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

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION
121 7th Place East, Suite 350
St Paul MN 55101-2147

LeRoy Koppendrayer	Chair
Marshall Johnson	Commissioner
Kenneth Nickolai	Commissioner
Phyllis Reha	Commissioner
Thomas Pugh	Commissioner

IN THE MATTER OF A PETITION BY EXCELSIOR ENERGY, INC. FOR APPROVAL OF A POWER PURCHASE AGREEMENT UNDER MINN. STAT. §216b.1694, DETERMINATION OF LEAST COST TECHNOLOGY, AND ESTABLISHMENT OF A CLEAN ENERGY TECHNOLOGY MINIMUM UNDER MINN. STAT. §216b.1693	Docket No. E6472/M-05-1993

DIRECT TESTIMONY AND EXHIBITS OF EDWARD A. GARVEY

ON BEHALF

OF THE MINNESOTA DEPARTMENT OF COMMERCE

SEPTEMBER 5, 2006

DIRECT TESTIMONY OF EDWARD A. GARVEY
DEPUTY COMMISSIONER, DEPARTMENT OF COMMERCE

EXCELSIOR ENERGY, INC. PURCHASE POWER AGREEMENT

DOCKET NO. E6472/M-05-1993

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I. BACKGROUND AND PURPOSE

Q. Please state your name.

A. My name is Edward A. Garvey.

Q. By whom are you employed?

A. I am employed by the Minnesota Department of Commerce (the Department or DOC) as Deputy Commissioner and lead the Department's Energy and Telecommunications Division. My office is located at Suite 500, 85 7th Place East, St. Paul, Minnesota 55101.

Q. What is your educational and professional background?

A. I have served in this role since January 2003. Prior to that, with a brief private consulting interlude, was a member of the Minnesota Public Utilities Commission. I served on the Commission for almost 6 years, from February 1996 to August 2002; for three of those years I served as the Commission's chair. My additional employment history is list in the Exhibit ___ (EAG-1.) As for education, I have a BA and JD from the University of Minnesota and an MBA from the University of St. Thomas.

Q. What are your responsibilities as Deputy Commissioner for Energy and Telecommunications at the Department?

A. I lead a division of roughly 80 people who implement the state's energy and telecommunications policies. This includes overseeing the disbursement of energy assistance money, siting and routing authorities, utility oversight and regulation, and the

state's energy information office. I report to the Commissioner of Commerce, Glenn Wilson, and through him to Governor Pawlenty, so I spend a large part of my time providing public policy advice to the Governor, legislators, the Public Utilities Commission and the general public on energy matters.

Q. Do you usually provide testimony on behalf of the Department in dockets?

A. No; it is not usual. In fact, this is the first time I have given testimony on behalf of the Department.

Q. So, why are you giving testimony now, in this docket?

A. I am testifying for several reasons:

1. First, the proposal to build the Mesaba facility is very important and a final decision can and should be made in light of the state's overarching energy policies;
2. Second, to offer an analytical public interest framework for handling questions raised by the very important Mesaba project;
2. Third, to outline a number of energy challenges confronting the state in the next 5-15 years and explain how the Mesaba project could fit into the State's energy policy and alleviate some of those energy challenges;
4. Fourth, to list the benefits of the Mesaba Project and its IGCC technology to the Arrowhead Region and the State of Minnesota; and

5. Finally, to introduce the other Department Witness, Dr. Eilon Amit, and put his analysis and testimony into context of the Department's overall public policy perspective.

II. MINNESOTA ENERGY POLICY GOAL AND CHALLENGES

Q. Deputy Commissioner Garvey, please share with us the Minnesota's overarching electricity policy goal.

A. Minnesota's overarching electricity policy goal is to create and maintain a reliable, low cost and environmentally-superior electricity system. Each of these terms means specific things. A reliable electricity system is one that "keeps the lights on" by avoiding black-outs and offers high quality power to all consumers. A low cost electricity system is one that provides electricity at prices that consumers can readily afford and allows our businesses and industries to effectively compete in the national and international marketplace. An environmentally-superior electricity system is one that reduces (and ideally, eliminates) the adverse environmental consequences of the generation, delivery and use of that electricity. All three elements are essential all the time. They are of equal importance; no one element is given primacy of the others.

Q. This sounds like a very complicated policy to implement. Is it and how does it fit into this docket?

A. Yes, it is both complicated and difficult. The state's electricity system is large and complex with many components. Thus, from a policy perspective, it is a perpetual balancing act between reliability, cost and environmental-superiority. The Department

recognizes that there is no magic formula or single electric generation technology that, by itself, meets all three aspects firmly. As a result, trade-offs must be made and measured, competing interests weighed and balanced, individual projects evaluated on both their individual merits and in the larger context of the state's energy policies. So it is with the Mesaba project: it should be evaluated on its individual merits and how it fits into the state's larger, longer-term energy needs and policies.

