



Minnesota Center for Environmental Advocacy

The legal and scientific voice protecting and defending Minnesota's environment

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September 5, 2006

The Honorable Steve M. Mihalchick
Office of Administrative Hearings
100 Washington Square, Suite 1700
Minneapolis, MN 55401-2138

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

Dear Judge Mihalchick:

Enclosed for filing please find (1) the Direct and Rebuttal Testimony of J. Drake Hamilton and attached Exhibits and (2) the Direct Testimony of Nancy Lange and attached Exhibit. The testimony is submitted on behalf of the Izaak Walton League of America – Midwest Office, Fresh Energy, and Minnesota Center for Environmental Advocacy, in the above referenced proceeding.

Sincerely,

Kevin Reuther

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE PUBLIC UTILITIES COMMISSION

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

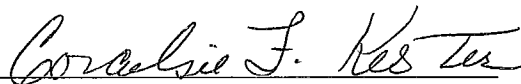
**MPUC Docket No. E-6472/M05-1993
OAH Docket No.12-2500-17260-2**

Coraelsie F. Kester, being duly sworn, says that on the 5th day of September, 2006, she delivered via U.S. Mail the following:

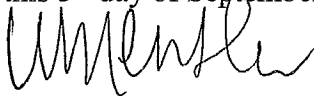
**Direct and Rebuttal Testimony of J. Drake Hamilton and attached Exhibits
Direct Testimony of Nancy Lange and attached Exhibit**

on the following persons, in this action, by e-mailing to them and/or mailing to them a copy thereof, enclosed in an envelope, postage prepaid, and by depositing the same in the post office at St. Paul, Minnesota, directed to said persons at the last known mailing address of said persons:

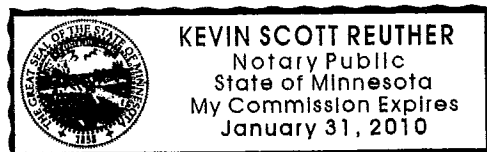
All Persons on the Attached Service List


Coraelsie F. Kester

Subscribed and sworn to before me
this 5th day of September, 2006.



Notary Public



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STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE PUBLIC UTILITIES COMMISSION

In the Matter of a Petition by Excelsior Energy, Inc.
for Approval of a Power Purchase Agreement Under
Minnesota Stat. § 116B.1694, Determination of
Least Cost Technology, and Establishment of a
Clean Energy Technology Minimum Under Minn.
Stat. § 216B.1693

**Direct and Rebuttal Testimony of
J. Drake Hamilton**

**On Behalf of
Izaak Walton League of America – Midwest Office
Fresh Energy
Minnesota Center for Environmental Advocacy**

September 5, 2006

1 **TESTIMONY OF J. DRAKE HAMILTON**

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

3 A. J. Drake Hamilton, Science Policy Director, Fresh Energy. Our business address
4 is 408 Saint Peter Street, Suite 220, Saint Paul, Minnesota 55102.

5 **Q. Would you please describe your educational and professional background.**

6 A. I have served for 10 years as policy director or science policy director for Fresh
7 Energy, formerly known as Minnesotans for an Energy-Efficient Economy.
8 Fresh Energy is a private nonprofit organization working to lead the transition to
9 a clean, efficient energy system, one that will support healthy economies and a
10 clean environment. My professional responsibilities include scientific analysis
11 and communication of scientific information to many audiences, as well as policy
12 development of energy solutions that could reduce greenhouse gas emissions and
13 build the region's economy. I serve on the board of directors of the United States
14 Climate Action Network, and in 2005 was selected for the International Leader
15 Program of the European Union, and spent fall 2005 studying global warming
16 policy solutions. In 2005 I participated as a nongovernmental observer in the
17 international climate change negotiation meetings hosted by the United Nations in
18 Montreal. I am the principal author of Fresh Energy's publication, *Playing with*
19 *Fire: Climate Change in Minnesota.*
20 Prior to joining Fresh Energy's staff in 1995, I was Assistant Professor of
21 Geography and Environmental Studies at The George Washington University. I
22 hold a Bachelor's degree in geography from Dartmouth College, and a Master's

1 degree in geography from the University of Minnesota. My graduate work
2 focused on climatology and water resources.

3 **Q. On whose behalf are you testifying?**

4 A. I am testifying on behalf of the Izaak Walton League of America, Fresh Energy,
5 and the Minnesota Center for Environmental Advocacy.

