

Responses

Commenter 102 – Kristin Henry

Because the DEIS fails to fairly define the purpose and need for this project, and further fails to consider the true costs of building and operating the Mesaba coal plant (discussed in detail later), it summarily rejects environmentally preferable alternatives on grounds that they are not coal-based generation technology and cannot satisfy MDOC's requirements for base-load power, job creation, and a generating facility in Northeast Minnesota. This failure to undertake meaningful consideration of alternatives violates NEPA. As NEPA's implementing regulations make clear, consideration of alternatives "is the heart of the environmental impact statement ... sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14.

Here, the DEIS leaves DOE, MDOC, and the public with the false impression that there is no viable alternative except building yet another coal-fired power plant.

1. The DEIS Improperly Dismissed Alternatives Using Renewable Energy.¹

The DEIS also fails to fully consider other economically beneficial means of generating electricity in a less environmentally harmful manner – such as use of renewable energy like solar, geothermal, and wind. There are ample renewable resources available to serve the base-load electricity needs in Minnesota. The DEIS is flawed because it fails to consider any technology for meeting the Statement of Need other than through coal-based generation technology.

First, without any detailed consideration, the DEIS dismissed alternatives that rely on renewable energy, including wind and solar power because they are not forms of coal-based generation. Since renewable alternatives were never evaluated, the DEIS does not discuss whether it is possible to generate 1,200 megawatts of power from renewable sources. Moreover, the DEIS never explores whether renewable energy could meet a smaller base-load demand. Nor does the DEIS offer a comparison between the realistic costs of electricity from Mesaba and up-to-date costs of delivered wind, solar, or geothermal power.

2. The DEIS Improperly Dismissed the Potential Role of Conservation and Efficiency Programs in Assessing Alternatives to a New Coal Plant.

The Statement of Need in the DEIS is also flawed because it fails to consider that any future electricity demand can be significantly offset by implementation of environmentally beneficial energy efficiency and conservation measures. The

¹ Minnesota state legislature decided that Excelsior Energy may use the state's Renewable Development fund to finance this project. There should be no mistake; the Mesaba coal-fired power plant is not a form of the renewable energy. In fact, the legislature should not allow Excelsior access to this fund because Minnesota statute clearly states that funds in the Renewable Development are to be granted "only for development of renewable energy sources." Minn. Stat. § 116C.779.

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failure to consider energy efficiency/conservation alternatives is a fatal flaw of the DEIS. Had such an alternative been considered, it would severely undercut the Statement of Need for the Mesaba power plant.

Efficiency is the cheapest, fastest, cleanest and safest way to generate power. That is why a number of states and power companies are investing in improving conservation and efficiency. States with high growth, such as Florida and North Carolina, are engaging aggressive energy efficiency and renewable standards to meet energy needs cheaply and cleanly, while at the same time rejecting plans to build new coal-fired power plants. In the Carolinas, Duke and Progress have launched initiatives to generate thousands of megawatts – more than the 6,000 megawatts of base-load power needed to meet demand in Minnesota.

The DOE and MDOC, on the other hand, are taking the opposite approach. They are proposing to build a new coal-fired power plant rather than investing conservation and efficiency. This is the wrong answer for Minnesota. The state of Minnesota and its electric utility industry can introduce a number of conservation and efficiency measures that would mitigate the need for new electricity generating units. Efficiency and renewables also produce more local jobs than a highly automated coal-fired power plant, which burns Power River Basin coal from other states.

Therefore, the DOE and MDOC must consider how to meet this demand with demand side management. A list of some, but not all, demand side management options that should have been considered include the following:

- switching to compact fluorescent lights (CFL) or LED lighting;
- improved insulation and weatherization;
- energy efficiency appliances, such as refrigerators, air conditioners, geothermal heating systems, and hot water heaters;
- switching from electric to natural gas appliances such as heating systems and hot water heaters;
- energy efficient improvements in industrial application such as electric motors and HVACs;
- cycling programs for heating and cooling systems;
- programmable thermostats and down comforters;
- passive solar;
- energy audits;
- general energy education on conservation and efficiency; and
- efficient mobile home purchasing.

By undertaking an independent analysis of conservation and efficiency savings that would reduce energy needs, the DOE and MDOC would also broaden the range of reasonable alternatives.

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III. Description of Proposed Action and Alternatives – Chapter 2

NEPA requires federal agencies to consider reasonable and feasible alternatives to the proposed action. Chapter 2 of the DEIS provides a description of the Proposed Action and Alternatives. The DEIS is flawed because it fails to consider any real and meaningful alternatives to the proposed action. The DEIS only considers three alternatives: the “no action alternative” and an identical, IGCC coal-fired power plant at two different locations. As such, other than the “no action” alternative, which is required by law, the DEIS does not present any meaningful alternative to the proposed action in terms of minimizing environmental impacts. Therefore, the DEIS is fundamentally flawed.

A. Failure to consider “clean energy alternatives”

The significant flaw in the DEIS stems from the fact that DOE and MDOC wrongfully eliminated all meaningful clean energy alternatives in the NEPA scoping and DEIS process. In essence, the DOE and MDOC wrongly concluded that none of the renewable energy technologies could provide 1200 MW of power, or a smaller base-load amount. This conclusion is flawed for several reasons. First, it is entirely reasonable that 1,200 MW of electricity could be generated from renewable resources, through staged renewable resource development. This would be a viable alternative to the Mesaba coal-fired power plant. Contrary to the finding in the DEIS, which rejected this alternative out of hand without any mention or analysis, these renewable alternatives are viable and being constructed in the Midwestern United States.

The DEIS also completely fails to consider whether some of the energy needs could be offset by clean and viable energy conservation and efficiency. As noted above, many states are reducing the base-load demand by implementing demand side management programs. Implementation of these programs would also reduce emissions of greenhouse gases and conventional pollutants. Implementation of these efficiency measures would also reduce the overall purpose and need of the Mesaba power plant. By eliminating the need for the project, the benefits of moving forward would be obviated—especially when compared to the adverse environmental impacts. Accordingly, the DEIS should analyze an energy efficiency/conservation alternative to determine whether purported purpose and need for the DFS could be met by these environmentally beneficial alternatives. As stated by EPA Region 9 in its recent comments on the White Pine DEIS “[I]ncreased energy efficiency offers an attractive, cost-effective alternative to building new power plants, and in some cases, even to generating electricity from existing power plants. The FEIS should discuss on-going and planned energy conservation programs undertaken by power distributors and how energy conservation may affect the need for this project.” EPA Region 9, Comments on White Pine DEIS. This statement also applies to the Mesaba DEIS.

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In fact, the spirit of Minnesota law requires MDOC to consider these alternatives. Minn. Stat. § 216B.243, subd. 3 (Minnesota Public Utilities Commission precluded from issuing a “Certificate of Need” for a proposed power plant until and unless the applicant proved demand “cannot be met more cost-effectively through energy conservation and load management measures...”). It is the policy of Minnesota to promote energy conservation and renewable energy alternatives. As the current statute states, “It is the energy policy of the state of Minnesota to achieve annual energy savings equal to 1.5 percent of annual retail energy sales of electricity and natural gas directly through energy conservation improvement programs and rate design, and indirectly through energy codes and appliance standards, programs designed to transform the market or change consumer behavior, energy savings resulting from efficiency improvements to the utility infrastructure and system, and other efforts to promote energy efficiency and energy conservation” (emphasis added) (Minn. Stat. § 216B.2401).

B. Failure to consider other fuel alternatives

The DEIS also fails to consider alternative fuels in its alternatives analysis such as biomass. Biomass can be co-fired with coal to reduce the emissions of regulated pollutants, including carbon monoxide, as well as to reduce carbon dioxide emissions. There are numerous examples of coal plants co-firing biomass that provide a roadmap for such consideration in the DEIS alternatives analysis. For example, the St. Paul heating plant burns approximately sixty-percent biomass and forty percent coal. The biomass is primarily waste wood from tree trimmings and other industrial activities. The Xcel Bay Point power plant in Ashland, Wisconsin, also burns large amounts of wood waste, consisting primarily of sawdust. While these plants are not IGCC plants, they can still serve as a reference point.

The U.S. Department of Energy has urged federal facility managers to consider co-firing up to 20 percent biomass in existing coal-fired boilers. In the Netherlands, all four electricity generation companies (EPON, EPZ, EZH and UNA) have developed plans to modify their conventional coal-burning plants to accommodate woody biomass as a co-fuel.

In short, the DOE and MDOC should consider as part of the DEIS alternatives analysis the co-firing of biomass as a means to mitigate CO and CO₂ emissions. The possible types of biomass include wood wastes, agricultural waste, switchgrass and prairie grasses.

C. Improper rejection of “no action” alternative

The DOE and MDOC rejects the no “action alternative” because it would not advance the commercialization of IGCC. As noted herein, any existing energy demand in the Midwestern United States should be met first by energy efficiency/conservation measures and then by renewable energy. Moreover,

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As stated in Section 1.4.1 (Volume 1), DOE’s need for the project “...is to accelerate the commercialization of clean coal technologies that achieve greater efficiencies, environmental performance, and cost-competitiveness.” DOE’s need is not specifically associated with the demand for power in Minnesota or the Midwest. As explained in response to Comment 75-05, the reference to baseload power generation needs within Minnesota was included in Chapter 1 of the Draft EIS under a section pertaining to the “Project Proponent Need”. The anticipated needs for additional baseload power in Minnesota relating to plans filed in PUC dockets were outlined in Appendix F1 (Volume 2) prepared by Excelsior at the request of USACE, which is a cooperating agency for this EIS (See Comment 116-33). The reference to projected baseload power generation needs has been deleted from Chapter 1 (Volume 1) of the Final EIS, because the project is exempt from requirements for a Certificate of Need as an innovative energy project under Minnesota Statutes 216B.1694. Section 1.2.2 (Volume 1) explains the state legislative incentives afforded to an innovative energy project, which transcend the specific needs for power generation.

For the above reasons, the commenter’s statement that “...any existing energy demand in the Midwestern United States should be met first by energy efficiency/conservation measures and then by renewable energy” is not relevant to DOE’s or PUC’s decision with respect to the proposed action. However, as stated in response to Comment 12-02, DOE is the Federal agency charged with responsibility to ensure that the U.S. develops sources of energy to maintain economic prosperity and national security. The department oversees numerous programs and projects that are intended to achieve these objectives, including fossil energy, nuclear energy, renewable sources, and energy conservation.

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MDOC's conclusion that it needs 3,000 to 6,000 megawatts of baseload capacity does not discuss whether this need can be met through other proposed coal plants in the Midwest. Failure to consider whether these other alternative power plants can meet the purpose and need of the MDOC is a fatal flaw of the DEIS.

D. Failure to adequately consider the impacts of coal combustion waste disposal, including cumulative impacts on the region of waste disposal from numerous new coal generating facilities.

102-05

The DEIS fails to adequately consider the impacts on land, water, and local public health related to the disposal of the many tons of toxic coal combustion wastes from this facility annually. These wastes contain arsenic, mercury, selenium and other toxic constituents and have caused drinking water contamination at other sites in the U. S. In particular the cumulative impacts on the region of the coal combustion waste disposal from this project combine with the similar requests other proposed coal plants to dispose of coal waste on local landfills.

IV. Discussion of the Affected Environment – Chapter 3

A DEIS must “fulfill and satisfy to the fullest extent possible the requirements established for final statements.” 40 C.F.R. § 1502.9(a). “If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portions.” *Id.* A crucial and significant role for an EIS in draft or final form is providing a “springboard for public comment.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 370 (1989). Thus a DEIS is defective if it references ongoing or incomplete studies which may or may not be included in the final EIS because the DEIS does not provide enough information to allow for meaningful public comment. This information must be made available for public review in advance of the FEIS. Post-hoc monitoring is not a sufficient examination of the affected environment for NEPA purposes. Rather the affected environment must be identified and analyzed before the federal agency authorizes an irretrievable commitment of resources. A statement about possible effects absent meaningful analysis before an action takes place does not satisfy NEPA's hard look requirement. *See e.g., Sierra Club, Inc. v. Austin*, 82 Fed. App'x 570, 573 (9th Cir. 2003) (citing *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372 (9th Cir. 1998)).

102-06

In numerous instances, the “Affected Environment” section of the DEIS (Chapter 3) is defective because it does not contain adequate information or relies on future studies or determinations. The BLM must analyze the affected environment before an irretrievable commitment of resources is made. For the reasons stated below, the DEIS is legally defective and premature because it fails to contain vital information on the affected environment.

A. Air impacts not considered.

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Comment 102-05

The two marketable byproducts from operation of the Mesaba Energy Project (elemental sulfur and slag) are non-hazardous in the context of tests designed to identify hazardous waste. Toxicity characteristic leaching procedure results for slag from the E-Gas™ process are provided in Excelsior's Joint Permit Application at Table 3.4-25 (page 234). [This document is accessible at the MDOC website for the Mesaba Energy Project Docket:

<http://energyfacilities.puc.state.mn.us/Docket.html?Id=16573>.] These materials are different than wastes from traditional coal-fired power plants as identified in this comment. See response to Comment 53-03, which addresses concerns related to unmarketable slag and sulfur.

Comment 102-06

See response to Comment 99-12, which addresses some of the same concerns. Other issues raised in this comment have been addressed in response to Comment 105-11 from MPCA, which is the state agency responsible for air quality and permitting. Health impacts are discussed in Section 4.17 and discussions of the affected environments for health and safety are in Section 3.17 (Volume 1). Additionally, the Final EIS has been revised to insert a missing sub-section heading (in printed copies of the Draft EIS), “4.17.2.3 Human Health Risks,” for the text that addresses risks associated with air pollutants emitted by the project. Section 4.17.2.3 includes updated AERA modeling results (reported in Section 5.8 of Appendix C [Volume 2]), including a discussion on impacts from PM_{2.5}.

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Section 3.3-6 of the DEIS fails to adequately discuss the health impacts associated with PM 2.5 emissions from the proposed Mesaba plant. While the DEIS mentions the National Ambient Air Quality Standards (“NAAQS”), the secondary standards and Minnesota Ambient Air Quality Standards (“MAAQS”) for all associated air pollutants, including PM 2.5 emissions, the DEIS does not discuss the health impact of fine particulate matter pollution from the Mesaba power plant.

In 2006, the U.S. EPA stated, after conducting its review of the National Ambient Air Quality Standards for PM10 and PM 2.5, that PM 2.5, which the U.S. EPA sometimes refers to as “fine particulate matter” has a variety of adverse health effects including premature mortality, increased hospital admissions, emergency room visits and development of chronic respiratory disease. 71 Fed. Reg. 2,620 (Jan. 17, 2006).

U.S. EPA has also stated:

The research on which EPA based the 1997 standards did not identify a specific threshold concentration below which individuals have no PM related health effects, meaning that emissions reductions resulting in reduced concentrations below the level of the standards may continue to provide additional health benefits to the local population.

70 Fed. Reg. 65,983, 65,988 (Nov. 1, 2005). In U.S. EPA’s most recent review of the PM10 and PM2.5 National Ambient Air Quality Standards, U.S. EPA was unable to find evidence supporting the selection of a threshold level of PM2.5 under which the death and disease associated with PM 2.5 would not occur at the population level. 71 Fed. Reg. 2,620, 2,635 (Jan. 17, 2006). The US EPA also noted that in “the extended ACS [American Cancer Society] study, the authors reported that the associations for all-cause, cardiovascular and lung cancer mortality “were not significantly different from linear associations.” *Id.* A linear relationship means that more pollution tends to cause more health impacts at the population level.

For the foregoing reasons, the amount of PM 2.5 emissions from Mesaba power plant must be quantified and the associated human health impacts analyzed and compared against a true no action alternative.