Q. Earlier, you mentioned that you would offer "an analytical public interest framework for handling questions raised by the very important Mesaba project." What did you mean by that?

A. The size and significance of the Mesaba project has triggered a number of issues and legal questions that the parties, including the Department, will debate and offer advice on in the course of this docket. But the question is whether the project is in Minnesota's long-term interest, and more specifically in the interest of Xcel Energy's ratepayers as guided by the statutes. To make this determination, the Department will need to answer three questions before it can make a final recommendation to the Public Utilities Commission:

1. Do the terms and conditions of the Power Purchase Agreement between Excelsior and Xcel Energy appropriately balance the economic risks and benefits of the construction and operation of the Mesaba facility, thereby protecting the ratepayer?
2. Are the costs of the electricity produced by Mesaba and borne by Xcel Energy rate payers under the PPA reasonable, fair and appropriate?

3. Does the Mesaba facility constructively and positively fit the state's long-term electricity policy of a reliable, low cost and environmentally-superior electricity system?

If the ultimate answers to all of these questions are "yes," then the Commission should find Mesaba in the public interest.

Q. What challenges do you foresee in the next five to fifteen years that impact the state's energy policy goal?

A. I see a number of challenges ahead, with some already here or on the verge of being here. I'll list a few specific ones in a moment but the gist of the challenges is that Minnesota and regional electricity systems needs to significantly expand and upgrade its electricity infrastructure to meet the present and future demand and these expansions and upgrades must be made at a time when there will be increased (appropriately so) environmental scrutiny on how they are done. To answer the specific question, among the challenges I see, there are:

- Volatile natural gas prices due to high demand, supply and distribution uncertainties, and weather events which make it risky to rely too much on natural gas as a fuel for electrical generation.
- Stricter air pollution emissions laws are likely to impact the operations and costs of many current and future electricity generating facilities, especially coal-fueled facilities. For, example, Minnesota has adopted one of the strictest mercury emission reduction laws in the country is likely to affect

some of the state's coal-based electricity facilities. Reductions of greenhouse gas emissions are also likely in the next few years.

- The electric transmission "grid" today in Minnesota and our region is essentially operating at full capacity. Already, there are some specific areas not able to keep up with the demands made on them. A primary example is the constricted transmission system that serves the Buffalo Ridge area where most of Minnesota's wind turbines are located.
- Like our transmission grid, our baseload generation fleet in Minnesota and in the region is also running at full capacity. The Department agrees with the region's utilities that predict that more baseload will be needed in the next five to fifteen years to keep up with expected demand.
- Almost all utilities that file integrated resource plans in the State project continued growth in electricity usage in their service territories in the next fifteen years. This correlates to information by the Metropolitan Council that forecasts that the Twin Cities metropolitan area may gain up to a million new inhabitants by the year 2030 (Exhibit No. ___ (EAG-2.). Expected growth also is understandable simply because our entire economy and today's lifestyles are very much technology-supported, and becoming more so all of the time, and most of that technology requires reliable electricity.

Q. Does the Department believe the Mesaba project could help meet the state's electricity challenges?

A. Yes. The Mesaba project could have an important place in helping meet Minnesota's energy challenges.

Q. Could you provide more specifics?

A. Certainly. Above I stated that the State's energy policy goal strives for (1) reliable (2) low cost, and (3) environmentally superior energy. I will address Mesaba's applicability to each of these three aspects separately.

A. FIRST ELECTRICITY POLICY ELEMENT -- RELIABILITY

Q. Please go on.

A. The Mesaba applicants have taken many steps to ensure that the plant produces reliable baseload electricity. Among the "extra" reliability steps included in the proposed project are:

- Mesaba is designed to generate electricity using four different types of fuels that come from four different sources:
  - Bituminous coal from domestic supplies in the eastern U.S.,
  - Sub-bituminous coal from the domestic supplies in the western U.S.,
  - Petroleum coke (pet-coke), which is available as a by-product of Minnesota's and the region's gasoline refineries, and
  - Natural gas from either the southern U.S. or from Canada.

  This should ensure that if one source of fuel is disrupted or becomes uneconomic, Mesaba will be able to switch to the most available and

economic fuel. The first three types of fuel may also be mixed together, to more efficiently manage differing inventory levels.