6 **Q. To what issues are you testifying in this proceeding?**

7 A. The primary focus of my testimony is to provide evidence (1) that there is
8 national and international consensus that global climate change is resulting from
9 human activities; (2) that carbon dioxide emissions are a primary contributor to
10 global climate change and must be stabilized and ultimately reduced to avoid
11 dangerous consequences from global climate change; (3) that coal-burning energy
12 facilities such as the one proposed by Excelsior Energy are a significant source of
13 carbon emissions; and (4) that it is very likely that in the near future government
14 regulations will be applied to carbon emissions resulting in significantly increased
15 costs for energy from coal-based sources.

16 In addition, I am offering rebuttal testimony to Excelsior Energy's witnesses
17 Schrag, Weissman and Osteraas.

18 **Q. Can you please provide a brief description of what is meant by global**
19 **climate change?**

20 A. Climate is influenced by many factors, both natural and human. Climate
21 scientists are now convinced that human decisions to burn fossil fuels, such as
22 coal, oil, and natural gas, serve as the primary drivers that are forcing the climate
23 to change. Burning fossil fuels releases large amounts of heat-trapping emissions

1 of carbon dioxide and other greenhouse gases. These greenhouse gases build up
2 in the atmosphere and trap heat, causing the climate to change at an unusual,
3 rapid rate. While some greenhouse gases are natural and desirable in our
4 atmosphere – they produce the so-called greenhouse effect – climate scientists
5 point to an exacerbated greenhouse effect which could fundamentally reshape the
6 planet’s climate, changing forever the landscape, water resources, forests,
7 wildlife, and agricultural lands of the planet. The identification of human
8 decisions as main drivers of climate change clearly defines the problem as one
9 that, to a large extent caused by humans, is within our power to address and
10 reduce the most damaging impacts.

11 **Q. How do carbon dioxide emissions contribute to global climate change?**

12 A. According to the United States Department of Energy, carbon dioxide is one of
13 the most significant of the greenhouse gases contributing to global climate
14 change. Emissions from the burning of fossil fuels (such as coal, oil, and natural
15 gas) are responsible for about 80 percent of the yearly carbon dioxide emissions
16 worldwide and in the United States. Carbon dioxide released into our atmosphere
17 remains there 100 years or more, trapping more and more heat, and driving the
18 climate. According to the World Meteorological Organization, since 1860, global
19 carbon dioxide emissions have increased more than 1000 percent, as humans have
20 burned more and more fossil fuels.

21 **Q. Do you believe that carbon emissions are likely to be regulated in the near**
22 **future?**

23 A. Yes.

1 **Q. On what do you base your belief?**

2 A. Attached as Exhibit A is a May 2006 report by Synapse Energy Economics
3 entitled “Climate Change and Power: Carbon Dioxide Emissions Costs and
4 Electricity Resource Planning.” The report sets out multiple reasons for the
5 conclusion that future carbon regulation in the United States is a certainty. The
6 report documents the widespread scientific consensus that global climate change
7 is real and that prompt action, including reducing the emissions of carbon
8 dioxide, must be taken to address global climate changes. International regulation
9 of carbon emissions has already begun. Although the United States has not
10 ratified the Kyoto Protocol, pressure is mounting on the United States to take
11 immediate steps to regulate carbon emissions. The United States, at the 2005 G8
12 Summit, signed a statement pledging “to act with resolve and urgency” to reduce
13 greenhouse emissions. Bills have been introduced in Congress that would assign
14 a financial penalty to carbon emissions. And many states and local governments
15 have already taken steps toward the regulation of carbon emissions. As
16 concluded in the report, all of these trends indicate that federal laws limiting the
17 emission of greenhouse gases are very likely in the near future. A recent study by
18 The Union of Concerned Scientists, “Gambling with Coal and How Future
19 Climate Laws Will Make New Coal Power Plants More Expensive,” attached as
20 Exhibit F, comes to the same conclusion.

21 **Q. Is it likely that carbon regulations will be applied to coal-fueled electricity**
22 **plants?**

1 A. Yes. Nearly 40% of the carbon dioxide emissions in the United States come from
2 coal-fueled power plants. Every bill for the regulation of greenhouse gas
3 emissions that has been introduced in Congress would cover CO2 emissions from
4 coal-fired power plants. There are many good reasons to focus regulations on
5 coal plants, most notably that a relatively small number of large plants contribute
6 such a significant percentage of emissions.