B. Failure to consider impact to “global” environment

The U.S. Department of Interior Director’s Order No. 3226 (U.S Dep’t of Interior, Jan. 19, 2001) acknowledges that “[t]here is a consensus in the international community that global climate change is occurring and that it should be addressed in government decisionmaking.” That Order further instructs “[e]ach bureau and office of the Department [of Interior] [to] consider and analyze potential climate change impacts . . . when making major decisions regarding the potential utilization of resources under the

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Comment 102-07

Secretarial Order 3226 of the Department of the Interior is not applicable to planning efforts by DOE. Section 5.2.8 (Volume 1) has been added to the Final EIS to discuss the effects of global climate change regionally, nationally and globally. DOE recognizes that the emissions of the Mesaba Energy Project would contribute incrementally to these effects. However, there are no reliable models currently available to accurately assess the impacts of GHG emissions from a single, discrete source on climate change.

See also response to Comment 12-02, which addresses similar concerns regarding global climate change.

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Department’s purview.”² The same should apply to branches of the Department of Agriculture.

As noted elsewhere herein, the DEIS fails to adequately list the affect the Mesaba power plant will have on the broader global environment. For example, the DEIS fails to adequately analyze the broader environmental affects the emission of over 5 million tons of global warming pollution each year from the Mesaba power plant. Chapter 3 of the DEIS fails to adequately characterize the potential effect to the global environment caused by the Mesaba power plant’s release of over 5 million annual tons of global warming pollution: global climate change, global temperature change, rising sea levels, effect on wildlife (corals, polar bears), glacier reduction, less snow, more rain and earlier snowmelt runoff. The DEIS is flawed for failing to characterize this impact to the global environment.

102-07
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C. Failure to list impacts of other U.S. government actions

Moreover, the DEIS fails to analyze that these same environments will be affected by the cumulative impacts of the actions of the U.S. government regarding numerous pending coal-fired power plant proposals currently undergoing NEPA review, including the White Pine power plant, the Toquop plant, the Ely Energy Center, the Bonanza plant, the Big Stone II plant and others in the United States.

102-08

D. Failure to consider impacts to visibility from emissions

Section 3.3 of Chapter 3 (Visibility and Regional Haze) fails to recognize that emission of pollutants from the Mesaba will affect visibility, including visibility at nearby Class I areas. Instead, the DEIS notes that under the new federal Regional Haze Act, the plant may be regulated in the future to address haze. These visibility impacts caused by pollutants must be acknowledged and analyzed now and not put off until some undetermined future point in time.

102-09

E. Failure to specifically consider exposure to coal combustion waste

The DEIS fails to note that groundwater resources could be impacted from coal combustion waste disposal at the power plant site. The DEIS notes that sludge and waste from the Mesaba power plant would be taken to a local landfill for disposal. Given the history of coal combustion waste causing groundwater contamination, the DEIS must not only acknowledge this potentially affected environment, but also analyze potential public health impacts. The DEIS must characterize the pollutants of concern, the pathways of exposure and the human health risk as a result of coal combustion waste produced throughout the life of the mine and power plant.

102-10

F. Failure to acknowledge potential impact of groundwater pumping on area springs and seeps

102-11

² http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3226

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Comment 102-08

See response to Comment 102-07, which addresses the same concerns. The plants referenced in the comments are located in Nevada, Utah, and South Dakota; therefore it is unlikely that the cumulative effect of their emission combined with those of the Mesaba Energy Projects would be significant. With respect to cumulative CO₂ emissions the effect of Mesaba Energy Project’s impact on global climate change with respect other facilities in the energy sector are discussed in Section 4.3.5.6. See also response to Comment 12-02, which addresses similar concerns regarding global climate change.

Comment 102-09

The impacts on visibility in Class I Areas were discussed in Section 4.3 (Volume 1) of the Draft EIS (see Section 4.3.3.2 for the West Range Site and Section 4.3.4.2 for the East Range Site). See also response to Comment 49-01, which addresses the same concerns.

Comment 102-10

IGCC power plants do not produce the coal combustion wastes referenced by the commenter; thus, the comments regarding potential health risks from such wastes are not applicable to this project. See Sections 2.2.3.3, 2.2.3.4, and 4.16.2.2 (Volume 1), which discuss solid wastes, marketable byproducts, and waste management. See Comment 105-50 by MPCA regarding the rules pertaining to the beneficial use of coal combustion slag and sulfur. See response to Comment 53-03 regarding the selection of a landfill for disposal of slag or sulfur in the event that these byproducts cannot be marketed. See response to Comment 82-51, which addresses concerns regarding potential groundwater resources.

Comment 102-11

Section 2.2.2.3 (Volume 1) describes the process water requirements for the Mesaba Energy Project. The proposed facility would not require any groundwater pumping and is not in the same watershed as the Boundary Waters Canoe and Wilderness Area; thus, there would be no impact on that resource from groundwater pumping. New text has been added to subsection *Water Levels and Water Balance During Operations* (under Section 4.5.3.1, [Volume 1]), which discusses potential impacts on water level fluctuations in nearby water bodies as a result of water appropriation during the proposed facility’s operation.

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102-11
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Abandoned mine pits would be the primary source of water for the proposed Mesaba power plant. A water pipeline and pumping system would convey water from the abandoned mine pits to the Mesaba Generating Station. The DEIS fails to acknowledge impacts to area surface waters, springs, and seeps as a result of groundwater pumping to serve the Mesaba power plant. In addition, the DEIS should explore whether this pumping would have any impact on the water resources of the Boundary Waters Canoe and Wilderness Area. This impact must be acknowledged and analyzed.

G. Failure to acknowledge potential impact of groundwater pumping on existing groundwater wells

102-12

The DEIS fails to acknowledge impacts to existing water wells as a result of groundwater pumping to serve the Mesaba power plant. This impact must be acknowledged and analyzed.

H. Failure to analyze electromagnetic field impacts

102-13

The DEIS fails to identify electromagnetic fields generated by the power plant and transmission facilities as part of the effected environment. The DEIS must analyze impacts to public health and the environment as a result of electromagnetic fields.

I. Lack of project design plans in Draft EIS

102-14

There are no detailed design plans (stack heights, schematics of conveyance systems, road improvements, etc.) included in the DEIS. This prevents a complete analysis of the proposed Mesaba power plant.

J. Human health risk assessment

102-15

The DEIS also largely fails to acknowledge that emissions and releases from the plant will pose risks to human health. The DEIS must acknowledge these risks and quantify the impacts from the plant against a true no action alternative.

V. Environmental Consequences- DEIS Chapter 4

A. Failure to Adequately Examine Global Warming Impacts

The Mesaba facility would emit approximately 5 million tons of CO₂ and would operate for at least 40 years. Thus, the total emission of CO₂ over the life of the plant is expected to be 200 million tons of CO₂.

NEPA requires governmental agencies to consider impacts on the global environment, as well as local and regional impacts. For example, NEPA Section 102(F) requires that the federal government "recognize the world-wide and long-range character of environmental problems and, where consistent with the foreign policy of the United

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Comment 102-12

The proposed facility would not require any groundwater pumping, and thus, would not result in impacts to existing water wells. See response to Comment 7-02, which discusses potential impacts to aquifers.

Comment 102-13

See response to Comment 3-01, which addresses the same concerns.

Comment 102-14

The Mesaba Energy Project EIS is based on project information provided by Excelsior in i) the Joint Permit Application (referenced as Excelsior Energy, 2006a) submitted June 19, 2006 to the PUC and ii) the Application to the MPCA for a New Source Review Construction Authorization Permit (Air Permit Application) appended thereto. The Joint Permit Application and the Air Permit Application include stack height information and plot plan diagrams. The Joint Permit Application is a planning level document required by the Minnesota Power Plant Siting Act, which can be accessed at the MDOC website for the Mesaba Energy Project Docket:

<http://energyfacilities.puc.state.mn.us/Docket.html?id=16573>. The level of detail contained in the Joint Permit Application is as customary for an EIS by DOE and MDOC. Chapter 2 (Volume 1) of the Final EIS provides information about the project.

Comment 102-15

The human health risk assessment is contained in Section 4.17.2 (Volume 1) of Section 4.17, Safety and Health. The Final EIS has been revised to insert a missing sub-section heading (in printed copies of the Draft EIS), "4.17.2.3 Human Health Risks", for the text that addresses risks associated with air pollutants emitted by the project. See also responses to Comments 38-01 and 42-01, which address similar concerns.

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States, lend support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment." This includes global climate change. As the Ninth Circuit recently held, federal agencies have an obligation to evaluate "the expected amount of CO₂ emitted" as a result of their activities, and the "incremental impact" that these emissions will have "on climate change or on the environment more generally in light of other past, present, and reasonably foreseeable actions . . ." *Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 2007 U.S. App. LEXIS 26555 at *111 (9th Cir. Nov. 15, 2007).

The Intergovernmental Panel on Climate Change ("IPCC") was established by the World Meteorological Organization ("WMO") and the United Nations Environment Programme ("UNEP") in 1988. The IPCC's mission is to comprehensively and objectively assess the scientific, technical and socio-economic information relevant to human-induced climate change, its potential impacts, and options for adaptation and mitigation. *See* <http://www.ipcc.ch/about/about.htm>. The IPCC completed its First Assessment Report in 1990, its Second Assessment Report in 1995, and its Third Assessment Report in 2001. *Id.*

In February 2007, the Intergovernmental Panel on Climate Change ("IPCC") released a summary of the contribution of Working Group I to its Fourth Assessment Report. The Summary concludes, among other things:

- The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005;
- The atmospheric concentration of carbon dioxide in 2005 exceeds by far the natural range over the last 650,000 years;
- The primary source of the increased atmospheric concentration of carbon dioxide since the pre-industrial period results from fossil fuel use;
- There is at least a 9 out of 10 chance that the global average net effect of human activities since 1750 has been one of warming;
- Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level;
- At continental, regional and ocean basin scales, numerous long term changes have been observed. These include changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones;

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- There is greater than a 90% likelihood that most of the observed increases in global average temperatures since the mid-20th century are due to the observed increases in anthropogenic greenhouse gas emissions;
- For the next two decades, warming of about 0.2 Degrees Celsius per decade is projected for a range of emission scenarios;
- There is greater than a 90% likelihood that hot extremes, heat waves and heavy precipitation events will continue to become more frequent; and
- Anthropogenic warming and sea level rise would continue for centuries due to the time scales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized.

In April 2007, the IPCC released a summary of the Contribution of Working Group II to its Fourth Assessment Report. Working Group II is responsible for assessing the vulnerability of socio-economic and natural systems to climate change, the consequences of climate change, and the options for adapting to it. <http://www.ipcc.ch/about/about.htm>. The Working Group II Summary concludes, among other things:

- By mid-century, annual average river runoff and water availability are projected to decrease by 10-30% over some dry regions at mid-latitudes and in the dry tropics, some of which are presently water stressed areas;
- In the course of the century, water supplies stored in glaciers and snow cover are projected to decline, reducing water availability in regions supplied by meltwater from major mountain ranges, where more than one-sixth of the world population currently lives;
- Warming in the mountains of western North America is projected to cause decreased snowpack, more winter flooding, and reduced summer flows, exacerbating competition for over-allocated water resources;
- Drought-affected areas will likely increase in extent. Heavy precipitation events which are very likely to increase in frequency, will augment flood risk;
- Increases in the frequency of droughts and floods are projected to affect local crop production, especially in subsistence sectors at low latitudes. (The DEIS then fails to consider how emitting over 5 million tons of CO₂ annually would impact the current drought.
- Poor communities can be especially vulnerable, in particular those concentrated in high-risk areas. They tend to have more limited adaptive capacities, and are more dependent on climate-sensitive resources such as local food and water supply;

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- Disturbances from pests, disease and fire are projected to have increasing impacts on North American forests, with an extended period of high fire risk and large increases in area burned;
- In North America, major challenges are projected for crops that are near the warm end of their suitable range or depend on highly utilized water resources;
- The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g., flooding, drought, wildfire, insects, ocean acidification), and other global change drivers (e.g., land use change, pollution, over-exploitation of resources);
- Approximately 20-30% of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperatures exceed 1.5-2.5 Degrees Celsius;
- For increases in global average temperature exceeding 1.5-2.5 Degrees Celsius and in concomitant atmospheric carbon dioxide concentrations, there are projected to be major changes in ecosystem structure and function, species' ecological interactions, and species' geographic ranges, with predominantly negative consequences for biodiversity, and ecosystem goods and service, e.g., water and food supply;
- Projected climate change-related exposures are likely to affect the health status of millions of people, particularly those with low adaptive capacity; and
- Even the most stringent mitigation efforts cannot avoid further impacts of climate change in the next few decades, which make adaptation essential, particularly in addressing near-term impacts. Unmitigated climate would, in the long term, be likely to exceed the capacity of natural, managed and human systems to adapt.

On or about May 4, 2007, the IPCC released a summary of the contribution of Working Group III to its Fourth Assessment Report. Working Group III is responsible for assessing options for limiting greenhouse gas emissions and otherwise mitigating climate change. <http://www.ipcc.ch/about/about.htm> The Working Group III Summary, concludes, among other things:

- Global greenhouse gas (GHG) emissions have grown since pre-industrial times, with an increase of 70% between 1970 and 2004;
- The largest growth in global GHG emissions between 1970 and 2004 has come from the energy supply sector (an increase of 145%);
- With current global climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades;

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Comment 102-16

Greenhouse gas emissions by the Mesaba Energy Project are described in Section 5.2.8 (Volume 1) of the Final EIS, which has been added to the Final EIS and includes information from the current IPCC Report. See response to Comment 102-07. The response to Comment 12-02 explains DOE's responsibilities for energy development and notes that the CCPI Program is only one of numerous DOE initiatives, programs, and projects intended to achieve national energy goals through renewable and non-renewable sources, as well as conservation. See response to Comment 102-30 for discussions regarding the economic impacts of CO₂ emissions.

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- There is substantial economic potential for the mitigation of global GHG emissions over the coming decades, that could offset the projected growth of global emissions or reduce emissions below current levels;
- There are mitigation opportunities with net negative costs, in other words, for which the benefits such as reduced energy costs and reduced emissions of pollutants equal or exceed their costs to society, excluding the benefits of avoided climate change;
- Fuel switching from coal to gas, renewable heat and power (hydropower, solar, wind, geothermal and bioenergy), and early applications of carbon capture and storage (e.g., storage of removed carbon dioxide from natural gas) are key mitigation technologies and practices currently commercially available;
- Near-term health co-benefits from reduced air pollution as a result of actions to reduce GHG emissions can be substantial and may offset a substantial fraction of mitigation costs;
- It is often more cost-effective to invest in end-use energy efficiency improvement than in increasing energy supply to satisfy demand for energy services. Efficiency improvement has a positive effect on energy security, local and regional air pollution abatement and employment;
- Renewable energy generally has a positive effect on energy security, employment and on air quality; and
- In order to stabilize the concentrations of GHGs in the atmosphere, emissions would need to peak and decline thereafter.

Hansen and others have stated that global emissions of CO₂ and other global warming pollutants must be immediately reduced to avoid exceeding the 475 ppm ceiling for significant irreversible impacts.³ The World Health Organization has estimated that approximately 154,000 human lives are lost each year as a result of global warming.⁴

102-16

DOE and MDOC should consider the entirety of the Fourth Assessment Report and make it part of the administrative record for the DEIS. Due to the severe impacts of the Mesaba power plant's carbon dioxide emissions on the health, welfare, economy, and environment of the state of Minnesota, the nation, and the planet as a whole as described

³ Hansen, et al. *Global Temperature Change*, *PNAS* published online September 25, 2006; doi:10.1073/pnas.0606291103. See also, Hansen, et al. 2006, *Dangerous Human-made Interference with Climate: A GISS modelE study*; available at <http://arxiv.org/abs/physics/0610115>.

⁴ World Health Organization (WHO) 2002, *The World Health Report*, available at <http://www.who.int/whr/2002/en/index.html>.

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Responses

102-16
(cont'd)

in the IPCC report, the DEIS should examine alternatives and mitigation measures designed to eliminate or minimize carbon dioxide emissions.

The DEIS should also assess the impacts of global warming pollution on different environmental receptors—such as wildlife, vegetation, water resources, humans, or land. The DEIS should analyze the local, regional, and global environmental impacts of CO₂ emissions from the Mesaba power plant. The DEIS should also consider the economic impacts of CO₂ emissions from the Mesaba power plant. In addition, the DEIS should consider the cumulative impacts of this significant new source of CO₂ emissions in combination with other existing and proposed CO₂ sources.