- The Mesaba project is being designed to operate two 600MW units (this proceeding addresses the first of the two units.) Each of the two generating units will be supported by three coal gasification "trains." The project proposers recognize that the gasifiers represent the most unique technology aspect to this project and, as such, may be subject to some down-time during start-up as well as maintenance during operation. The third train is included specifically to ensure that if one train is down, the extra train can take over and maintain gasified fuel to the generators.
- While the multi-fuel fed gasifiers are a unique new technology, the raw fuel delivery (coal via railroad, pet-coke via truck and natural gas via pipeline) as well as the electrical generator turbines themselves are the same technologies and facilities that are used at any traditional coal plant. Thus, there should be no more risk to reliability for these facilities as there is for any other baseload coal plant.

B. SECOND ELECTRICITY POLICY ELEMENT – LOW COST

Q. Please discuss the "low cost" element in the context of the Mesaba plant

A. The Department, through the testimony of Department witness Dr. Eilon Amit, performed a review of the terms and analysis of the costing elements set forth in the PPA. Please see Dr. Amit's testimony for a more in-depth discussion on PPA term issues and the cost comparison. Dr. Amit identified some concerns regarding the PPA's terms

dealing with financial and operating risks. I look forward to working with Excelsior and other parties in the course of this docket to address those concerns.

Dr. Amit also constructed a cost comparison between the PPA cost and the projected costs of other comparably-sized proposed coal baseload plants. Dr. Amit found that the Mesaba PPA is higher cost than the comparison coal plants. This is a logical finding because of the gasification technology (with a third train) and multiple fuel capability (i.e., constructing a natural gas pipeline) was, naturally, not included in the comparison plants' estimated costs. While the Department's initial cost analysis finds that Mesaba's costs to be higher than comparable facilities, it does not mean the Department or the Commission cannot find it in the public interest. I say this for two reasons. First, through this contested case process the cost of not only Mesaba but the comparable facilities will be tested and adjusted as parties provide further information and do deeper analysis. My second reason is that, as I mentioned before, the ultimate decision on Mesaba is a public interest determination. Cost is one element in that determination but that does not necessarily require the lowest cost or mean that a higher cost cannot be justified by the other benefits that Mesaba can bring to the state's electricity system.

Q. Beyond the terms and conditions in the PPA and it's price, are you aware of any other material cost of the project which should be factored into the overall public interest determination?

A. Yes. the PPA proposes to begin in 2011. According to Xcel's Commission-approved Integrated Resource Plan (IRP) in Docket No. E0002/RP-04-1752 (Ordering Paragraph 10, page 17,) the Company will need to acquire baseload energy (of 375MW) but not

until 2015. So there appears to be a timing mismatch between when customers begin paying for the PPA's baseload power and when they will need it. Dr. Amit addresses this issue in greater testimony in his testimony.

Q. You have spoken of the benefits of the Mesaba plant, what are those benefits?

A. Because, as I mentioned before, this is a "public interest" decision of which the cost is only one part of that decision. The benefits of the project are also a very important consideration. There are three types of benefits. First, as I have mentioned already: Mesaba can provide electricity to a state and region that needs additional energy and capacity in the coming decades. A second benefits is the economic impacts of the construction and operation of this plant to the region and the State should be taken into account. This is borne out in Minn. Stat. 216B.1694, Subd. 3, part (7) that the Commission should include in its public interest determination, "…the project's economic development benefits to the state'…" The third benefit is the positive environmental aspects of the Integrated Coal Gasification Combined Cycle (IGCC) technology Mesaba will use to generate that electricity.

Q. Could you provide an example of "economic development benefits to the state"?

A. Such impacts would include, for example, the number of jobs generated by the plant's construction and ongoing operation and the resulting tax base to the state and local communities.

Q. Have there been any economic studies performed on the economic impacts of the project on the region and the State?

A. The Department has not done such an economic impacts study, but Excelsior retained the Labovitz School of Business and Economics, University of Minnesota-Duluth, to provide an analysis of the economic development impact of the IGCC project on the Arrowhead Region and on Minnesota. This report is provided as Exhibit B, University of Minnesota Duluth's Analysis of the Mesaba Project's Economic Benefits (Labovitz Report or Report), Volume I of Excelsior energy's Report to the Commission.

Q. Have you read the Labovitz Report?

A. Yes, I have, and Department staff also have read the Labovitz Report.

Q. Can you summarize the report?

A. The Labovitz Report analyzes both the construction spending and the operational activities impacts of the Mesaba project on the Arrowhead region as well as on the state of Minnesota. The Report looks at the spending that will take place to construct and operate the plant. It also takes into account lesser impacts across all relevant sectors (i.e., agriculture, mining, etc.) as well as interactions across the relevant industries and services (i.e., heavy machinery, food, housing, medical, etc.).