7 **Q. Is it likely that future carbon regulations would apply to the new IGCC plant**
8 **proposed by the Mesaba project proponents?**

9 A. Yes. There would be no basis for exempting IGCC facilities from future carbon
10 regulation. IGCC is a technology to derive energy from coal that produces
11 essentially equivalent levels of carbon dioxide emissions as standard coal-burning
12 technologies. With regard to carbon dioxide emissions, the only advantage IGCC
13 technologies have over other coal-burning technologies is the potential ability to
14 separate carbon dioxide from the gas stream prior to release into the atmosphere,
15 thus allowing carbon capture and storage as a possibility. With retrofits to an
16 IGCC plant, there is potential to capture the carbon that has been separated, and
17 under site-specific circumstances, to store the carbon underground. The amount
18 of carbon dioxide produced as a pollutant from an IGCC facility, however, is not
19 reduced. If an IGCC facility were to actually capture and sequester a portion of
20 its carbon emissions, then the overall cost associated with carbon regulation
21 would be lower. However, carbon capture and sequestration itself would be
22 expensive and likely be subject to its own set of regulations.

1 **Q Are there reliable estimates about the likely cost of future carbon**
2 **regulations?**

3 A. Yes. The Synapse report (Exh. A) discusses the likely expense of future carbon
4 regulations. It concludes that it is very likely that the federal government will
5 impose a cap-and-trade system in which carbon emissions are capped and
6 allowances are sold on an open market. Synapse developed cost projections in
7 the low-, mid- and high ranges for utility planning purposes. Synapse's
8 conclusions, averaged over a thirty-year period, are that in the best case scenario
9 regulations will impose a \$8.50 per ton cost on carbon emissions; in the mid-
10 range that figure is \$19.60 per ton, and in the case of high-cost regulations, the
11 thirty-year average is \$30.80 per ton of carbon emitted. The likelihood of future
12 carbon regulation and its expense is also demonstrated by the Union of
13 Concerned Scientists (Exh. F).

14 **Q. How do the costs associated with carbon regulation affect the cost of coal-**
15 **based power?**

16 A. Significantly. The Synapse study, assuming a base cost of deriving energy from
17 coal to be \$47.50 per megawatt hour, concluded that in the best case scenario the
18 increase above the base price would be 17%; in the mid-range regulations would
19 increase the price by 40%; and in the case of high-cost regulations the increase
20 would be 62%.

21 **Q. Is there any indication whether it is more likely that the low-, mid- or high-**
22 **cost regulations will be enacted in the future?**

1 A. It is important to note in the Synapse study that the researchers based projections
2 on existing proposals. Those proposals are, in fact, quite modest compared to the
3 emissions reductions that will be required to achieve stabilization of atmospheric
4 concentrations of the greenhouse gases and prevent dangerous climate change.
5 Thus, it is likely that initial legislation will be consistent with the proposals now
6 on the table; however, future regulation, if it is to address the actual emissions
7 reductions required, will have to be more stringent. Therefore, the Synapse study
8 averaging the costs of carbon regulations over the coming thirty years based on
9 existing federal proposals likely understates the actual costs of such regulations
10 over the coming thirty-year period.

11 **Q You stated that carbon capture and sequestration would be expensive. On**
12 **what do you base that belief?**

13 A It is widely agreed that the capture and sequestration of carbon from coal-burning
14 power plants, including those using IGCC technologies, will add considerable
15 expense to the output from the plants. Attached as Exhibit B is a report from the
16 Intergovernmental Panel on Climate Change that discusses carbon capture and
17 sequestration. The IPCC review indicates that carbon capture, excluding
18 transport or sequestration, increases the capital costs of a new IGCC plant by
19 between 19 – 66%. First, it is important to note that available technology does
20 not capture 100% of the carbon produced from IGCC facilities. (According to
21 the IPCC, efficiency of available technologies suggests a removal rate of 85 –
22 95%. However, in Excelsior Energy's application to the Minnesota Pollution
23 Control Agency for an air permit, Excelsior stated that it would expect to capture

1 only 1/3 of the carbon its proposed project will emit should it implement a carbon
2 capture system.) Thus, carbon capture and sequestration does not avoid
3 completely any additional costs associated with future carbon regulations.
4 Second, the capture and sequestration themselves require energy. The IPCC
5 estimates that for a power plant that has access to geological or ocean storage, a
6 carbon capture and sequestration system would require 14 – 25% more energy to
7 operate, thus, decreasing the efficiency of the plant and increasing the cost of
8 each output unit. Third, there would be significant capital investment and
9 maintenance expenses associated with any capture and storage system.
10 Particularly if off-site storage is contemplated, the costs of engineering the
11 transport will be significant, as would be engineering, monitoring and
12 maintaining sequestration. Finally, there are probable external costs associated
13 with carbon sequestration, including risks of leakage and large-scale
14 environmental accidents/disasters should large amounts of carbon escape.