B. Failure to Adequately Consider Impacts of Ozone Pollution

On July 11, 2007, EPA published proposed revisions to strengthen the national ambient air quality standards for ozone. *See* 72 Fed. Reg. 37,818. In October 2006, the EPA Clean Air Scientific Advisory Committee unanimously and unambiguously advised EPA Administrator Stephen Johnson: “(1) There is no scientific justification for retaining the current primary 8-hr NAAQS of 0.08 parts per million (ppm), and (2) The primary 8-hr NAAQS needs to be substantially reduced to protect human health, particularly in sensitive subpopulations.”⁵ The Committee also unanimously agreed upon a recommended range: “Therefore, the CASAC unanimously recommends a range of 0.060 to 0.070 ppm for the primary ozone NAAQS.”⁶ These recommendations leave no room for misinterpretation. Indeed, the CASAC pointedly found that “*there is no longer significant scientific uncertainty regarding CASAC’s conclusion that the current 8-hr primary NAAQS must be lowered*” and “[r]etaining this standard would continue to put large numbers of individuals at risk.”

*[T]here is no longer significant scientific uncertainty regarding the CASAC’s conclusion that the current 8-hr primary NAAQS must be lowered. A large body of data clearly demonstrates adverse human health effects at the current level of the 8-hr primary ozone standard. Retaining this standard would continue to put large numbers of individuals at risk for respiratory effects and/or significant impact on quality of life including asthma exacerbations, emergency room visits, hospital admissions and mortality.*⁷

In sum, CASAC unequivocally found that there is no basis in public health considerations for EPA to retain the current standard.

The scientific evidence of mortality effects is one of the significant scientific developments since EPA’s 1997 decision to lower the ozone health standard. The

⁵ Dr. Rogene Henderson, Chair, CASAC, to Stephen Johnson, EPA Administrator, “Clean Air Scientific Advisory Committee’s (CASAC) Peer Review of the Agency’s 2nd Draft Ozone Staff Paper,” (Oct. 24, 2006).

⁶ *Id.* at 2 (italics in original).

⁷ *Id.* at 5 (italics in original).

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CASAC expressly pointed to the studies on ozone mortality effects as part of the body of evidence documenting adverse health effects below the current health standard. The CASAC found:

- “Several new single-city studies and large multi-city studies designed specifically to examine the effects of ozone and other pollutants on both morbidity and mortality have provided more evidence for adverse health effects at concentrations lower than the current standard.”⁸
- “[A]dverse health effects due to low-concentration exposure to ambient ozone (that is, below the current primary 8-hour NAAQS) found in the broad range of epidemiologic and controlled exposure studies cited above include . . . an increase in mortality (non-accidental, cardio-respiratory deaths) reported at exposure levels well below the current standard.”⁹
- “Retaining this [the current] standard would continue to put large numbers of individuals at risk for . . . mortality.”¹⁰

CASAC’s series of statements in its October 2006 correspondence to the Administrator placed CASAC’s full force, unanimously, on the evidence of mortality and other health effects in compelling EPA to adopt a lower standard to protect public health with an adequate margin of safety.

In addition, both CASAC and EPA found that ozone has serious adverse welfare effects at concentrations well below the current ambient standard. These welfare effects are addressed in the October 2006 CASAC letter to EPA Administrator Stephen Johnson and EPA’s July proposal on the national ambient air quality standards for ozone. *See* 72 Fed. Reg. 37,818. Both documents are incorporated here by reference as part of the administrative record for this proceeding.

DOE and MDOC must fully evaluate the potential for the proposed Mesaba power plant to contribute to elevated ozone concentrations that threaten human health and the environment. In such analysis, the extensive ozone-forming pollution associated with the Mesaba power plant must be evaluated together with all other emission sources in the region.

3. Failure to Adequately Consider Impacts to National Parks and Class I areas

Within a 300 km range of the Mesaba power plant there are numerous Class I areas, the Boundary Waters Canoe Area, Rainbow Lake Wilderness Area, Voyageurs National Park, and Isle Royale National Park. DEIS at 3.3-6. These Class I areas are already under

⁸ *Id.* at 3 (citations omitted).

⁹ *Id.* at 4.

¹⁰ *Id.* at 5.

Responses**Comment 102-17**

The impacts from emissions of ozone precursors (i.e., VOC and NO_x) are discussed in detail in Section 4.3 (Volume 1) of the EIS. Additionally, associated cumulative impacts are addressed in Section 5.2.2 (Volume 1).

102-17

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tremendous pressure from numerous existing and proposed coal-fire power plants and other emission sources in Minnesota and the Midwestern United States.

In 1977 Congress amended the Clean Air Act and designated certain federal lands as class I areas, giving them the greatest level of protection under the Act. To protect the air in class I areas, Congress created the prevention of significant deterioration or PSD program. PSD seeks to “preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special ... natural, recreational, scenic or historic value.” Clean Air Act Sec. 160.

Under PSD, Congress established limits (known as increments) on additional amounts of pollution in class I areas over baseline conditions that existed in 1977 when PSD was enacted. Increments are in place for emissions of sulfur dioxide, particulate matter, and nitrogen oxides. Because Congress sought to protect air quality not just from long-term pollution increases, but also from fluctuations and “spikes” that occur at certain times of year (e.g., peak summer energy demand), it created both annual and short-term (3 and 24 hours) increments for these pollutants.

Since Congress wants class I areas to have the cleanest air in the country, these parks and wilderness areas have the smallest increments, or allowable amounts of new pollution. The DOE and MDOC need to do a study (known as an increment analysis) to show how much pollution is already in the class I area and how much additional pollution it will add.

While DOE and MDOC performed an increment analysis this was flawed in many ways. When the draft air permit for this facility is issued, Sierra Club will submit extensive comments on the deficiencies with this increment analysis, including problems associated with the modeling. The Sierra Club hereby incorporates by reference any future comments by the Club on air impacts.

The Mesaba power plant will likely have impacts at these Class I areas, as well as on regional haze. The National Park Service, U.S. EPA, and Forest Service will probably be commenting on the proposed Mesaba power plant air permit. The Sierra Club thus request that finalization of the EIS be delayed until the Park Service, Forest Service and U.S. EPA have formally commented on the air permit. The Sierra Club hereby incorporate herein by reference any future comments regarding air impacts from the Mesaba power plant from any governmental agency, including but not limited to the Park Service, EPA, and National Forest divisions.

Further, states will soon have to comply with the federal regional haze rule which will require improvements to visibility on the best days and no impairment on the worst days. The DEIS should analyze how the Mesaba power plant, and all other proposed coal plants cumulatively, will impact the federal regional haze rule.

4. Failure to Evaluate Mercury Deposition in Class I areas

Responses

Comment 102-18

See response to Comment 49-01, which addresses the same concerns.

102-18

Commenter 102 – Kristin Henry**102-19**

The DEIS fails to properly evaluate mercury deposition in Class I areas. This impact must be recognized and analyzed against a no action alternative. The DEIS should also include a cumulative impact analysis of the combined impacts of mercury deposition from all existing and proposed power plants in the region.

Numerous scientific studies show that elemental mercury accumulates closely around the point of emission.¹¹ The two possible sites are 40 and 100 kilometers from the Boundary Waters Canoe and Recreation Area, which is a popular area for angling and canoeing. Once emitted into the environment, elemental mercury is transformed by biochemical processes into methylmercury. Methylmercury is highly toxic to humans and wildlife, even in minute amounts. For these reasons, the American Medical Association says that allowing power plants to escape mercury cleanup through cap-and-trade “is inconsistent with the AMA’s health-protective approach to air pollution.”¹²

- Research in the eastern United States shows significant bioaccumulation of methylmercury in salamanders, Peregrine falcons and forest songbirds. In recent decades, the number of wood thrushes in the southeast region has declined 45 percent, and researchers now suspect that accumulation of airborne mercury in forest ecosystems could be part of the cause.
- Monitoring has shown that concentrations of methylmercury in game fish from many interior lakes in Voyageurs National Park in northern Minnesota substantially exceeds criteria for the protection of human health. Researchers recently concluded that nearly all of the mercury in fish in this seemingly pristine environment was derived from industrial emissions.¹³
- Extremely high mercury levels were recently found in the endangered Indiana bats living in Mammoth Cave National Park in Kentucky, which is located in an area that has among the greatest concentrations of coal-fired power plants of anywhere in the country.¹⁴

102-20

The DEIS fails to discuss or provide any data on the mercury levels in Minnesota’s air and water.

5. The DEIS Does Not Adequately Analyze Impacts to Wilderness

¹¹ E.g., Gerald J. Keeler, M.S. Landis, G.A. Norris, E.M. Christianson, and J.T. Dvorch, “Sources of Mercury Wet Deposition in Eastern Ohio, USA,” *Environmental Science and Technology* (American Chemical Society), Vol. xx, No. xx, xxx (published online September 8, 2006).

¹² American Medical Association, <http://www.ama-assn.org/ama/pub/category/17086.html>.

¹³ J.G. Wiener, B.C. Knights, M.B. Sandheinrich, J.D. Jeremianson, M.E. Brigham, D.R. Engstrom, L.G. Woodruff, W.F. Cannon, and S.J. Balough, “Mercury in Soils, Lakes and Fish in Voyageurs National Park (Minnesota): Importance of Atmospheric Deposition and Ecosystem Factors,” *Environmental Science and Technology* (American Chemical Society), vol. 40, no. 20 (September 6, 2006).

¹⁴ The Louisville Courier-Journal, “Contaminated BATS? Mercury found in animals at Mammoth Cave,” August 7, 2005

Responses**Comment 102-19**

PSD regulations and application guidelines do not include or address deposition of mercury. In cumulative Class I analysis for Mesaba, total mercury was included as a transported pollutant (see Table 5.2.2-7 [Volume 1]). However, mercury deposition was not modeled because the chemical and physical form of mercury emissions from various sources is unknown. Deposition parameters for mercury compounds are highly dependent on the form of the mercury, and poorly defined for some mercury substances. Therefore there is no current methodology for reliable modeling of total mercury deposition. The human health risk assessment is contained in Section 4.17.2 (Volume 1) of Section 4.17, Safety and Health. The Final EIS has been revised to insert a missing sub-section heading, “4.17.2.3 Human Health Risks”, for the text that addresses risks associated with air pollutants emitted by the project. See also responses to Comments 38-01, 42-01, and 82-64, which address similar concerns.

The following text has been added to Section 4.8.2.2 (Volume 1): “In general, mercury exposure can cause negative impacts to terrestrial and avian wildlife species including adverse effects to neurological, endocrine, and reproductive processes. There are two major guilds of wildlife that have the potential to act as a baseline for bioaccumulation: fish and insects. Therefore, species that prey on fish or insects have the potential to be affected as well (Colman, 2007).”

Comment 102-20

Mercury concentrations in water bodies closest to the West Range and East Range Sites are provided in Sections 3.5.1.2 and 3.5.2.2. See response to Comment 102-19 regarding atmospheric mercury.

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102-21 The DEIS fails to analyze the impacts that the visible blighted plume from the Mesaba coal plant will have on observers in the surrounding wilderness areas. The DEIS fails to consider whether the plume will adversely impact recreation in the area due to a loss of the current unspoiled characteristics in the area. The DEIS also fails to analyze whether industrialization near these wilderness areas will have an adverse impact on the local economy as a result of reduced wilderness uses of the area. These impacts must be analyzed. An individual and cumulative haze analysis should be performed of the Mesaba plant and all other existing and proposed power plants in the region.

6. Noise

102-22 The DEIS fails to present data on the cumulative impacts of noise on the wilderness and nearby recreation areas from operation of the Mesaba coal-fired power plant, operation of the railroad line, and operation of water pumping stations. The DEIS must recognize that recreational receptors value the area for its “solitude”. A cumulative noise impact analysis should be performed to specifically quantify the collective noise from all of this development and then determine its likely impact on solitude in the local wilderness areas and recreation areas.

7. Failure to consider impacts caused by coal combustion waste disposal

102-23 The DOE and MDOC failed to “succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration.” as required by 40 CFR 1502.15. Without a detailed description of baseline environmental conditions, there is no means for assessing and comparing the impacts of the alternatives on water quality.

First, the DEIS did not assess baseline groundwater monitoring or surface water data. Second, the neither the DEIS or its Appendices contain a baseline description of the area(s) where waste will be disposed, including the large volumes of ash that will be disposed. Site-specific baseline geochemical data of the stratigraphy and layers of earth as well as water flow pathways at these specific disposal sites are necessary to understand and predict the consequences of placing large volumes of coal combustion waste into the ground. Baseline information is necessary to understand the amount of water that will interact with the coal waste, the quality of that water prior to the interaction, and the rates, directions and pathways that water will flow in from that interaction. This information is necessary to understand the potential for that water to reach any human and ecological receptors. Without this information, the information in the DEIS severely deficient for assessing and commenting on the environmental impacts of the preferred alternative.

The potential impact on aquatic life, terrestrial life and human health from exposure to coal ash contaminants from a large disposal of coal waste from the Mesaba power plant into the ground/landfill should have been discussed comprehensively in this DEIS. *See* Hopkins, W.A, C.L. Rowe, J.H. Roe, D.E. Scott, M. T Mendonta and J. Congdon. 1999. Ecotoxicological impact of coal combustion byproducts on amphibians and reptiles. Savannah River Ecology Laboratory, presented at the Society for environmental

Responses

Comment 102-21

Section 4.2.3.2, Aesthetics, as updated in the Final EIS, discusses the impacts related to plume visibility in more detail. The plume would potentially be visible to an area with a radius of up to 20 miles. The closest public lands in the areas are the Hill Annex Mine State Park (5 miles), the Forest History Center (15 miles) and the eastern edge of the Chippewa National Forest (20 miles). Cumulative visibility impacts are discussed in Section 5.2.2 (Volume 1), and Section 5.3.2.2 presents a discussion of the mitigation options for potential visibility impacts. Additionally, see response to Comment 100-04, which address impacts to recreation and tourism.

Comment 102-22

The noise analysis presented in Section 4.18 (Volume 1) indicated that proposed rail transportation and plant noise impacts to residential receptors would be minor; therefore, because recreational receptors and designated wilderness areas are located at a greater distance from the rail corridor than the residential receptors, it is expected that impacts to recreational/wilderness areas would be negligible.

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**102-23
(cont'd)**

Toxicology and Chemistry, 20th annual meeting, Philadelphia, PA, Abstract # PMP009; Skorupa, Joseph P., 1998. Selenium poisoning of fish and wildlife in nature: Lessons from twelve real world examples. From Environmental Chemistry of Selenium, Marcel Dekker, Inc. New York; and Cherry, D.S. et al. 2000. Review of the global adverse environmental impact to ground water and aquatic ecosystems from coal combustion wastes. Final Report. Prepared for the Hoosier Environmental Council and Citizens Coal Council, March 28, 2000 for coal ash impacts on aquatic ecosystems and Agency for Toxic Substances and Disease Registry. Health Consultation, Town of Pines Groundwater Plume, Town of Pines, Porter County, Indiana, June 14, 2002, http://www.atsdr.cdc.gov/HAC/PHA/townpines/top_p1.html for potential impacts to human health.

The DEIS also fails to provide leach data or other detailed waste characterization of the coal ash to be disposed. There is no field or laboratory data in the DEIS describing the leaching tendencies of the coal waste that will be generated by Mesaba. Along with the limited site-specific baseline information about the coal waste disposal areas, the failure to provide any in depth discussion of the chemistry of the coal waste involved further limits the ability to assess direct or indirect impacts from the preferred alternative. Site specific knowledge of the coal waste integrated with how it will behave in the disposal site in question are crucial to this understanding.