Q. What does the Report find?

A. The Labovitz Report identifies net benefits during the construction phase at close to a billion dollars for the Arrowhead region and slightly over one billion dollars for

Minnesota. The Report also finds net benefits for a typical year of operation of approximately a quarter of a billion dollars for both the region and the State. (See Labovitz Report, Volume I, Exhibit B, Executive Summary, pp.v-vi.)

Q. Do you agree with the findings of the Labovitz Report?

A. It seems very credible and well done. The only minor item I would note is that on page 3 of the Report its says, "Local or export based purchases that represent transfers from other potential local purchases are not counted." This would mean that the results may (or may not be) slightly overstated for the State if resources where simply moved from one part of the State to the Mesaba Plant. Having said that, I have no reason to question its bottom line. More importantly, it supports common sense: building a large electricity facility like Mesaba in Minnesota will have very, very significant beneficial economic impacts on the region and state.

C. THIRD ELECTRICITY POLICY ELEMENT – ENVIRONMENTALLY SUPERIOR

Q. Commissioner Garvey, how does the "environmentally-superior" element apply to the Mesaba project?

A. This is where this project really shines! With the mercury poisoning warnings given to those who eat fish pulled from Minnesota lakes and the world-wide attention being given to carbon dioxide (CO2) emissions contributing to global warming, environmentally superior energy generation choices are more important than ever before. The IGCC technology that Mesaba uses would move us a few steps toward that ultimate "zero environmental impacts" future.

Q. Why do you say that the Mesaba plant, using IGCC technology, may lead us a little closer to a future of zero environmental impacts?

A. As shown on pages 27-35 of Volume I, Section I of the initial petition, the IGCC technology is not yet a "zero emissions" technology, however, its emissions levels for criteria pollutants are lower than for comparably-sized supercritical pulverized coal plants.

Q. How does the IGCC technology achieve lower emissions levels than other coal technologies?

A. Page 20, Volume I, Section I of the initial petition says it succinctly, "Because IGCC cleans impurities from the syngas at a high-pressure, high-temperature stage in the process, clean-up is much more efficient and manageable when compared to conventional technologies, which must clean up flue gases after combustion has occurred."

Q. You mentioned mercury emissions before. The 2006 Legislative Session mandated that mercury emissions must be decreased by 90 percent at the State's two largest coal-fired generating plants—Sherco and Boswell. What impact would that law have on Mesaba if it was extended to all coal-fired plants, including Mesaba?

A. Mesaba is projected to capture around 90 percent of the potentially emitted mercury (Volume I, Section I, page 28 of the initial petition) because, as I mentioned above, the mercury would be captured with other pollutants in a concentrated form in the

gasification process rather than, as in other coal technologies, combusted and then captured out of the flue gas send into the atmosphere.

Q. You also mentioned global warming and CO2 earlier. Does the IGCC technology has a role in curtailing CO2 emissions and, potentially, global warming or, at least, not contributing to the problem?

A. One of the most impressive features of the IGCC technology, in my view, is that the technology emits lower levels of CO2 than other coal-fueled generating plants. Plus, capturing the CO2 (which will allow for its sequestration) is much more readily possible for a facility like Mesaba than other technologies. Although the costs of capturing the carbon emissions (and potentially sequestering it) are not included in this PPA, Excelsior has noted the Commission's interest in the subject and " …engaged experts at the University of North Dakota (UND) to produce a study that looks at our specific plant, and that produces a plan of sort of what would you do and what is it likely to cost if and when there's regulation and therefore makes sense to actually capture [CO2]." (statements of Mr. Thomas Osteraas, General Counsel for Excelsior, in the July 28, 2006 Prehearing Transcript pp. 33-34.) Since the UND report has not been introduced into the record to date, Excelsior will have to tell us when that report is scheduled to be completed and whether it will be in time for introduction into this record or the record for the Unit 2 proceeding which may commence as soon as the first quarter 2007.

III. SUMMARY

Q. You have addressed all three elements of the State's energy policy goals and how the Mesaba PPA fits into those goals. Would you care to summarize?