15 **Q Has it been demonstrated that carbon capture and sequestration is feasible**
16 **from the proposed Mesaba Project?**

17 A No. To my knowledge no one has assessed whether carbon capture and
18 sequestration is feasible from this particular site. However, based on statements
19 from those studying carbon sequestration it appears unlikely that carbon
20 sequestration would ever be a viable option for the Mesaba Project. First, the
21 location of this proposed plant is about as far as one could get in North America
22 from any of the possible sequestration sites. As is clear on the map attached as
23 Exhibit C, Minnesota contains no potential CO₂ reservoirs. The closest possible

1 reservoirs are to the south, in Iowa, and the west, in North Dakota. Excelsior
2 seeks to site this facility in Northeast Minnesota. This location makes absolutely
3 no sense if carbon sequestration is truly planned from this facility. Placing the
4 plant so far from all potential reservoirs increases, without basis, the costs of an
5 already very expensive proposition. In fact, an assumption built into the models
6 for evaluating the future cost and feasibility of carbon sequestration is that plants
7 will be built either over or within short distances from sequestration reservoirs.
8 As set out in the attached report, Exhibit D, "Identification of CO2 Sequestration
9 Strategies for the PCOR Partnership Region," the Plains CO2 Reduction
10 Partnership (PCORP), in which Excelsior participates, determined a "desired
11 distance" of less than 125 miles between carbon source and geologic sink. (p. 10).

12 **Q: Does this conclude your direct testimony?**

13 **A: Yes.**

14
15 **REBUTTAL TESTIMONY**

16 **Q: I now want to turn to the testimony you are offering in response to**
17 **Excelsior's witnesses. Tell us again which witnesses your rebuttal testimony**
18 **will address.**

19 **A: I am offering testimony in rebuttal of Excelsior's witnesses Schrag, Weissman,**
20 **and Osteraas.**

1 **Q:** As to Excelsior witness Schrag, what testimony do you have to offer?

2 **A:** In response to Professor Schrag's testimony, I offer two main points:

3 First, an inaccurate assumption underlies his testimony and conclusions as to
4 Excelsior's proposal: that Minnesota *needs* a new coal-fueled source of
5 electricity. While Professor Schrag states an overarching belief that it is
6 impossible to develop an electricity generation strategy for the United States that
7 does not rely on fossil fuels, that belief, assuming it to be true, does not justify the
8 addition of coal-fueled electricity at a time and in a place where it is not needed.

9 The Public Utilities Commission, less than three months ago, approved a resource
10 plan for Xcel Energy (the proposed recipient of Excelsior's output) which stated
11 that Xcel had a need for 375 megawatts of baseload beginning first in 2015. The
12 Plan is attached as Exhibit E. Xcel could likely meet this need by renewing its
13 contract with Manitoba Hydro, a source of electricity that emits minimal
14 greenhouse gases. Excelsior seeks to force Xcel to purchase 600 megawatts of
15 unneeded coal-fueled output starting in 2011 from a source that will add over 5
16 million tons of carbon dioxide to the atmosphere yearly. Nothing in this plan
17 requires Xcel or Excelsior to offset the new emissions by backing down other
18 coal-fueled sources. Excelsior's proposal will unnecessarily add to the global
19 warming consequences Professor Schrag aptly describes in his testimony. While
20 I agree with Professor Schrag about the "absolute imperative" to choose IGCC
21 technology over traditional pulverized coal technologies if and when necessity
22 calls for coal-fueled electricity, that choice is not presented here.