102-24

Coal combustion wastes are known to leach numerous harmful contaminants at levels harmful to health and the environment. EPA's 2006 report, entitled Characterization of Mercury-Enriched Coal Combustion Residues from Electric Utilities Using Enhanced Sorbents for Mercury Control confirmed that coal ash leaches arsenic and selenium at levels of potential concern.¹⁵ The report tested both laboratory leachate and field leachate of coal combustion waste and found significant exceedances of Maximum Contaminant Levels (MCLs, a.k.a. Primary Drinking Water Standards) for arsenic and selenium in groundwater in a substantial percentage of the samples. In fact, the concentrations of some samples approached 100 times the MCL. The report concludes that use of activated carbon injection to capture mercury at coal-fired power plants substantially increases the arsenic and selenium content of coal combustion waste. The report found, in addition, that coal ash commonly leached arsenic and selenium in excess of 10 times the MCL from both plants that employed sorbent technologies and those that did not.

Recent congressional concern about the adverse impacts of this practice lead to the National Research Council (NRC) 2006 report entitled, "Managing Coal Combustion Residues in Mines." The NRC Report concluded that "that the presence of high contaminant levels in many CCR ("coal combustion residue") leachates may create human health and ecological concerns at or near some mine sites over the long term."¹⁶ While the NRC committee found that monitoring systems at coal mines were generally

¹⁵ F. Sanchez, Keeny, R., Kosson, D., Delapp, R., Thorneloe, S. Characterization of Mercury-Enriched Coal Combustion Residues from Electric Utilities Using Enhanced Sorbents for Mercury Control, EPA/600/R-06/008, January 2006.

¹⁶ Committee on Mine Placement, National Research Council. Managing Coal Ash Residues in Mines. National Academies of Science, page 4, 2006.

Responses

Comment 102-23

See responses to Comments 53-03, 102-05, and 102-10, which address the same concerns.

Comment 102-24

As stated in responses to Comments 102-05 and 102-10, IGCC power plants do not produce the coal combustion wastes referenced by the commenter. See Sections 2.2.3.3, 2.2.3.4, and 4.16.2.2 (Volume 1), which discuss solid wastes, marketable products, and waste management. Toxicity characteristic leaching procedure results for slag from the E-Gas™ process are provided in Excelsior's Joint Permit Application accessible at the MDOC website for the Mesaba Energy Project Docket. See Comment 105-50 by MPCA regarding the rules pertaining to the beneficial use of coal combustion slag and sulfur. See response to Comment 53-03 regarding the selection of a landfill for disposal of slag or sulfur in the event that these byproducts cannot be marketed. See response to Comment 82-51, which addresses concerns regarding potential groundwater resources. Section 4.3.2 (Volume 1) addresses fugitive dust emissions and mitigation.

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inadequate to detect contamination from coal combustion waste, it dedicated Chapters 3 and 4 of its Report to the behavior of coal ash in the environment, threats to human health and damages that have occurred to groundwaters, surface waters, ecological systems and private property from coal combustion waste. As a result, the committee found that “enforceable federal standards are necessary to guarantee acceptable minimum levels of environmental protection wherever CCRs are disposed.”¹⁷

Substantial clouds of fugitive dust migrating across property lines and permit boundaries can regularly occur from ash piles and deposits. Fugitive dust is also generated regularly when ash is left exposed for indefinite periods in pits. This occurs despite the wetting of ash that is undertaken during its transport because, the permits often do not require daily or intermediate cover of the ash or scrubber sludge dumped in them and these materials dry out quickly when left exposed in the dry environment of the area.

These clouds of dust from ash and dried scrubber sludge pose a health threat to nearby residents or recreationalists that is entirely ignored by the DEIS. Numerous studies document severe cytotoxic effects in the lung cells of animals inhaling fly ash dust. The dust alters lung and liver tissue structure and kills or harms the alveolar macrophages, cells that protect against infection.¹⁸ Toxic metals concentrated in inhaled fly ash are readily transferred to other organs in animals.^{19, 20} Absent some evidence or research indicating otherwise, the authors of this DEIS cannot assume that humans are immune to these effects. Indeed, inflammatory interleukin-8 levels (proteins causing damage) increased in human lung epithelial cells exposed to fly ash by as much as 8 times.²¹ These studies (Aranyi et al, and Smith et al) have concluded that smaller particles prevalent in fly ash (below 1 micron) present the greatest inhalation hazard.

Aside from its concentrating effect, the combustion of coal leaves metals and other pollutants in a more soluble state in the waste left behind, another basic reality entirely ignored by the DEIS. Numerous researchers have long documented adverse environmental impacts caused by soluble constituents in coal combustion waste to groundwater and surface waters, plants, aquatic life, and other organisms. Carlson and Adriano (1980) maintain that the major environmental impacts of coal combustion waste include: leaching of potentially toxic metals and other substances into soils, groundwater and surface waters; hindering effects on plant communities; and the accumulation of toxic elements in the food chain. Elsewi et al. (1980), Phung et al. (1979), and Menon et al. (1990) analyzed the chemical and physical composition of fly ash under various

¹⁷ *Id.* at page 186, Chapter 8.

¹⁸ Aranyi, Catherine et al. *Cytotoxicity to Alveolar Macrophages of Trace Metals Adsorbed on Fly Ash*, ENVIRONMENTAL RESEARCH 20, 14-23, 1979.

¹⁹ Chauhan et al. Induction of Pulmonary and Hepatic Cytochrome p-450 Species by Coal Fly Ash Inhalation in Rats, *Toxicology*, 56, 95-105, 1989.

²⁰ Srivastava et al. Distribution of Metals of Inhaled Fly Ash in Various Organs of Rats at Various Periods After Exposure, *Environmental Science Health*, A19(6), 663-677, 1984.

²¹ Smith et al. *Interleukin-8 Levels in Human Lung Epithelial Cells Are Increased in Response to Coal Fly Ash and Vary with the Bioavailability of Iron, as a Function of Particle Size and Source of Coal*, American Chemical Society, October 1999.

Responses

102-24
(cont'd)

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Responses

**102-24
(cont'd)**

experimental conditions and documented the environmental impact of inorganic constituents at disposal sites, including the release of trace elements in water and soils treated with the ash. Sandhu et al. (1993) specifically studied the leaching of nickel, cadmium, chromium, and arsenic from coal ash impoundments of different ages and reached the general conclusion that leaching produces a measurable release of metals into the environment from both old and new ash deposits: “[A]sh deposits... weathered and leached for over 10 years, yet still may provide a source of metal contamination to infiltrating water. Thus, ash disposal basins may be potential sources of ground water contamination for many years after ash deposition has ceased.”

More recently, research has documented that oxyanionic trace metals such as arsenic that are not only in coal ashes, but in mined earth and soils that the ash is placed into contact with, become more vulnerable to leaching when the pH of waters moving through those materials is raised by the alkalinity of the ash. Yet the estimation of cumulative risk in the DEIS and its Appendices have left out any examination of the obvious potential for increased harm from exposure to the metals that are likely to be mobilized by this activity.

102-25

Failure to include a full range of alternatives renders an EIS inadequate under NEPA. *See Resources Ltd. v. Robertson*, 35 F.3d 1300, 1307 (9th Cir. 1993). NEPA requires that in preparing an EIS, each agency “[r]igorously explore and objectively evaluate all reasonable alternatives to the proposed action. 40 CFR 1502.14. The DEIS presents no alternatives to disposal of coal ash on site.

102-26

The DEIS fails to describe in detail the nature of the landfill that will receive the coal combustion waste. An engineered landfill with all the required safeguards, including a liner, leachate collection system, and groundwater monitoring system is a minimum requirement. However, the DEIS fails to commit to these safeguards. Most coal combustion waste in the U.S. is disposed in engineered landfills. *See* United States Environmental Protection Agency and United States Department of Energy, *Coal Combustion Waste Management at Landfills and Surface Impoundments, 1994-2004* (August 2006). An engineered landfill is thus a reasonable alternative which must be specified and considered in the DEIS.

102-27

The DEIS should also specify more detailed mitigation measures for coal combustion waste. The DEIS should examine the impact of fugitive emissions from Mesaba’s coal combustion waste and propose daily cover or wetting requirements and/or other mandatory, enforceable safeguards (e.g., restrictions on locations and timing of coal combustion waste placement) to prevent an increase in exposure to toxic airborne dust from the transport, storage and land filling of ash. Land filling mitigation measures should also be specified, including the adequate characterization of the coal combustion waste, the integration of those characterizations to enable effective monitoring systems to be installed, adequate monitoring of the ash after placement (from enough points, for enough parameters and for a long enough period), isolation of the ash from water, cleanup standards and meaningful participation of the public in permitting decisions.

Comment 102-25

See responses to Comments 37-01, 111-02, 111-03, and 116-11, which address the same concerns. In response to these comments, DOE has revised Chapter 2 of the Final EIS (Volume 1) to more clearly explain the alternatives determined to be reasonable for the EIS in Section 2.1.1.2 (Volume 1). No alternatives for disposal of coal ash on site have been presented because there will be no coal ash disposed for the IGCC Power Station.

Comment 102-26

See responses to Comments 53-03, 102-05, and 102-10, which address the same concerns. Once a plant site is selected for permitting, Excelsior will identify one or more landfills with the suitable engineered safeguards (liner, leachate collection system, and groundwater monitoring) to accept wastes from the Mesaba Energy Project.

Comment 102-27

See responses to Comments 53-03, 102-05, and 102-10, which address the same concerns. Section 4.3.2 (Volume 1) addresses fugitive dust emissions and mitigation during construction and operations.

Responses**Comment 102-28**

As explained in the response to Comment 12-01, the effects of commercial coal mining are generally well known and well described and are not within the scope of this project. However, it should be noted that the Mesaba Energy Project is not proposing to use Appalachian coal, or any other coal that would be mined via mountaintop removal. The primary fuel for the Mesaba Energy Project would be Powder River Basin Coal. Between 1990 and 2005, annual PRB coal shipments doubled – from 200 to 400 million tons. As stated in Section 4.15.2.2 (Volume 1), under peak use scenarios for both Phases I and II, the Mesaba Energy Project could utilize up to 6 million tons of coal annually, which represents 1.5 percent of the PRB's annual output for 2005. The extent of impacts analysis associated with coal mining are discussed in relation to transportation and greenhouse gas impacts. Section 2.2.3.1 (Volume 1) provides a discussion of greenhouse gas emissions associated with the Mesaba Energy Project, including emissions from coal mining and transportation. Section 4.3.2.2 (Volume 1) describes and analyzes transportation-related emissions, including emissions from trains that would haul coal from mining locations. Section 5.2.8 (Volume 1) describes cumulative environmental impacts of climate change particularly with respect to continued fossil fuel combustion.

Commenter 102 – Kristin Henry**8. The DEIS Should Have Considered the Environmental Impacts How the Coal is Mined**

The DEIS did not analyze the environmental effects of mining the coal that would be used to fuel this power plant. It should have analyzed these impacts because these are indirect, secondary environmental effects that are clearly foreseeable. Building the proposed coal-fired power plants will, by definition, require that more coal be mined to feed the plants, and the proposed plants are slated to burn Powder River Basin coal. Thus, the DEIS should have analyzed the environmental impacts of the coal mining activity that will occur in the basin in order to provide coal for this proposed plants.

9. The EIS Must Consider Carbon Costs

The United States emits more greenhouse gases, including carbon dioxide, than any other nation.²² The United States is responsible for 24% of the global carbon dioxide emissions. *Id.* Within the United States, the electricity sector is responsible for 39% of carbon dioxide emissions, and within that sector, coal-fired power plants are responsible for 82% of carbon dioxide emissions.²³ *Id.* As a result, any regulatory program addressing domestic global warming emission will require significant reductions in emission from electric generating units, particularly coal-fired power plants.

In addition, controlling emissions from large, stationary point sources is easier, and often cheaper, than controlling emissions from smaller and/or mobile point sources. *Id.* Therefore, the electric sector is likely to play a key role in future carbon regulation scenarios. *Id.* In fact, it is predicted that 65% to 90% of energy-related carbon dioxide emission reductions will come from the electricity sector. *Id.* The Mesaba power plant is thus likely to be subject to intensive carbon regulation in the future.

In fact, there is a very high likelihood that mandatory CO₂ regulation will be adopted early in the lifespan of any coal-burning power plant constructed in the near future. Multiple bills have been proposed in Congress that would impose mandatory, market-based limits on carbon dioxide emissions. These proposals would employ a cap-and-trade regulatory approach that would require power plant operators to own an allowance for each ton of carbon dioxide emitted. Allowances would be tradable among emitters, and market forces would set the price of the allowances. Federal legislators are beginning to lay the groundwork for such a national regulatory program. In fact, Senator McCain, author of one of the climate bills under consideration in the Congress, said that the chances of approving meaningful legislation before 2008 were “pretty good” and he believed “we’ve reached the tipping point in this debate, and it’s long overdue.”

²² Synapse Energy, Inc., *Climate Change and Power: Carbon Dioxide Emissions Costs and Electricity Resource Planning* (June 2006) available at: <<http://www.synapse-energy.com/Downloads/SynapsePaper.2006-06.0.Climate-Change-and-Power.A0009.pdf>>.

²³ Gas-fired plants and oil fired plants are responsible for 13% and 5%, respectively, of carbon dioxide emissions from the electricity sector.

102-28

Commenter 102 – Kristin Henry

Similarly, there is general agreement that a very aggressive regulatory program will be necessary to address global warming. The consensus is that ambient carbon dioxide must be stabilized to 450-550 parts per million in ambient air, in order to avoid serious climate disruption. To stabilize greenhouse gases at this level; we will need to reduce annual carbon dioxide emission from current levels by some 60-80% by the year 2050.

Not only will the Mesaba power plant likely face federal regulation, it may also face state carbon regulation. To date, state governments have taken the lead on implementing climate change policy. For instance, Governor Schwarzenegger and the California legislature reached an agreement on AB32, the Global Warming Solutions Act. The Act creates an economy-wide cap on greenhouse gas emissions, which limits California's greenhouse gas emissions to 1990 levels by 2020. Similarly, the Governor of Arizona issued an Executive Order (EO 2006-13) establishing a statewide goal to reduce Arizona's greenhouse gas emissions to 2000 levels by 2020 and 50% below this level by 2040.

Carbon regulation at the federal level is inevitable and perhaps may occur at the state level. Based on the inevitability of carbon regulation, there will unquestionably be a significant cost differential between zero emitting sources, such as energy efficiency and operating moderately carbon dioxide emitting sources, such as a natural gas unit, and a high carbon dioxide emitting source such as a coal-burning power plant.

Under Minnesota law, "No large energy facility shall be sited or constructed in Minnesota without the issuance of a certificate of need by the [Public Utilities] commission..." Minn. Stat. § 216B.243, subd. 2. In addition, the Public Utilities Commission must "quantify and establish a range of environmental costs associated with each method of electricity generation" Minn. Stat. § 216B.2422, subd. 3. The statute also requires that utilities legitimately apply not only those cost projections but also "other external factors, including socioeconomic costs" in evaluating any proposed resource. Minn. Stat. § 216B.2422, subd. 3.

102-29

The DEIS should have considered the prospect of future regulatory costs in order to determine the full costs of the proposed Mesaba facility and compare that with costs of different alternatives. Excelsior Energy has proposed to build an IGCC power plant that is not carbon capture and sequestration ready. In addition, Excelsior Energy has not projected how much it will cost once its carbon emissions are regulated and how those costs will be paid. The EIS must carefully consider this issue to ensure that residents of Minnesota don't get stuck paying off a bad decision.

10. The EIS Must Consider the Economic Impact of Emitting Greenhouse Gases.

102-30

The DEIS should have considered the economic impacts of emitting 5 million tons of CO₂ annually. Peer reviewed studies have been performed modeling the economic costs

Responses

Comment 102-29

As stated in response to Comment 53-04, Section 2.2.1.3 (Volume 1) of the Final EIS (under Potential Carbon Capture Retrofit) explains that CCS options presented in the EIS are based on a potential future requirement to reduce CO₂ emissions from the Mesaba Energy Project, along with potential financial incentives such as carbon removal credits traded in a "carbon market" that would limit the cost of CCS passed on to utility customers. CO₂ emissions are not currently limited under the CAA, and a viable carbon market has not been established in the U.S. Therefore, as stated in Appendix A2 (Volume 2), the effect of CCS on the cost of electricity from the Mesaba Energy Project has not been quantified. Assuming that legislation restricting carbon emissions would eventually be passed by the U.S. Congress and signed into law, the real costs associated with CO₂ emissions and required reductions would be determinable at that time. Under the standards established by 40 CFR 1502.22 of the CEQ NEPA regulations, the EIS has addressed "reasonably foreseeable" impacts from CO₂ emissions and CCS to the extent practicable without resorting to unwarranted conjecture. See also responses to Comments 4-01 and 4-03, which address the same concerns.