A. Yes. The public interest is best served through a reliable, low cost and environmentally superior electricity system. This requires balancing three often competing elements. It also requires the assessment of the substantive merits of individual resource projects, in this case the Mesaba facility through the filed PPA, and how Mesaba (or any resource project) fits into the state's overall long term electricity system. I have discussed some positive aspects related to Mesaba's reliability, economic development impacts and environmental superiority. I have also noted that the Department's other witness, Dr. Amit, has submitted testimony noting that several terms in the PPA need improvement and that Mesaba's costs are above those of comparable facilities. Neither point is fatal to a final positive public interest determination. The PPA terms can be resolved through negotiation and amendment. Mesaba's higher costs may not make it contrary to the public interest. Nor, on their face, are Mesaba's higher costs automatically contrary to the public's interest since cost is but one of the factors that should be considered in the public interest analysis. I am confidant that through the multiple opportunities in this process these costs (both of Mesaba and the alternatives) will receive robust scrutiny by the Parties. The result of this scrutiny may improve Mesaba's already impressive standing so that it may become part of Minnesota's reliable, low-cost and environmentally-superior electricity system.

Q. Deputy Commissioner Garvey, does this complete your testimony?

A. Yes, it does.

EDWARD A. GARVEY
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Edward has served as Deputy Commissioner for Energy and Telecommunications Regulation at the Minnesota Department of Commerce since his appointed there in January 2003. Prior to that, he served on the Minnesota Public Utilities Commission from January 17, 1997, including three years as Chair of the Commission, from February 1, 1997 to December 3, 1999.

Prior to his appointment to the Commission, Edward served as Director of the Minnesota Office of Environmental Assistance from January 1995 to January 1997. He also served as a policy advisor to former U.S. Senator Durenberger, (May 1987 to November 1990 in the Washington DC office and October 1993 to December 1994 in the Minnesota office). Edward also practiced law at the Minneapolis law firm of Gray, Plant, Mooty, (December 1990 to September 1993).

Edward received his Bachelor of Arts degree in 1983 and Law degree in 1986, from the University of Minnesota and his Masters in Business Administration from the University of St. Thomas in St. Paul, Minnesota in 1998.

While on the MN PUC, Edward was very active in the National Association of Regulatory Utility Commissioners' (NARUC), serving as Vice-Chair of the Committee on Energy Resources and the Environment, Chair of the NARUC Subcommittee on Administration, and a member of the NARUC Board of Directors, a member of the EPRI Advisory Council and the Board of Directors of the National Regulatory Research Institute (NRRI). Edward also represented NARUC at the international climate change negotiation meetings.

Edward, his wife, and two daughters reside in St. Paul.

Metropolitan Council

Building communities that work

TWIN CITIES AREA FORECAST FACT SHEET

January 2004

HISTORIC POPULATION GROWTH TRENDS

U. S. Census Data	Year	% Change	Population Change	Total Population
The 2000 census figures revealed that the Twin Cities 7-county Metro Area experienced its largest population growth in any decade in its history. The 353,333 growth recorded in the 1990s surpassed the growth of the 1960s (the previous record) by just over 4,000 people. The growth rate inched up marginally from 15.3% to 15.4%, but is still well below the rapid growth rates of the 1950s and 1960s. These figures reflect the final 2000 census figures, in which very minor revisions were made to a dozen cities.	1940			1,000,558
	1940-1950	18.5%	185,136	
	1950			1,185,694
	1950-1960	28.7%	339,306	
	1960			1,525,297
	1960-1970	22.9%	349,315	
	1970			1,874,612
	1970-1980	5.9%	111,261	
	1980			1,985,873
	1980-1990	15.3%	302,856	
	1990			2,288,729
	1990-2000	15.4%	353,333	
	2000			2,642,062
Metropolitan Council Forecasts				
The new 2000 census numbers are about 42,000 above the Metropolitan Council's 2000 forecast for the region made in 1995. Almost all of this unanticipated growth was due to in-migration of people under age 35. The 25-34 age group had nearly 25,000 more people than pre-census forecasts. The Twin Cities strong economy is what most likely drew these people to the area. The higher census figures require some upward revision. Because the unexpected growth was all in age groups that are of childbearing ages or will be in the forecast period, the impact on future growth is stronger than if the added growth had a more balanced age composition. Even so, the continued aging of the baby boom generation is still going to play a role in slowing the rate of growth over the next 30 years. How age shifts affect household formation and the demand for different types of housing will be of vital interest in forecasting how the region will grow in the next thirty years. These forecasts also reflect moderate increases over those made in 2002 (see next section).	2000-2010	13.7%	363,000	
	2010			3,005,000
	2010-2020	10.9%	329,000	
	2020			3,334,000
	2020-2030	8.2%	274,000	
	2030			3,608,000
	1980 to 2000	33.9%	656,189	
	2000 to 2020	26.2%	692,000	
	1970 to 2000	40.9%	767,450	
	2000 to 2030	36.5%	966,000	