1 Second, Professor Schrag submits that it is “technically” feasible to capture and
2 sequester carbon as a way of using coal to generate electricity without
3 contributing greenhouse gases to the atmosphere. Excelsior and Professor Schrag
4 provide no information, however, about the *economic or environmental*
5 *feasibility* of carbon capture and sequestration (CCS) from a northeastern
6 Minnesota location, hundreds of miles from the nearest sequestration reservoirs
7 The costs of CCS from the remote location of the proposed facility are likely to
8 be much higher than from facilities more suitably sited for CCS because of the
9 absence of any nearby sequestration reservoirs, and no existing pipelines or other
10 infrastructure to use to transfer captured carbon. The Commission should take
11 seriously Professor Schrag’s suggestion to invest wisely based on a future world
12 with restrictions on carbon emissions. To do so would require that an economic
13 and environmental feasibility study for CCS from the proposed facility be
14 completed prior to making any decision approving any part of Excelsior’s
15 proposal. Again, as set out in the PCORP Report (Exh. D), the “desired distance”
16 is less than 125 miles between carbon source and geologic sink. It is
17 approximately 400 miles from the western proposed site at Taconite to the nearest
18 sequestration reservoir in North Dakota and much further to sites of actual
19 enhanced oil recovery sequestration projects in Saskatchewan, Canada.

20 **Q:** In response to Excelsior witness Weissman, what testimony do you have to
21 offer?

22 A: Mr. Weissman asserts in his testimony that coal (as opposed to natural gas) will
23 enjoy “relative price stability.” Mr. Weissman provides no basis for his assertion.

1 His polemic against natural gas, "A Critical Choice Point for Minnesota,"
2 chastises Xcel for failing to plan for additional coal-fueled power but fails to
3 analyze the projected costs of power from coal. As outlined in my earlier
4 testimony and the reports incorporated therein, as well as the testimony of
5 Professor Schrag, it is inevitable that the United States will begin, likely very
6 soon, to regulate carbon emissions. Indeed, Excelsior itself has stated that it
7 expects carbon to be regulated within the next ten years. Thus, stating that coal
8 offers "relative price stability" is simply false. Considerable volatility in the price
9 of burning coal is destined to occur in the near future. Absent consideration of
10 this fact, Mr. Weissman's arguments about the volatility of natural gas prices are
11 unpersuasive. Moreover, Mr. Weissman's arguments are redundant and
12 irrelevant inasmuch as they have already been made to and rejected by the
13 Commission in approving Xcel's resource plan. (Mr. Weissman states that his
14 report updates an earlier submission on Docket E002/RP-04-1752, Xcel's
15 resource plan.)

16 **Q: In response to Excelsior witness Osteraas, what testimony do you have to**
17 **offer?**

18 **A:** In response to Mr. Osteraas's testimony, I submit that there is no reason that the
19 Public Utilities Commission treat any of its decisions in this docket as "urgent."
20 The Commission is being asked to approve an enormous public investment (in
21 terms of direct subsidy and ultimately through the payments of ratepayers). This
22 is a decision that Minnesota ratepayers will live with for at least the next 50 years
23 and one that has environmental consequences world-wide. The gravity of the

1 Commission's decision counsels unhurried, thoughtful deliberation, not urgency.
2 What the world needs most urgently is a *reduction* of CO2 emissions, not another
3 5 million ton per year source.

4 The many unknowns associated with this proposal advise delay rather than
5 urgency. First, there is no need for the output Excelsior seeks to supply, clearly
6 suggesting that the Commission need not rush to a decision. Second, there has
7 been no showing that the major benefit this technology offers – carbon capture
8 and sequestration – is or will be feasible for the proposed project. The PCORP
9 study in which Excelsior is participating, is scheduled to release general findings
10 on feasibility in 2009. At a minimum, Excelsior should delay its request until it
11 can supply the Commission with more specific information about the feasibility
12 of carbon capture and sequestration. Third, it is in Minnesota ratepayers' interest
13 to be the "first" to employ IGCC technology only if the energy derived from this
14 source is truly necessary. While IGCC technology has advantages over
15 traditional coal-fueled power, it is still less desirable than renewable energy
16 sources such as wind, solar, and advances in efficiency which should all be
17 considered before turning to a coal-based option. In addition, technological
18 advances in coming years are bound to make the IGCC technology (as well as
19 carbon capture technology) more efficient and less costly.

20 The reasons for urgency suggested by Mr. Osteraas are contrary to the facts. The
21 Legislature, far from providing a directive to act quickly, believed that it would
22 take some time for the right project to be developed. The statute obliging Xcel to
23 purchase power from an IGCC facility does not sunset until 2012. In terms of

1 natural gas prices, Mr. Osteraas, like Mr. Weissman, ignores the fact – confirmed
2 by Excelsior’s own witness – that carbon regulation is on the horizon and will
3 significantly affect the price of burning coal. Finally, Mr. Osteraas asserts the
4 “need for new baseload capacity” to meet Minnesota’s future needs, a contention
5 that is wholly contradicted by Xcel’s recently approved resource plan. Attached
6 as Exhibit E is the PUC Order approving Xcel’s resource plan.