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102-30
(cont'd)

of global warming and CO₂ emissions.²⁴ For example, it has been estimated that each ton of CO₂ emitted causes approximately \$85 in damage. *Id.* When this is extrapolated out that means that the Pee Dee facility 5 million tons of CO₂ will cause almost \$425 billion dollars in damage. The DOE and MDOC cannot turn a blind eye to these damages. The DEIS should have analyzed the economic impact of emitting over 5 million tons of CO₂ annually. *See, e.g.*, Minn. Stat. § 216B.2422, subd. 3 (requiring the PUC to consider other external factors and costs).

12. The EIS Must Consider the Local Economic Impact of the Different Alternatives.

102-31

Renewable energy sources, energy efficiency and conservation produce more local jobs than a highly automated plant burning dirty imported fuel. The DOE and MDOC should have considered these impacts to the local economy in its DEIS. This is especially true given that one of MDOC's stated purposes for the project is to create jobs.

13. The DOE must fully analyze the proposed project's impacts to species listed protected under the Endangered Species Act.

As part of its evaluation of the impacts of the proposed project to species listed as "endangered" or "threatened" under the Endangered Species Act, 16 U.S.C. § 1531, et seq. ("ESA" or "Act"), DOE must comply with additional procedural and substantive requirements of the Act, as explained below.

a. The requirements of the Endangered Species Act

The Endangered Species Act was enacted, in part, to provide a "means whereby the ecosystems upon which endangered species and threatened species depend may be conserved . . . [and] a program for the conservation of such endangered species and threatened species..." 16 U.S.C. § 1531(b). The ESA "is the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 180 (1978). The Supreme Court's review of the ESA's "language, history, and structure" convinced the Court "beyond a doubt" that "Congress intended endangered species to be afforded the highest of priorities." *Id.* at 174. As the Court found, "the plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost." *Id.* at 184.

The ESA vests primary responsibility for administering and enforcing the statute with the Secretaries of Commerce and Interior. The Secretaries of Commerce and Interior have

²⁴ Stern, N., *Stern Review on the Economics of Climate Change*. Cambridge University Press. Available at http://www.hmtreasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

Responses

Comment 102-30

DOE considers the development of economic estimates of incremental damage from GHG emissions to be beyond the scope of this EIS. The U.S Climate Change Science Program integrates Federal research on global climate change and oversees both the U.S. Global Change Research Program (USGCRP) and the President's Climate Change Research Initiative (<http://www.climatechange.gov/about/default.htm>). The U.S Climate Change Science Program is a coordinated interagency research program overseen by the U.S. Office of Science and Technology Policy, the CEQ, the National Economic Council, and the Office of Management and Budget with participation by DOE and 12 other Federal agencies. DOE considers that any estimate relating to economic damage from global climate change is under the jurisdiction of that program. The U.S Climate Change Science Program and USGCRP have been funded at approximately \$2 billion per year since 1993 (<http://www.climatechange.gov/infosheets/ccsp-8/>), and no such estimate has been published to date.

DOE acknowledges that the Stern Review (Stern et al., 2006), cited in the comment, and other studies have modeled and attempted to predict the costs of global climate change. However, as evidenced in a review by Dr. Richard S. J. Tol (2005) of 28 published studies on the subject, consensus is lacking on the marginal damage costs of CO₂ emissions. Tol statistically combined the results of the 28 studies and reported a mode of \$2/ton carbon (C), a median value of \$14/ton C, a mean of \$93/ton C, and a 95th percentile value of \$350/ton C. These amounts equate to respective values for CO₂ (at 3.664 grams CO₂ per gram carbon) of \$0.55/ton, \$3.82/ton, \$25.38/ton, and \$95.52/ton. Tol found that the discount rate used in the studies had a strong bearing on the results, and he also noted that peer-reviewed studies gave lower estimates for marginal damage costs with smaller uncertainties than studies that were not peer-reviewed.

In a critique of the Stern Review, Tol (2006) noted that Stern's estimate of \$85/ton CO₂ would be considered an outlying value in the 28 published studies. Other researchers (Dasgupta, 2006; Nordhaus, 2007; and Weitzman, 2007) also found fault with the Stern Review and its assumptions, particularly with respect to the use of an extremely low (near-zero) discount rate that greatly overstates the costs of future impacts in today's dollars. As best expressed by Dasgupta (2006): "To be critical of the Review isn't to understate the harm humanity is inflicting on itself by degrading the natural environment – not only in regard to the stock of carbon in the atmosphere, but also in regard to so many other

Commenter 102 – Kristin Henry

delegated this responsibility to the National Marine Fisheries Service (“NMFS”) and the U.S. Fish and Wildlife Service (“FWS”) respectively. 50 C.F.R. § 402.01(b). NMFS has primary responsibility for administering the ESA with regards to most marine species, including corals, sea turtles and most marine mammals, while FWS has responsibility for terrestrial species, as well as some marine mammals, and all seabirds.

Section 2(c) of the ESA establishes that it is “the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act.” 16 U.S.C. § 1531(c)(1). The ESA defines “conservation” to mean “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary.” 16 U.S.C. § 1532(3). Similarly, Section 7(a)(1) of the ESA “contains a clear statutory directive (it uses the word ‘shall’) requiring the federal agencies to consult and develop programs for the conservation of” listed species, and requires the Secretary to review “other programs administered by him and utilize such programs in furtherance of the purposes of the Act.” 16 U.S.C. § 1536(a)(1); *Sierra Club v. Glickman*, 156 F.3d 606, 617 (5th Cir. 1998). The ESA “was enacted not merely to forestall the extinction of species (i.e., promote a species survival), but to allow a species to recover to the point where it may be delisted.” *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1070 (9th Cir. 2004); *see also id.*

(“Conservation” is a much broader concept than mere survival” – the “ESA’s definition of ‘conservation’ speaks to the recovery of a threatened or endangered species”). Species listed as endangered or threatened are entitled to the ESA’s substantive protections. The “take” of listed species is generally prohibited. *Id.* at § 1538(a); 50 C.F.R. § 17.31(a). “Take” means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” 16 U.S.C. § 1532(19). The Services may, however, permit “incidental” take on a case-by-case basis if they find, among other things, that such take will be minimized and mitigated and that such take will not “appreciably reduce the likelihood of survival and recovery of the species.” *Id.* at § 1539(a).

Section 7(a)(2) requires that for all discretionary activities carried out by federal agencies, such as the proposal to permit the proposed project, the acting agency must “insure” that its actions neither “jeopardize the continued existence” of any of the nation’s listed species nor “result in the destruction or adverse modification” of listed species’ “critical habitat.” *Id.* at § 1536(a)(2). In order to fulfill the substantive purposes of the ESA, Federal agencies, such as BLM, are required to consult with NMFS or FWS to “insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the adverse modification of habitat of such species . . . determined . . . to be critical . . .” 16 U.S.C. § 1536(a)(2). As the Supreme Court recently reiterated, Section 7(a)(2)’s prohibition against jeopardy is “imperative.” *Nat’l Ass’n of Home Builders v. Defenders of Wildlife*, 127 S. Ct. 2518, 2532 (U.S. 2007).

Responses

Comment 102-30 (cont’d)

environmental matters besides. But the cause isn’t served when parameter values are so chosen that they yield desired answers.”

In the absence of either a published estimate from the U.S. Climate Change Science Program or clear consensus on the marginal damage costs of CO₂ emissions, DOE elected not to speculate on the potential economic impact of the Mesaba Energy Project on global climate change. In doing so, DOE has not intended to diminish concerns about the future costs of global climate change. However, DOE has a responsibility to evaluate technologies that have the greatest potential to meet the future energy needs of the nation using available resources. As stated in response to Comments 37-01, 63-01, and 102-03, DOE’s responsibility for this EIS within the restrictive context of the CCPI legislation is to evaluate an advanced coal-based technology that offers promise to reduce pollutant emissions compared to conventional coal-fueled power plants. Also, as stated in response to Comment 12-02, IGCC technologies offer the best opportunities among coal-fueled plants to capture concentrated CO₂ emissions. When coupled with other technologies to be demonstrated under the CCPI Program as well as under DOE’s Carbon Sequestration Program, these technologies offer the best opportunities for minimizing or eliminating future CO₂ emissions from coal-fueled power plants.

Comment 102-31

See response to Comment 37-01, which explains the reasonable alternatives available to DOE to achieve the purpose and need.

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In completing this formal consultation, DOE must address both the jeopardy and critical habitat prongs of Section 7 by considering the current status of the species, the environmental baseline, the direct and indirect effects of the proposed action, as well as its cumulative effects. 50 C.F.R. § 402.14(g)(2)-(3); 50 C.F.R. § 402.02 (emphasis added) (the “‘effects of the action’ refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline”); id. (the “environmental baseline” includes the “past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process”).

This analysis must be critical, comprise more than a mere “recitation” of the activities, and consider the “total impact” to listed species. *Defenders of Wildlife v. Babbitt*, 130 F. Supp. 2d 121, 128 (D.D.C. 2001). The analysis may not be unduly constrained – the regulations broadly define “action area” as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” 50 C.F.R. § 402.02 (emphasis added).

b. Local and Regional Species Affected by the Project

There are numerous listed species located in or in the vicinity of the project area whose individuals and habitat will be impacted by construction and operation of the Mesaba power plant, including the threatened and endangered species that inhabit the Boundary Waters Canoe and Wilderness Area, such as the peregrine falcon. The Project will adversely affect these listed species directly, indirectly, and cumulatively, and these impacts must be analyzed by DOE pursuant to the statutory and regulatory requirements of Section 7 of the ESA.

c. Species impacted by the project as a result of greenhouse gas emissions and global warming

In addition to adversely impacting listed species located in the vicinity of the project area, there is a growing number of listed species that are not located in or in the immediate vicinity of the proposed project, but which are nevertheless adversely affected by concentrations of greenhouse gas emissions in the atmosphere, which the proposed project will increase.

There are numerous listed species that are affected by global warming, triggering the consultation requirement. Global warming impacts on United States species already listed as threatened and endangered have been well documented. Affected species include two listed coral species, elkhorn and staghorn corals, as the final listing rule for these species specifically discussed the impacts of global warming and greenhouse gas emissions on the species. *See* 71 Fed. Reg. 26,852. Sustained increased ocean temperatures cause these coral to expel symbiotic algae on which they depend for photosynthesis and energy, the

Responses

Comment 102-32

As discussed in Sections 3.8.3.1 and 4.8.2.1 (Volume 1) of the Final EIS, DOE consulted with the USFWS for compliance with Section 7 of the Endangered Species Act as evidenced by the correspondence in Appendix E (Volume 2). In accordance with this consultation, DOE completed a Biological Assessment for USFWS addressing project impacts on the Canada lynx and gray wolf (see Volume 2, Appendix E). No other species were identified by USFWS for specific assessment. The USFWS concurred with DOE’s conclusions at the West Range site. In the event that the East Range site would be selected for the Proposed Action, DOE would resubmit the Biological Assessment to the USFWS for concurrence. DOE also addressed potential impacts on Minnesota protected species in Sections 3.8 and 4.8 (Volume 1). DOE does not agree that any effects of global climate change that can be attributed to emissions of greenhouse gases from the Mesaba Energy Project require a determination of effect under the Endangered Species Act, nor has the USFWS required such a determination during the Section 7 consultation. It may be relevant that the Department of the Interior stated in its decision to list the polar bear as “threatened” (May 14, 2008) that the Endangered Species Act would not be used to regulate global climate change.

A new section has been added to the Final EIS (Section 5.2.8 [Volume 1]) that discusses the incremental emissions of greenhouse gases from the Mesaba Energy Project relative to the effects of global climate change.

102-32

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deadly phenomenon known as “coral bleaching.” 71 Fed. Reg. 26,858. In addition, increased levels of dissolved carbon dioxide in surface seawater acidifies the oceans and decreases the ability of these corals to calcify. 71 Fed. Reg. 26,858-9. Coral reefs are among the first ecosystems to show the significant adverse impacts of global warming. As the National Marine Fisheries Services stated in the listing rule, the “major threats to these species’ persistence (i.e., disease, elevated sea surface temperature, and hurricanes) are severe, unpredictable, have increased over the past 3 decades, and, at current levels of knowledge, the threats are unmanageable.” 71 Fed. Reg. at 26,858. Each of these threats is directly related to greenhouse gas emissions. Moreover, CO2 emission themselves are resulting in acidification of the ocean, inhibiting coral growth. The impacts of greenhouse gas emission and global warming on the elkhorn and staghorn corals are well established. By ignoring these impacts, DOE will be in abrogation of their ESA responsibilities.

102-32
(cont’d)

DOE must also consult on the impact of the proposed project’s greenhouse gas pollution on the polar bear. FWS has formally proposed listing the polar bear as a threatened species due to the melting of the Arctic sea ice, following a Petition and lawsuit by the Center for Biological Diversity, NRDC, and Greenpeace. 72 Fed. Reg. 1064-99 (Jan. 9, 2007). Polar bears are completely dependent upon Arctic sea-ice habitat for survival. Polar bears need sea ice as a platform from which to hunt their primary prey (ringed seals, *Phoca hispida*), to make seasonal migrations between the sea ice and their terrestrial denning areas, and for other essential behaviors such as mating. The polar bear’s sea-ice habitat is melting away due to global warming, and the Arctic may be ice-free in the summer well before the end of this century. Overpeck et al. 2005. Polar bears cannot be expected to survive the near complete loss of their sea-ice habitat.

VI. Consultation and Coordination (DEIS Chapter 7)

The DOE should consult with the agencies with specific expertise on global climate change with regard to the impacts and implications of the Mesaba power plant. More specifically, Section 102(c) of NEPA states that “prior to making any detailed statement, the responsible federal official shall consult with and obtain the comments of any Federal agencies which has jurisdiction by law or special expertise with respect to any environmental impact involved.” The term “special expertise” is defined in 40 C.F.R. 1508.26 as a “statutory responsibility, agency mission, or related program experience.”

102-33

There is no evidence in the record that the DOE consulted with the agencies with the greatest expertise on global warming impacts—namely, the National Oceanic and Atmospheric Administration or National Aeronautic and Space Administration. There is no evidence in the record that either of the agencies were consulted with regard to the global warming impacts of the TEP. *See*, DEIS Chapter 5 Tables 5-3 and 5-4. Moreover, there is no evidence in the record that BLM consulted with U.S. Fish and Wildlife Service (“FWS”) or National Marine Fisheries Administration regarding impacts to animals and habitat as a result of Mesaba’s release of global warming pollution. The DOE should not issue the Final EIS without undergoing the required consultation with these agencies regarding the global warming impacts of the proposed Mesaba power plant. The results of any such consultation should be made public. Given the

Responses

Comment 102-33

NOAA reviewed the Draft EIS and submitted Comment 55-01. The Draft EIS appropriately documented coordination with the USFWS. Sections 3.8.3 and 4.8.2 (Volume1) describe consultation with USFWS in accordance with Section 7 of the Endangered Species Act. Copies of correspondence between DOE and USFWS, as well as the Biological Assessment prepared for the Canada lynx and gray wolf, are included in Appendix E (Volume 2) along with the USFWS concurrence. USFWS commented on the Draft EIS through the Department of Interior (see Comments 57-10 through 57-12).

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**102-33
(cont'd)**

acknowledged significant adverse environmental impacts of the Mesaba power plant, this consultation must be conducted before undertaking this project.

CONCLUSION

Thank you for the opportunity to comment on the DEIS and please keep us informed of developments in this process. In addition, thank you for your attention to our concerns.

