicals in commerce.

Environmental Technology Verification (ETV) Program Analysis and Evaluation. Mr. Jones managed a five-year project in which ICF provided data collection, survey, analysis, meeting support, and report preparation in support of program evaluation for EPA's ETV Program. At the conclusion of the five-year pilot period, ICF assisted ORD in developing an extensive evaluation report that documented accomplishments and provided extensive quantitative findings and a separate report to Congress that summarized program highlights and presented a blueprint for ETV in the future.

SELECTED PUBLICATIONS AND PRESENTATIONS

Murphy, R., Jones, B., Laniak, G., Murphy, D.L. 2005. TRIM.FaTE and 3MRA Model Comparison: Mercury Fate and Transport. SETAC annual meeting, November 2005, Baltimore, MD.

Jones, B. 2004. Risk Assessment Provisions of the European Commission's REACH Regulations. Invited speaker for the September 2004 Risk Assessment Symposium in Montreal, Canada, sponsored by the American Industrial Hygiene Association.

Cook, R., Jones, B., Cleland, J. 2004. A Cohort-based Approach for Characterizing Lifetime Inhalation Cancer Risk from Time-varying Exposure to Air Toxics from Ambient Sources. *Environmental Progress* 23(2):120-125. American Institute of Chemical Engineers.

Burch, D.F., Lee, R.M., Jones, B., Dusetzina, M. 2003. TRIM.FaTE Application and Model Comparison for Organic Compounds and Mercury. SETAC annual meeting, November 2003, Austin, TX.

Murphy, D.L., Jones, B., Lee, R.M., Burch, D. 2003. TRIM.FaTE Test Case: Distribution of Mercury Mass and Concentrations Among Environmental Compartments. SETAC annual meeting, November 2003, Austin, TX.

Langstaff, J.E., Lee, R.M., Maddalena, R.L., Jones, B.L., Murphy, D.L. 2003. TRIM.FaTE Test Case: Sensitivity Analysis Using Steady-state Solutions. SETAC annual meeting, November 2003, Austin, TX.

Laurenson, J.P., Jones, B.L., Kauffman, R.M., Schnick, R.A. 2003. Development and Use of the Aquaculture Risk Information System (AQRIS) for Prioritizing Import Sampling and Analysis. Society for Risk Analysis annual meeting, October 2003.

Murphy, D.L., Maddalena, R., Langstaff, J., Jones, B., Lee, R.M., Eyth, A., Lyon, B.F., McVey, M., Laniak, G. 2002. Evaluation of the TRIM.FaTE Multimedia Model: A Mercury Case Study. International Society of Exposure Assessment/International Society of Environmental Epidemiology annual meeting, August 2002.

Cook, R., Jones, B., Cleland, J. 2002. A Cohort-based Approach for Characterizing Lifetime Inhalation Cancer Risk from Time-varying Exposure to Air Toxics. Air and Waste Management Association Annual Meeting, June 2002.

Lee, M., Burch, D., Jones, B., Lyon, B., Bennett, D., Murphy, D. 2000. Model-to-Model Evaluations for TRIM.FaTE. Society for Risk Analysis annual meeting, November 2000.

Contributing author to Swanson, M., Socha, A. (eds.). 1997. *Chemical Ranking and Scoring: Guidelines for Relative Assessments of Chemicals*, SETAC Press.

Singh, R., Jones, B. 1994. A Method for Characterizing Current and Future Population Risk Due to Long-term, Time-varying Exposures. Society for Risk Analysis annual meeting, December 1994.

Hegner, R., McVey, M., Jones, B. 1990. Comparison of Criteria for the Protection of Aquatic Life with Drinking Water Standards and Criteria and with Quantitation Limits. Society of Environmental Toxicology and Chemistry annual meeting, November 1990.

Wyngarden, S., Ward, W., Jones, B. 1990. Survey of Ecological Damages and Risks at Hazardous Waste Sites. Society of Environmental Toxicology and Chemistry annual meeting, November 1990.

Laurenson, J., Cheney, C., and B. Jones. Risk Assessment Guidance for Superfund (RAGS): Overview and Process. Presented at the 9th annual conference, Society of Risk Analysis. October 1990.