7 **Q: Does this complete your testimony?**

8 **A: Yes.**

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Izaak Walton League of America – Midwest Office
Fresh Energy
Minnesota Center for Environmental Advocacy**

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1 Pollution Control Agency's regulation of emissions as a result of its Total
2 Maximum Daily Load for mercury.

3 **Q. Can you please provide a brief background on what is meant by Total**
4 **Maximum Daily Load?**

5 A. A Total Maximum Daily Load, or TMDL as it is often referred to, is in lay terms
6 the clean-up plan the state is required to create for waters that are polluted. The
7 Clean Water Act requires states to develop a TMDL for lakes and streams that are
8 impaired. Mercury is a pollutant that has degraded nearly all lakes and streams in
9 Minnesota. The TMDL identifies the sources of the impairment and calculates
10 what level of pollutant load reduction is needed to eliminate the impairment. The
11 TMDL divides the total load allowable into allocations that are assigned to point
12 and non-point sources of the impairment.

13 **Q. What do you mean by point versus non-point sources?**

14 A. In the case of the mercury TMDL, point sources are those sources that discharge
15 mercury-containing effluent directly to a waterbody through a pipe or other man-
16 made conveyance, while non-point sources are facilities that emit mercury to the
17 air which is later deposited in the affected lake or stream.

18 **Q. When does a lake or stream get listed as "impaired" for mercury?**

19 A. A waterbody is "impaired" if the fish in the water body are not safe for human
20 consumption. In Minnesota, based on human health standards employed by the
21 Pollution Control Agency, a lake or stream is impaired if the fish have mercury
22 concentrations greater than 0.2 ppm in their tissue.

23 **Q: How does mercury present a health problem?**

1 A: Mercury cycles through air, water and living organisms. Mercury that is
2 deposited from the air or directly discharged into a water body bio-accumulates in
3 the aquatic food chain. This means that mercury, particularly methyl-mercury, is
4 taken up by small organisms which are in turn eaten by larger and larger aquatic
5 organisms, increasing the concentration of mercury in the top predator fish.
6 Generally, methyl-mercury is not excreted, but accumulates in tissue. Thus, the
7 largest predatory fish in Minnesota—walleye and northern pike—are likeliest to
8 have the highest concentrations of mercury.

9 Mercury is a neurotoxin that is especially damaging to developing nervous
10 systems. For that reason, fish consumption advisories are targeted to women of
11 child-bearing age and children. In addition, there is emerging evidence that
12 mercury is also hazardous to cardiovascular health.

13 **Q. To what degree are Minnesota's lakes and rivers meeting the water quality**
14 **standard for fish consumption?**

15 A. Nearly 90% of those water bodies that have been tested are listed as impaired by
16 mercury based on the fish consumption standard. Also, because of the
17 characteristics of the different ecosystems in the State and the way that mercury
18 cycles, it appears that the mercury contamination is more severe in the
19 northeastern part of the State.

20 **Q. Has the State done a TMDL for lakes and streams impaired by mercury?**

21 A. Yes, the State has done an initial TMDL that covers many lakes and rivers in
22 Minnesota. The TMDL does not cover the most severely impaired water bodies.
23 The State must still complete a TMDL for those lakes and rivers.

1 Attached as Exhibit A is the Minnesota Statewide Mercury TMDL which was
2 issued in June 2006. The TMDL must be approved by the United States
3 Environmental Protection Agency (EPA). It is expected that the EPA will
4 approve the TMDL within the next couple of months.