Respectfully submitted,

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Responses

Commenter 103 – Carol Overland

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January 11, 2008

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RE: Draft Environmental Impact Statement – Comments of mncoalgasplant.com

Dear Mr. Hargis and Mr. Storm:

Enclosed for filing please find the Comments of mncoalgasplant.com regarding the Draft Environmental Impact Statement.

DEIS IS INCONSISTENT WITH SCOPING DOCUMENT

The Mesaba Project DEIS is inconsistent with the September 13, 2006 scoping document signed by the Commissioner of Commerce and there is no apparent scoping document by the DOE.

1) The Department of Commerce scoping document and DEIS misstate prohibitions of review. From the scoping document:

Because the Department has concluded that this facility qualifies as an "innovative energy project" and because Minnesota Statute 216B.1694, subdivision 2, item 1, has exempted such a project from demonstrating need, issues related to the need, size or type of the facility are excluded from consideration in this matter. Thus, such issues are not within the scope of the EIS. The DOC will not, as part of this environmental review, consider whether a different size or different type plant should be built instead. Nor will the DOC consider the no-build option.

103-01

Responses

Comment 103-01

MDOC stands by its statement in the Scoping Report and the project's exemption from a Certificate of Need.

Commenter 103 – Carol Overland

Scoping Document, p. 4. Under Minnesota rules, consideration of size, type and timing is prohibited where a Certificate of Need has issued, and not where a project is exempt:

7849.5920 FACTORS EXCLUDED.

When the Public Utilities Commission has issued a Certificate of Need for a large electric power generating plant or a high voltage transmission line or placed a high voltage transmission line on the certified HVTL list maintained by the commission, questions of need, including size, type, and timing, questions of alternative system configurations, and questions of voltage shall not be factors considered by the commission in deciding whether to issue a permit for a proposed facility.

The Department may claim that there is a statutory prohibition, but the statutory prohibition applies only to the siting/routing permits, and this project has a much broader scope under the PUC. Environmental issues were raised in the PPA proceeding, and are a part of the statutory criteria at issue. See Minn. Stat. §§ 216B.1693; 216B.2694.

216B.1694 INNOVATIVE ENERGY PROJECT.

Subdivision 1. Definition. For the purposes of this section, the term "innovative energy project" means a proposed energy-generation facility or group of facilities which may be located on up to three sites:

(1) that makes use of an innovative generation technology utilizing coal as a primary fuel in a highly efficient combined-cycle configuration with significantly reduced sulfur dioxide, nitrogen oxide, particulate, and mercury emissions from those of traditional technologies;

... and ...

Subdivision 2. Regulatory Incentives.

(8) shall be eligible for a grant from the renewable development account, subject to the approval of the entity administering that account, of \$2,000,000 a year for five years for development and engineering costs, including those costs related to mercury-removal technology; thermal efficiency optimization and emission minimization; environmental impact statement preparation and licensing; development of hydrogen production capabilities; and fuel cell development and utilization.

**103-01
(cont'd)**

103-02 2) The Department of Commerce scoping document also states: "*Nor will the DOC consider the no-build option.*" There is no authority or rationale for the statement. The no-build option must be considered by the PUC.

103-03 3) The DOE scoping document has not been distributed to stakeholders, parties and interested persons. At the very least, notice and links, if not hard copies, must be provided.

Responses

Comment 103-02

As stated in response to Comments 99-01 and 102-04, the PUC's decision on the basis of this EIS and MDOC's recommendation would result in the approval of permits for either the West Range or East Range Site, or the disapproval of permits for the Mesaba Energy Project. The disapproval of permits would be equivalent to a no action (no-build) alternative, because the project could not be constructed without them.

Comment 103-03

As stated in response to Comment 7-01, DOE conducted its scoping process in accordance with department policy and the CEQ NEPA requirements (specifically 40 CFR 1501.7). Section 1.6 (Volume 1) of the Final EIS describes the scoping process that was undertaken by DOE and MDOC for the Mesaba Energy Project EIS. There is no Federal requirement for the publication and distribution of a scoping document. However, all comments received during the Federal and state scoping periods were posted at the MDOC website for the Mesaba Energy Project Docket: <http://energyfacilities.puc.state.mn.us/Docket.html?Id=16573>.

Commenter 103 – Carol Overland

- 103-04** | 4) In many instances, the DEIS has no distinction between DOE and DoC analysis and information. This should be made clear throughout the DEIS.
- 103-05** | 5) Section 1.3.1 claims to address the “Project Proponent Proposed Action” but the narrative is misdirected, and should address Excelsior Energy’s applications to DOE for funding, the “Project Proponent Proposed Action” that is the trigger of the DOE DEIS.
- 103-06** | 6) The DEIS, in Section 1.4, p. 1-6 to 1-9, improperly shifts the purpose of the project, from that of public need, as framed in the DoC scoping document, to one focusing on project proposer need. EIS must address the public need for the project and eliminate discussion of “project proponent need.”
- 103-07** | 7) The DEIS, in section 1.4.1.2, provides a narrative regarding the DOE purpose, and it does not include “demonstrate” in line one where the purpose of the DOE’s action is explained. This is a “demonstration” project, mentioned elsewhere, and that is a material term in the purpose of this project.
- 103-08** | 8) In section 1.4.14 of the DEIS, the State Purpose is addressed. One important omission that must be corrected is the state’s need to provide for public participation opportunities under the Power Plant Siting Act and in the PPA docket.
- 9) Section 1.4.2.1 accepts the project proponents’ claim of a “need within Minnesota for 3,000 to 6,000 MW of base load power generation over the next 15 years.” That is not substantiated, has not been independently verified, and it is not true – this “need” is a repeated exaggeration on the part of Excelsior Energy, and in the words of the PUC chair in November, specifically regarding Excelsior’s Mesaba Project’s projected generation, “No one needs it, no one wants it, and we’re not going to force it on anyone” or words to that effect. The EIS must include substantiation of this claimed need. CapX 2020 claims a “need” for 4,500-6,000MW in the REGION, the shaded multi-state area below:

103-09



Diagram 1 - CapX 2020 Region

Xcel, the largest utility in this area, was found by PUC to have a “need” for an RFP for only an additional 375 MW by 2015, and has since returned to PUC with “Changed Circumstances” that eliminates the need for an RFP. See Xcel’s Notice of Changed Circumstance:
<http://nocapx2020.info/wp-content/uploads/2007/09/xcel-notice-of-changed-circumstances.pdf>

Responses

Comment 103-04

The EIS has been prepared as a joint Federal and Minnesota document for compliance with NEPA and the Minnesota Power Plant Siting Act. As stated in the Cover Sheet (Volume 1), because the EIS requirements of both acts are substantially similar, DOE and MDOC cooperated as lead Federal and state agencies in the preparation of an EIS to fulfill the requirements of both laws. There is no Federal or Minnesota requirement to indicate in the EIS which analyses were done by the respective agencies.

Comment 103-05

As stated in response to Comment 75-05, the “Project Proponent Need” section in the Draft EIS (Volume 1) was based on language in the document (Appendix F1, Volume 2) prepared by Excelsior at the request of USACE as a cooperating agency for the EIS (see Comment 116-33). The information contained in the Draft EIS section has been replaced with a brief statement referencing the project proponent’s purpose in Appendix F1. Sections 1.3 and 1.4 (Volume 1) of the Final EIS have been revised to correctly focus on DOE’s and MDOC’s proposed action, purpose and need.

Comment 103-06

As stated in response to Comment 103-05, Section 1.4 (Volume 1) of the Final EIS has been rewritten to focus on the purpose and needs of DOE and MDOC. The broader public needs associated with the project are explained in Section 1.2 (Volume 1) of the Final EIS consistent with DOE’s CCPI Program and Minnesota’s innovative energy technology statute. The discussion of the project proponent’s purpose has been replaced with a reference in Section 1.4.3 (Volume 1) to Appendix F1 (Volume 2), which was prepared by Excelsior at the request of USACE, a cooperating agency for the EIS.

Comment 103-07

The Final EIS has been revised in Section 1.4.1 (Volume 1) to clearly indicate DOE’s purpose.

Comment 103-08

The State Purpose and Need has been revised in the Final EIS Section 1.4.2 (Volume 1).

Comment 103-09

See response to Comment 75-05, which addresses the same concern.

Commenter 103 – Carol Overland

103-09
(cont'd)

Where the area's largest utility has no need for additional generation, that raises questions about Excelsior's claimed "need within Minnesota" and that claim should not be accepted without independent verification.

DEIS MUST INCORPORATE ENVIRONMENTAL DATA FROM PPA DOCKET

6) In its characterization of "State Involvement" (§1.4.2.3, p. 1-9), the DEIS limits state involvement to "responsibility for siting power plants... and transmission lines." It refers only to PUC Docket E6472/GS-06-668. **PUC DOCKET E6472/05-1993 HAS BEEN ENTIRELY OMITTED.** The DEIS must incorporate all environmentally focused testimony and documents in the PPA record (05-1993); including, but not limited to:

Direct testimony of Ronald R. Rich:
<http://legalectric.org/ff/2008/01/mcgp-direct-ronrich.pdf>
[The Challenge of Integration](#)
[Climate Vixion Risk Framework](#)
[UMD Itasca County Mesaba Economic Impact Study 2006](#)

Issues raised by Ron Rich that should be included in the EIS include:

103-10

- 6a) Cost of Carbon Dioxide Emissions and Sequestration
- 6b) Air Emissions from Proposed Flares – Cost of Control and Mitigation
- 6c) Cost of Plant Safety and Off-site Safety
- 6d) Evaporative Cooling Tower and ZLD Air Emissions – Cost of Control and Mitigation
- 6e) Cooling Water Blowdown ZLD – Cost of Control and Mitigation
- 6f) Cost of Cumulative Impacts in Conjunction with the MSI project
- 6g) Overstated Economic Benefits and Costs not addressed

Rebuttal testimony of Edwin Anderson, M.D., and Ronald R. Rich:
[MCGP Rebuttal Testimony of Edwin Anderson, M.D.](#)
[Exhibit 2](#)
[Exhibit 3](#)
[Exhibit 4](#)

The Rebuttal testimony of Edwin Anderson, M.D., includes the following issues that should be included in the EIS (see DEIS Community Health Issues, 3.17.3, p. 3.17-4):

103-11

- 6h) Emissions modeling representing "health benefits" presents false conclusion, and would have detrimental health impact, including increased mortality and morbidity.
- 6i) Comparison of smaller IGCC plant in more remote area with larger SCPC plant in less remote area is misleading – plants of similar characteristics must be compared.

Responses

Comment 103-10

The response to Comment 41-01 explains that the final revenues and costs for the project cannot be determined until a power purchase agreement has been settled. The power purchase agreement is the subject of a separate docket, which MDOC has stated it is not a subject for this EIS.

Comment 103-11

As stated in response to the preceding comment, the power purchase agreement is the subject of a separate docket, which MDOC has stated it is not a subject for this EIS.

As explained in responses to Comment 7-03 and 80-23, the EIS analyzed health risks for the Mesaba Energy Project using the AERA protocol required by MPCA for mandatory EIS categories that include this project. The AERA results indicated that the plant would not exceed established risk thresholds for carcinogenic and non-carcinogenic risk levels of air pollutants, which is not to say that project emissions won't affect human health at all. But, Federal and state agencies responsible for air pollution control establish risk thresholds to protect public health based on exposure pathways as discussed in Section 4.17.1.2 (Volume 1). The Final EIS has been revised to insert a missing sub-section heading (in printed Draft EIS copies), "4.17.2.3 Human Health Risks", for the text that addresses risks associated with air pollutants emitted by the project. With respect to points 6l and 6m in the comment regarding the ICF report, see response to Comment 82-93.

Committer 103 – Carol Overland

Responses

6j) A decrease in stack height and decrease of mercury removal means that health impacts, sickness and death, will increase, particularly among those with asthma, Chronic Obstructive Pulmonary Disease (COPD), chronic bronchitis and heart disease, putting children, the aged, and those with compromised immune systems at higher risk.

Expected morbidity:

Morbidity = Non-Fatal Health Effects:	Cases/yr in Minnesota related to PM 2.5
Acute bronchitis	1.6
Non-fatal MI (heart attack)	1.9
Asthma exacerbation	100
Cough, shortness of breath and/or wheezing	
ER visits for asthma	1.3
Lower respiratory Symptoms	19
Minor restricted activity days	791
Feel sick	
Work loss days	18,313
Clinic/urgent care visits	?
<i>See ICF Report, p.3-1, List of Health Endpoints, p. 3-4.</i>	

6k) Mortality costs (morbidity costs estimated at 7-8% of mortality costs)

Minnesota = \$8.7 million per year
United States = \$84.9 million per year

6l) Dry deposition of mercury is above the highest level measured at several points very near the site proposed for the Mesaba Project. ICF Report, Exhibit 2-13.

6m) Human health effects from chronic exposure of the developing fetus to mercury are:

- Human nervous system toxicity
- Mental retardation
- Growth deformity
- Seizures/Epilepsy
- Blindness
- Deafness
- Severely delayed development

Human Health Effects of Mercury from chronic exposure as infants or small children:

- Impaired reflexes
- Delayed motor development
- Impaired attention
- Impaired memory
- Impaired language

Human Health Effects from high level mercury exposure in adults:

- poisoning symptoms/very high exposure can cause:
- paresthesias- burning or prickling sensation in skin
- fatigue
- vision and hearing impairments
- ataxia (loss of muscle control)
- abnormal heart rhythms and irregular pulse
- coma

**103-11
(cont'd)**

Commenter 103 – Carol Overland

death

The ICF report notes that “Recent research has indicated that low-level chronic exposure to methyl-mercury via fish consumption may be linked with a higher risk of serious cardiovascular impacts in men, including MI, coronary artery disease, and other cardiovascular disease.” Further, “low level mercury exposure may lead to heart attack, stroke, and hardening of the arteries especially in adult males.” ICF Report, p. A-6.

6n) Specifics that should be disclosed:

1. Regarding expected morbidities, provide the range expected for these morbidities in a given year, and adjust for seasonal variation.
2. Give the expected number and range of clinic or urgent care visits, and factor this in to projected costs both to the State, and to local health care facilities and for specific local health insurance plans such as Itasca Medical Care (IM Care).
3. Explain the apparent discrepancy between low numbers of minor respiratory illness, significant number of minor restricted activity days, and the seemingly out of proportion number of work loss days.
4. Describe and quantify the cost of the predicted 18,000 lost work days to the average family affected, as well as the affect on employers needing to cover for sick workers. In simple monetary terms, if \$20 per hour workers lose 18,000 days of work, that is \$2,880,000 cost to the families in lost wages, and another \$2,880,000 to replace those workers for that time at the same wage (without any benefit or sick time adjustment).

6o) The DEIS should address air quality modeling and adverse health consequences, both local and regional, with regard to secondary particulates, and provide similar analysis of secondary particulate matter health impacts for the general population, individuals with co-morbidities, and the elderly.

6p) The DEIS should estimate the increase in risk for developing childhood asthma and associated costs; estimate risk and associated costs attributable to ozone exposure for people with co-morbidities, including children, individuals with lung disease, and the elderly; including average risk as well as increased risk on hot, sunny days; and estimate the health risk for healthy individuals and children exercising outdoors on hot sunny days and all associated costs.

[MCGP Rebuttal Testimony of Ronald R. Rich](#)

[Exhibit 5](#)

[Exhibit 6](#)

[Exhibit 7](#)

[Exhibit 8](#)

6q) The EIS must consider the internalized and externalized costs of accomplishing Carbon capture and sequestration and the internalized and externalized costs if this is not accomplished.

Dept. of Commerce:

Rebuttal Testimony of Eilon Amit:

<http://legalelectric.org/f/2006/10/05-1993-pub-rebuttal.pdf>

6r) Cost comparison update, p. 1-7.

Responses**Comment 103-12**

See responses to Comments 4-01 and 53-04, which address the same concerns.

**103-11
(cont'd)****103-12**

Commenter 103 – Carol Overland

103-12
(cont'd)

6s) Sequestration of Carbon Dioxide, p. 20-23.

AIR

7) The EIS must incorporate all of the MPCA filings regarding air emissions in the PPA docket:

103-13

8) The EIS must include, at minimum, truck and train traffic in emissions calculations. The EIS should also address increased train traffic necessary to support Phases I and II of the Mesaba Project. See MPCA Final Emissions Analysis:
http://legalelectric.org/f/2007/03/ago_docs-1712467-v1-excelsior_energy_mPCA_comments_in_pdf.pdf

103-14

9) The DEIS states that particulate emissions were “conservatively” assumed to be PM10 (DEIS p. . This is not reasonable, nor is it conservative, as gasification reduces the size of particulate matter, making it even more dangerous. An assumption of PM2.5 would be reasonable and conservative. The PM10 assumption must be corrected to more closely match reality of MEP’s emissions.

103-15

10) The Clean Air Act requires regulation of PM2.5, a criteria air pollutant. This must be addressed in the DEIS, for example, in Table 4.3-1, et seq.

103-16

11) Because the total of Annual tons per year of HAP Emissions, at 24, is so close to the 25 ton per year threshold, the Compound numbers should be itemized as to source to document that each source is indeed included.

103-17

12) Truck and train traffic attributable to MEP operations must also be included in emissions calculations. The MPCA frequently adds this calculation (see Midtown Eco-Energy Air Permit), but this calculation should include MEP operational traffic from its source to the MEP to deliver and then the return trip, not just on-site traffic.

103-18

13) The MPCA is soliciting comments for revisions of allocations under the Clean Air Interstate Rule and Excelsior is participating in discussions and making Comments. The EIS must address impact of proposed changes on the impact of the Mesaba Project. See Excelsior CAIR Comments:
<http://www.pca.state.mn.us/publications/cair-excelsiorenergy.pdf>
<http://www.pca.state.mn.us/air/excelsior-energy-comments-cair.pdf>

103-19

14) The MPCA is having discussions of altering Haze requirements in a Regional Haze Concept Plan, and Excelsior is participating in discussions and submitting Comments. The EIS must address impact of these changes. See Excelsior Haze Comments:
<http://www.pca.state.mn.us/publications/haze-excelsiorcomments.pdf>

WATER

103-20

15) Wabash River is the immediate predecessor of the Mesaba Project, and had many, many technical problems, including water contamination. These problems should be anticipated and plans must incorporate “lessons learned,” and there must be preparation for immediate remediation. The EIS must address

Responses

Comment 103-13

See response to Comment 12-01, which addresses the same concern.

Comment 103-14

See responses to Comments 9-01, 20-03, and 99-12, which address the same concerns.

Comment 103-15

See responses to Comments 9-01, 20-03, and 99-12, which address the same concerns.

Comment 103-16

Section 2.2.3.1 (Volume 1) provides a description of the types of sources and air emissions that they would produce. Table 4.3-5 (Volume 1), provides a list of HAPs that would be emitted annually from sources with the significant emissions of pollutants. The text of Section 4.3.2.4 (Volume 1) discusses the types of sources that are expected to produce minor or negligible emissions.

Comment 103-17

See response to Comment 12-01, which addresses the same concern.

Comment 103-18

The Final EIS has been updated to include the most current information on the Clean Air Interstate Rule in Section 3.3 and its impact on the Mesaba Energy Project.

Comment 103-19

The Final EIS has been updated to include the most current information on the Regional Haze Rule in Section 3.3 and its impact on the Mesaba Energy Project.

Comment 103-20

The Wabash River Plant corrected their process water effluent deficiencies (violations of limitations on arsenic and other pollutants) by treating contact process water with a ZLD system. The Mesaba Energy Project already proposed a ZLD system for process water effluent as a lesson learned from the Wabash River Plant. With Excelsior’s decision to implement the enhanced ZLD system at the West Range Site to include blowdown effluent (see response to Comment 6-01 and revised Section 4.5 [Volume 1]), the majority of water quality concerns that were originally discussed in the Draft EIS are no longer applicable.

Regarding stormwater management, the MPCA is still developing the draft rule; thus, any analysis of impacts for the project would be speculative at this time. However, as described in responses to

Commenter 103 – Carol Overland

16) The Wabash River plant was in “routine violation” of its water permit, emitting arsenic, cyanide and selenium into the water. ZLD as a preventative measure and mitigation must be addressed for the West site, not just the East site, and REQUIRED!

17) The DEIS must address each water issue raised in the Wabash River technical report.

18) The MPCA is anticipating and preparing for a Water Quality Trading Scheme, and Excelsior Energy has been participating in discussions. The EIS must address the environmental impact of a Water Quality Trading Scheme. See MPCA Water Quality Trading Meeting Participant List: <http://www.pca.state.mn.us/water/wqtrading/meeting-participants.pdf>

19) Stormwater Management is also being addressed by the MPCA, with Excelsior participating. The EIS must address the impact of proposed changes if instituted by Mesaba Project. See MPCA notes: <http://www.pca.state.mn.us/water/stormwater/swpfocusgroup-notes101107.pdf>

WETLANDS

20) The Mesaba Project footprint and project area is located in wetlands. EIS must address wetland mitigation and availability of wetlands for compensation of wetland loss: <http://www.duluthsuperior.com/mid/duluthsuperior/news/12999133.htm>

CRISIS OF CREDITS But a major problem could lie ahead for other developers. A scarcity of available wetlands for developers to compensate for wetland loss could become a large issue for several planned projects in Northeastern Minnesota. Economic development projects such as PolyMet Mining Co.'s proposed base and precious metals mine, Excelsior Energy's coal-gasification plant and Mesabi Nugget will probably require wetland replacement. With the exception of about 10 to 20 acres near Duluth, there's no certified wetlands credits available in Northeastern Minnesota, said Malterer. "It's a crisis," he said. "Where will the credits come from?" Tim Peterson, a U.S. Army Corps of Engineers project manager in Two Harbors, said Northeastern Minnesota needs more wetlands for mitigation. "Up in this area, there isn't too much for banks at the moment," said Peterson. "Compensatory mitigation for these projects hasn't been figured out yet -- they're discussing different options." Replacing wetlands with the same type of wetland and in the same watershed is preferred, he said. However, replacing wetlands with a different type of wetland can also be considered before looking to a bank for replacement, Peterson said.

ACCESS ROADS

21) The DEIS, addressing access roads, only discusses “an extension” of CR 7. However, realignment of CR 7 (Scenic Highway 7) is occurring specifically for the Mesaba Project, and the impact of this realignment must be addressed in the EIS. See MCGP Ex. 5058, SEH Presentation on allocation of project infrastructure.

HIGH VOLTAGE TRANSMISSION

22) The EIS must address the impacts of not just the interconnection transmission, but the system transmission that must be added to deliver Mesaba Project electricity to the metro area. Excelsior has proposed 345kV transmission lines, which under Minnesota law are assumed to

Responses

Comment 103-20 (cont'd)

Comments 84-01 and 105-49, the IGCC Power Station would be designed to ensure that all stormwater is either reused or treated to facilitate compliance with existing and future regulations.

Comment 103-21

Comments pertaining to wetlands, including avoidance and minimization of impacts and mitigation of unavoidable impacts, have been addressed in the responses to related comments from USACE (Commenter 116), which is the Federal agency responsible for wetland permitting and a cooperating agency for this EIS. In particular, see responses to Comments 116-22 through 116-24.

Comment 103-22

See response to Comment 80-11, which addresses the same concern.

Comment 103-23

See response to Comment 80-20, which addresses the same concern. See also new text in Section 2.2.2.4 (Volume 1) regarding MISO evaluations, scope of the EIS, and findings from recent system impact studies.

103-20
(cont'd)

103-21

103-22

103-23

Responses

Commenter 103 – Carol Overland

**103-23
(cont'd)**

have an environmental impact. These lines are part of the project and the impact must be evaluated. The need for this transmission has been documented repeatedly over the years by Excelsior lobbyists and electrical engineers. See MCGP 5041, Scherner presentation to MAPP 3/30/04; MCGP 5042, Scherner presentation to MAPP 10/26/04; MCGP 5043, Scherner presentation to MAPP 5/5/05; MCGP 5044, Scherner presentation to MAPP 8/16/06, MCGP 5045 Excelsior Presentation to MN Senate 2002; MCGP 5046, Excelsior Presentation to MN House 2002.

Thank you for the opportunity to Comment on the Mesaba Project DEIS. If you have any questions, or require anything further, please let me know.

Very truly yours,



Carol A. Overland
Attorney at Law

Enclosures

cc: Excelsior Energy Mesaba Project Service List (via email)

Responses

Comment 104-01

Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

Commenter 104 – Margaret Haapoja

>>> "Margaret Haapoja" <mhaapoja@northlc.com> 1/13/2008 4:15 PM >>>

Mesaba Energy Project, PUC Docket No. E6472/GS-06-668

DOE Draft EIS for the Mesaba Energy Project (DOE/EIS-0382D)

Comments on Draft EIS

We are definitely opposed to the Excelsior/Mesaba Energy Project, and it appears we're not alone in that sentiment. It seems to me the consensus of the majority in the county is that the plant is not necessary, would not be good for our air quality, might pollute our aquifer and is an unproven technology. After reading news articles and letters to the editor and speaking with the leaders of CAMP, I can see nothing positive about this project and much that is negative. It looks like the only people who stand to benefit from it are the proponents, and I wonder if they have ever invested any of their own money. Isn't our environment more important than the few jobs such a project would provide--especially when nothing about it makes sense?

Margaret A. Haapoja

20043 County Road 70
Bovey, MN 55709
218-247-7830

<http://users.northlc.com/mhaapoja>

104-01

Commenter 105 – Jeff J. Smith



Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 1-800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us

January 11, 2008

Mr. William Cole Storm
Minnesota Department of Commerce
Energy Facility Permitting
85 7th Place East – Suite 500
St. Paul, MN 55155-2198

RE: Minnesota Pollution Control Agency Comments on the Draft Environmental Impact Statement for the Mesaba Energy Project (MN PUC Docket #E6472/GS-06-668; DOE/EIS-0382D)

Dear Mr. Storm:

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) for the proposed Mesaba Energy Project. The Minnesota Pollution Control Agency (MPCA) has the following comments and concerns:

I. AIR

Industrial Air Quality Permitting

Please contact Marshall Cole (507-280-2992) if you have questions regarding our comments under this section.

105-01

Although the DEIS states (on page 5.3-16) that Selexol could be considered as an enhancement to mitigate unwanted environmental consequences due to sulfur dioxide emissions, the MPCA understands that the combustion turbine sulfur dioxide emissions are based on the use of methyl diethanolamine (MDEA) for removal of syngas sulfur compounds (primarily hydrogen sulfide) to a level of 50 ppmv. The Final EIS should reflect the use of Selexol because the use of Selexol is a cost-effective technology for syngas sulfur removal to a level of 20 ppmv or less, resulting in lower sulfur dioxide emissions and meets the required application of Best Available Control Technology (BACT) as required by the Clean Air Act. This approach will also address impacts Class 1 areas and regional haze issues.

105-02

The DEIS also states (on page 5.3-17) that selective catalytic reduction (SCR) could be considered as an enhancement to mitigate unwanted environmental consequences due to nitrogen oxides emissions. However, the MPCA understands that combustion turbine nitrogen oxide emissions are based only on the use of nitrogen injection into the syngas before combustion in the combustion turbines to reduce nitrogen oxides formation to a level of 15 ppmv. The Final EIS should reflect the reduction in nitrogen oxide emissions achieved through the application of SCR because the application of SCR is technically feasible to further reduce nitrogen oxides emissions to a level of 3 ppmv. This may be required to fulfill BACT requirements based on the required cost analysis and is a critical step in addressing regional haze concerns (see discussion below).

105-03

The DEIS reports that as many as four non-road diesel engines will be used at the facility. These engines will be a 2,000-kW emergency generator, a 350-kW emergency generator, and one or two 300-horsepower fire pump engines. The Final EIS must indicate the emissions tier that each engine will belong to when installed. For Best Available Control Technology purposes, these engines must meet the highest emissions tier commercially available (Tier II or Tier III, depending on engine size).

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Responses

Comment 105-01

See response to Comment 49-01, which addresses the same concerns.

Comment 105-02

See response to Comment 49-01, which addresses the same concerns.

Comment 105-03

EPA has established a number of emission tiers that will be phased in over time for various non-road diesel engine size; therefore, because the exact plant construction is not known at this time, the applicable emissions tier has not been specified. Excelsior would comply with whichever standard is applicable at the time of construction to ensure that such engines would meet the highest emissions tier.

Commenter 105 – Jeff J. Smith

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Page 2

105-04

The Material Handling Systems Section of the DEIS (on page 2-35) stated that wet spray dust suppression systems will be employed. However, in its September 4, 2007, e-mail transmittal to Marshall Cole of the MPCA, the project proposer had committed to installing a baghouse to control particulate matter (PM) emissions associated with the unloading of coal from railcars. The Final EIS should reflect this change.

105-05

Figure 2.2-1 (on page 2-15) shows fugitive emissions (FS-004) from gasification, syngas treating, and mercury removal processes. These fugitive emissions likely include hydrogen sulfide, carbon monoxide, and other gases. The Final EIS should include a discussion of leak detection and repair to reduce these emissions. Excelsior submitted a leak detection and repair plan to the MPCA in June 2007 and the Final EIS should reflect this.

Air Quality Dispersion Modeling

Please contact Ruth Roberson (651-296-7349) or Christopher Nelson (651-296-7750) if you have questions regarding our comments under this section.

Class II: Prevention of Significant Deterioration (PSD) Increment, National Ambient Air Quality Standard, and Minnesota Ambient Air Quality Standard Modeling

Air quality impacts on Class II areas were modeled for the proposed Mesaba Generating Station. Modeling addressed normal operating conditions as well as transient conditions. The predictive modeling approach and procedures are generally sound (i.e. the use of AERMOD [04300], and the inclusion of nearby and regional sources). Modeled concentrations from PSD increment analysis and AAQS evaluations are below applicable standards. However, MPCA staff must review and verify the emission rate calculations prior to the completion of a more detailed modeling review.

Modeling Considerations

- The Final EIS must specify what meteorological data was used in the dispersion modeling. The DEIS indicated that ISC-type model meteorological data was used. However, it is expected that AERMOD-type meteorological data be used.
- For permitting purposes, it is expected that the modeling will be updated to reflect the most recent meteorological data for northern Minnesota. Please note that AERMOD (07026) is the current version of the federally promulgated air dispersion model (40 CFR 51, November 2005).
- Receptor networks should be consistent with MPCA modeling guidance for PSD analysis (MPCA Guidance for Title V and PSD Air Dispersion Modeling, October 2004). The Final EIS should include justification and/or references to support the modeled network, keeping in mind that the receptor network should focus on resolution and location in addition to following modeling guidance.
- Regarding fugitive PM₁₀ Sources in Appendix B (B.1.1.1) the Final EIS should include a more thorough discussion of PM₁₀ emissions from the proposed project roadways. The discussion should include justification and references for characterization, emission calculations, and emission factors (see AP 42 13.2, January 1995).
- In Section 4.3.2.2 (page 4.3-7), the Final EIS should include a reference for the 20 percent reduction in vehicle trips due to carpooling.

Class I Areas

The MPCA typically collaborates with federal land managers (FLMs) from the National Forest Service and National Park Service on the review of Class I (far field) air dispersion modeling and analyses. The Class I areas potentially affected by the proposed Mesaba Generating Station project include the Boundary Waters Canoe Area Wilderness (BWCAW), Voyageurs National Park (VNP), and Rainbow Lakes Wilderness (RLW). Excelsior Energy analyzed Class I Increments and pollutant deposition in

105-06

Responses

Comment 105-04

Section 2.2.3.1 (Volume 1) of the Final EIS has been revised to show that a bag filter dust collection system design would be used in the material handling process.

Comment 105-05

Section 2.2.3.1 (Volume 1) has been revised to include measures to reduce fugitive emissions through leak detection and repair as presented in the Mesaba Energy Project Leak Detection and Repair Plan.