5 **Q. Can you briefly summarize the main points of the Minnesota mercury**
6 **TMDL?**

7 A. Yes. Because of the wide-spread mercury impairments, Minnesota took a state-
8 wide approach to the TMDL. It looked at the total load of mercury from all
9 sources (water discharges as well as deposition of air emissions) and calculated
10 the reduction that was needed in order to achieve the goal of having fish with less
11 than 0.2 ppm mercury in their tissue. Based on those calculations, the TMDL
12 concludes that Minnesota must reduce the amount of anthropogenic mercury
13 emissions by 93% from 1990 levels. Typically, the burden of reducing the level
14 of pollution would be divided between point sources (direct dischargers to water)
15 and non-point sources (facilities that emit mercury to the air). In this instance,
16 however, the TMDL concludes that less than one percent of the overall mercury
17 comes from point sources and therefore the overall contribution from point
18 sources is de minimis. As a result, the obligation for the 93% reduction is placed
19 on non-point sources, which are mercury-containing air emissions from energy
20 production, taconite processing and intentional uses of mercury in products.
21 Since 1990, Minnesota (and the United States) has made considerable progress in
22 reducing mercury emissions caused by the manufacture, use and disposal of
23 mercury-containing products. Mercury emissions from products dropped from

1 8,881 lbs in 1990 to 671 lbs in 2005 (a 92.4 percent decrease), and taconite
2 processing emissions dropped about 6 percent. In the same period, mercury
3 emissions from power plants *increased* by 10% from 1,667 lbs to 1,825 lbs. In
4 2005, mercury emission from the state totaled 3,341 pounds; the emissions goal
5 set in the TMDL is 789 lbs., which is a needed reduction of 76%. (Exh. A, p. 46).
6 It is widely recognized that a substantial amount of needed future reductions in air
7 emissions will have to come from the energy production sector.

8 **Q Does the mercury TMDL affect the Mesaba Project?**

9 A. Yes. The Mesaba Project is a new nonpoint source of mercury emissions. In its
10 permit application to the MPCA, Excelsior has identified a mercury permit limit
11 of 54 pounds per year. However, as stated in the TMDL, “[t]here is no reserve
12 capacity for nonpoint sources, because actual nonpoint source loads are far in
13 excess of the Load Allocation.” (p. 40). In fact, based on the targets presented in
14 the TMDL, the energy sector must move from the 1,834 lbs emitted in 2005 to an
15 initial target of 675 lbs.(p. 46) Thus, the energy sector not only has no capacity
16 for an additional new source, it must make significant reductions in *existing*
17 mercury emissions in the near future if these targets in the TMDL are to be met.
18 The MPCA has indicated that it anticipates drafting a new rule to regulate new
19 sources of mercury air emissions. The MPCA is taking this action in part to meet
20 its air emission targets contained in the TMDL. As a result of this future
21 regulation, Mesaba may face additional controls or be required to take other
22 actions in order to mitigate its mercury emissions, including options outlined in
23 the TMDL such as offsetting reductions from other sources. (p. 45)

1 **Q. In addition to the TMDL, are there other bases to believe that future**
2 **regulations could affect the mercury control costs for the Mesaba Project?**

3 A. Yes. The U.S. EPA has promulgated a Clean Air Mercury Rule, which will
4 regulate mercury emissions from electrical generating units across the United
5 States beginning in 2010. The rule uses a cap and trade form of regulation that
6 restricts pollution through the allocation and regulation of allowances. The rule
7 governs mercury emissions from both new and existing electrical generating
8 facilities. While Minnesota has the option under the Clean Air Mercury Rule of
9 creating a state-specific allowance allocation program, to date it has not taken any
10 action to do so. Absent a state allocation plan, EPA's model rule will govern how
11 allowances are allocated to new and existing sources.

12 Under EPA's model rule, as a new electrical generating unit, Mesaba will be
13 required to meet new source performance standards as well as hold allowances
14 equal to its mercury emissions. New generators will obtain these allowances
15 from a new source "pool." In the event that the new source pool does not cover
16 all the associated mercury emissions, these new generators will be required to
17 purchase additional allowances from other electrical generators. The current
18 provisions of the rule allocate 5% of a state's total mercury allowance budget to
19 the new source pool for the years 2010-2014 and 3% thereafter; in the case of
20 Minnesota, that would equal 69 and 42 allowances, respectively. At this time, it
21 is unclear whether Mesaba will receive a sufficient number of allowances from
22 the new source pool and if the company will have to purchase additional

1 allowances to cover its mercury emissions. There may be other new sources that
2 will require an allocation from the new source pool of allowances.

3 **Q. Has Excelsior described how it will address these pending mercury**
4 **regulations and any associated costs?**

5 A. No. Excelsior has not adequately demonstrated that it has taken these mercury
6 regulations into consideration and has not applied any additional costs associated
7 with the regulations discussed above.

8 **Q: Does this conclude your testimony?**

9 A: Yes.