Comment 105-06

The modeling methodology (including assumptions, data used, etc) and receptor network used for the analysis is summarized in Appendix B of the Draft EIS and has been updated in Appendix B (Volume 2) and Section 4.3 (Volume 1) of the Final EIS. The AERMOD-type meteorological data, which were acquired from MPCA, were used for all Class II dispersion modeling. The data were in AERMET format and were prepared for the specific area of the West and East Range Sites. All modeling used AERMOD Version 07026, which was the latest approved EPA version at the time of submittal of the Mesaba Energy Project Air Permit Application. The modeling receptor network was developed to meet or exceed MPCA guidance. It provides a high 10m resolution along the Mesaba fence line, 25m resolution over a 0.25 km x 0.25 km area, and increasing receptor spacing over successively larger areas. The total receptor grid covers a 50 km x 50 km area and includes all areas that could experience significant air quality impacts from Mesaba emissions. Resolution is adequate to identify the specific location of highest predicted concentrations. Emissions factors from trucks on unpaved roads were obtained from AP-42 Section 13.2.2, and applied to Fluor's estimate of annual vehicle miles traveled to transfer slag, assuming 100% annual plant operation, a 0.2 mile round trip, and 80% control from application of dust suppressant on the roadways. This yields annual PM₃₀ emissions of less than 3 tons per phase and PM₁₀ emission of less than 1 ton per phase. The Final EIS has been updated to include this information. Also see response to Comment 9-01 for discussions on PM₁₀ and PM_{2.5} emissions. A reference has been added in Section 4.3.2.2 of the Final EIS to the assumption made regarding reduction in vehicle traffic due to carpooling.

Commenter 105 – Jeff J. Smith

Mr. William Cole Storm
January 11, 2008
Page 3

105-06
(cont'd)

BWCAW, VNP, and RLW. Preliminary result of the Class I Increments and deposition analysis are below levels of concern. However, the modeling results will change based on the controls required to fulfill BACT requirements and should be reflected in the Final EIS.

Visibility and Regional Haze

Please contact Catherine Neuschler (651-296-7774) if you have questions regarding our comments under this section.

The DEIS appropriately notes that “visibility issues are significant for the Boundary Waters and Voyageurs Class I areas” and that mitigation measures for the Mesaba facility may be necessary to reduce the facility’s visibility impact. As stated under Section 3.3.3.3, Minnesota must submit to the U.S. Environmental Protection Agency (EPA) a Regional Haze State Implementation Plan that demonstrates reasonable progress towards a 2018 visibility goal for each Class I area within Minnesota. The DEIS correctly notes that, “to achieve reasonable progress toward the 2018 visibility goal, Minnesota may need to implement control measures on other sources (including new sources)...and ensure they do not hinder attainment of visibility goals. Any future control strategies on newer facilities that the MPCA implements, would affect the Mesaba Generating Station” (page 3.3-7).

The MPCA is concerned that this statement does not accurately portray the long term nature of the Regional Haze program; the ultimate goal of the program is a return to natural visibility conditions by 2064, requiring ongoing improvements in visibility. Therefore, it is likely that there will be a need to actively search for emission reductions to attain visibility goals, and that the Mesaba Project would be subject to such emission reductions. The Final EIS should reflect reductions achieved under the application of BACT for SO₂ and NO_x.

105-07

The discussion in Appendix D concerning emission reductions from three Minnesota Power facilities, and the statement that Mesaba’s contributions to visibility impacts “are small relative to existing regional source contributions” (page 4.3-20), also raise concerns that the DEIS does not accurately characterize the long-term need for emission reductions in order to meet visibility goals. The fact that the visibility improvement from Minnesota Power’s emission reductions will generally exceed the visibility impact of the Mesaba Project would be sufficient if the goal was to avoid additional visibility impairment, but does not adequately address the fact that visibility improvement from current conditions is needed. Also, the addition of even a relatively small level of emissions is a concern when overall reductions are needed. The Final EIS needs to reflect this fact.

The MPCA is also concerned with the reliance on the purchase of allowances to mitigate visibility impacts. As noted (page 5.3-17) the facility will be required to purchase Clean Air Interstate Rule (CAIR) allowances equivalent to 100 percent of its sulfur dioxide emissions, and these allowances could “be purchased selectively from sources having modeled visibility impacts on Class I areas, so as to represent an effective means of reducing such impacts from Project operations.” Any use of allowances for mitigation will have to be carefully considered for regional impacts, and this should be noted and explained in the Final EIS. Clearly, should Mesaba purchase its CAIR allowances from out of state, this would add to the sulfur dioxide emissions in the region and further contribute to the visibility impact. The Final EIS needs to reflect that the requirement to purchase allowances equivalent to 100 percent of its sulfur dioxide emissions will not result in reduced visibility impacts. Only the purchase and retirement of additional allowances, over and above those needed for facility operation under Title IV or CAIR, from within the region would appear to ensure mitigation of visibility impacts.

Responses

Comment 105-07

Minnesota is in the midst of rulemaking to develop a SIP for the Regional Haze Rule with target reductions for 2018. While the final rule is not known, the draft SIP primarily relies on BACT determinations to limit emissions from new sources. The draft SIP includes a target of reducing SO₂ and NO_x emissions from northeast Minnesota by 30%, which, like the national Regional Haze program, mainly deals with retrofit controls for older sources. Section 3.3.3.3 and Table 3.3-5 (Volume 1) of the Draft EIS, to the extent possible, discussed potential requirements that the Mesaba Energy Project would face due to potential changes to requirements in the Minnesota Regional Haze program; therefore, further speculations cannot be made as to the types of control that may be required. See Section 4.3.1.4 (Volume 1) for more details regarding the modeled scenarios. See also response to Comment 49-01, which addresses the issue of visibility in Class I areas and the MPCA’s BACT decision.

DOE acknowledges that the Mesaba Energy Project would be an existing source after 2018 and therefore would be subject to BART in future phases of the Regional Haze Rule. Discussions regarding visibility impacts have been updated based on latest modeling efforts for the Final EIS and are presented in *Class I (Far-Field) Visibility/Regional Haze Analysis* under Section 4.3.2.5 (Volume 1) and *Class I Visibility/Regional Haze Analysis* in Section 5.2.2.2 (Volume 1). DOE understands that the FLMs do not consider reductions by other sources to be “offsets” for visibility impacts of the Mesaba Energy Project. Ultimately, the MPCA must address cumulative visibility impacts as part of its responsibilities under the Regional Haze Regulation. Section 5.2.2 (Volume 1) of the Final EIS identifies such responsibilities and how the project would be designed to be an integral component in supporting them. Note that since publication of the Draft EIS, a revised air modeling analysis was conducted in light of comments on the Draft EIS to accurately evaluate Mesaba Energy Project impacts on air quality and AQRVs in Class I areas near the West and East Range Sites. Section 5.3.2.2 (Volume 1) has new text on conceptual emission offsets and presents results from a supplemental modeling analyses of the effectiveness of a sample offset scenario at reducing model-predicted visibility impacts. These analyses were conducted only as examples to provide information and illustrate the concept of mitigation.

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Air Quality Risk Assessment

Please contact Kristie Ellickson (651-296-7338) or Mary Dymond (651-296-7992) if you have questions regarding our comments under this section.

Air Emissions Risk Assessment including RASS, ERER, IRAP, and the MPCA Mercury Fish Intake Model

The methodology used by the facility for the various exposure scenarios has been reviewed and approved by MPCA during the scoping process. The MPCA has also provided comments and information on previous submittals. Although the results presented in the DEIS are stated to be below risk goals used by MPCA to evaluate projects, the emission and chemical data have not been verified by the MPCA.

- 105-08** The MPCA has authority to craft permit conditions to prevent pollution and to protect human health and the environment. We have found that we garner the necessary information to make these decisions from an Air Emission Risk Analysis (AERA) performed according to our AERA guidance document (<http://www.pca.state.mn.us/publications/aq9-18.pdf>) or from a more refined risk assessment, when necessary. The following questions and comments are intended to clarify portions of the submitted draft risk assessment materials that may be missing steps or that deviate from our AERA guidance or from agreed-upon refined risk assessment methodology. In some cases, simple clarification is requested.
- 105-09** **General Comments on the AERA**
In the Final EIS, clarify the location of each receptor/sensitive receptor relative to the facility. In the DEIS, some descriptions treat receptors in terms of the distances from the "facility," while others treat receptors in terms of the distances from the proposed facility stacks.
- 105-10** In the Final EIS, clarify the values used for the emission factors and emission rates. Are they: a statistical descriptor of central tendency; maximum values; or highest potential values? This information is necessary in order to understand how conservative the assumptions and calculations were as far as potential for adverse human health effects.
- 105-11** The Final EIS needs to address PM emissions in the AERA. This particularly pertains to PM_{2.5}. The Criteria Pollutant Screen on the MPCA RASS may be used for this assessment. When incorporating PM_{2.5} into the risk assessment please clearly state the assumptions that were made as to assessing the PM speciation. This evaluation process is described on page 40 of the updated AERA guidance.
- 105-12** Identify "Insignificant Activities" in the Final EIS and document how these activities met the conditions for exclusion as described on page 40 of the updated AERA guidance.
- 105-13** In the Final EIS explain how the Chemicals of Potential Concern (COPC) list was compiled. Include a description or a flow chart/diagram of how compounds were chosen to be COPCs and then eliminated or kept for the "Chemicals for Evaluation" list.
- 105-14** In the Final EIS, list risk and hazard values at the property boundary and at the fence line.
- 105-15** Generally in the AERA process, risk is calculated for both a resident and a farmer at the location of maximum air concentration on potentially farmable land. In the Final EIS, evaluate farmer risks at the location of maximum concentration at potentially farmable land. Also, have the location of the farmer and resident clearly identified in the text and figures along with the respective risk value.

Responses

Comment 105-08

Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS have been updated with the results of the revised AERA, which was conducted in accordance with MPCA requirements. See response to Comment 42-01, which addresses the same concerns.

Comment 105-09

The Final EIS has been updated to show that revised AERA included a description of the locations of each receptor modeled in the IRAP in a consistent manner and included distances from the facility fence line.

Comment 105-10

Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS have been updated to include a discussion of the emission factors and emission calculation methods used for the compounds included in the revised AERA. Calculations were based on emission sources operating at their capacities. Emission factors for air toxics were developed based on emission tests from the Wabash River Plant, material balances, and published emission factors.

Comment 105-11

Section 4.17 (Volume 1) and Appendix C (Volume 2) of the Final EIS have been updated to address PM_{2.5} emissions. Also see responses to Comments 7-03 and 9-01, which address the relationship between PM_{2.5} and PM₁₀.

Comment 105-12

Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS have been updated to identify "insignificant activities" and documents how they meet the conditions described in the AERA guidance.

Comment 105-13

Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS have been updated to explain how the list of chemicals of potential concern was compiled and includes a description of the process used to choose the chemicals of potential concern and eliminate them from the Chemicals for Evaluation list.

Comment 105-14

Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS have been updated to present hazard indices and risk values for the various scenarios at the location of highest off-property concentration. The IRAP method of estimating risk associated with the proposed facility is conducted at the receptor location having maximum impact from all the sources combined for each air parameter. The receptor location represents the worst-case location where a rural resident, farmer, or

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Comment 105-14 (cont'd)

fisher may be found off the proposed facility property boundary. The maximum impact receptor location, R3, can be seen on Figure 2 of Appendix C (Volume 2).

Comment 105-15

Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS have been updated to show hazard indices and risk values for the various scenarios (including adult and child residents, farmers, and fishers) at the area of highest off-property concentration and includes updated text and tables, indicating receptors with the highest predicted risk, as well as the associated risk values. Appendix C provides the full AERA report and includes figures illustrating receptor locations modeled. The cumulative health risk analysis has also been updated for the Final EIS and is discussed in Section 5.2 and Appendix D2.

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- 105-16** | The DEIS does not list the sensitizers and developmental toxicants described in Appendix C (sections 5.4 and 5.5). These should be included in the Final EIS. Health based risk quotients are not completely protective for people who are sensitized to certain chemicals. Also, acute health risk values should never be exceeded by developmental toxicant hourly concentrations.
- 105-17** | **Appendix C AERA [ERER (Q/CHI)], Section 4.5**
In the Final EIS, the AERA spreadsheets (ERER and RASS) should include fugitive emissions, with the exception of road dust.
- 105-18** | **Appendix C AERA (IRAP), Section 4.6**
In the Final EIS, use the toxicological values submitted to you by MPCA in each risk model, including the IRAP. Some chemicals were discussed on page 13 (section 4.6.2) and 23 (section 5.8) of Appendix C as not having toxicological values for one of the risk models, and default toxicological values were used in the IRAP modeling.
- 105-19** | **Appendix C AERA (Mercury Uptake Model), Section 4.7**
Please use the most current Mercury Model for the Fish Ingestion Pathway for this analysis (<http://www.pca.state.mn.us/air/acra-mercury.html>).
- 105-20** | In the Final EIS, the MPCA fish consumption pathway model should be applied to the fishable water body that is most impacted by the facility. The evaluation of Lake Diamond was supported by the amount of available fish data and the location of the majority of residences. Is Diamond Lake the “most impacted fishable water body?” If Lake Diamond is not the most impacted water body, and the most impacted water body does not have adequate fish data, the fish data from Lake Diamond may be used as a surrogate.
- 105-21** | In the DEIS, the average and the 90th percentile fish tissue data were evaluated. In the Final EIS, use the 95th percent upper confidence limit of the mean for the fish tissue data.
- 105-22** | In the Final EIS, sum the ingestion risks from mercury found using the MPCA fish pathway model and the ingestion risks from mercury found using IRAP.
- 105-23** | The DEIS also assumed all mercury emissions to be elemental. In the Final EIS, document the basis for this assumption, use a more conservative approach or identify the mercury speciation inputs.
- 105-24** | In the Final EIS, use the Minnesota recommended fish intake value (0.142 mg/day) for the subsistence scenario, and not the IRAP suggested value (0.082 mg/day). The Minnesota recommended value was described in the DEIS, but the input in the fish uptake spreadsheet was the IRAP value.
- 105-25** | **Specific Chemicals**
In the Final EIS, include dioxins and furans in the risk analysis. Although dioxin levels may be very low, their toxicity is exceedingly high. The MPCA recommends the use of dioxin emission data from the Wabash site. If no data are available, you may need to obtain surrogate data to complete the risk assessment.
- 105-26** | **Potential Cumulative Impacts, Section 5.2.9**
The submitted DEIS includes a cumulative effects analysis for the AERA. Only one facility, Minnesota Steel, was included in the cumulative effects analysis. The Final EIS should include all listed nearby facilities that could contribute to increased air concentrations in the 10km zone surrounding the proposed

Responses

Comment 105-16

The AERA spreadsheets in Appendix C (Volume 2) of the EIS have been updated to provide a list of the sensitizers and developmental toxicants and the respective hazard quotients. Any chemicals with hazard quotients that are not protective have also been addressed in the Final EIS.

Comment 105-17

Appendix C (Volume 2) of the EIS has been updated to include fugitive emissions of carbonyl sulfide, hydrogen chloride, and hydrogen sulfide from equipment leaks. Additionally, the Final EIS clarifies in the Section 4.17.2 that fugitive emission rates of other compounds are less than 1 percent of their respective project emission rates.

Comment 105-18

Appendix C (Volume 2) of the EIS has been updated to show that only toxicological values approved by MPCA in the updated IRAP analysis.

Comment 105-19

The mercury analysis has been updated using the most current version of the Mercury Model for the Fish Ingestion Pathway from the MPCA website (i.e., Version 1.3, date April 13, 2006) and the results have been provided in the Final EIS.

Comment 105-20

Additional information has been provided in Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS to show the rationale for choosing Big Diamond Lake in the mercury analysis. See response to Comment 42-01, which addresses the same concern.

Comment 105-21

The mercury risk assessment was revised to use the 95th percent upper confidence limit of the mean fish tissue data and the results are presented in Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS.

Comment 105-22

The risk from fish ingestion from the IRAP model and MPCA's fish consumption analysis are provided although a total is not provided. The risk contribution from chemicals of potential concern other than mercury in the IRAP is negligible (on the order of 10⁻⁷ for cancer and 10⁻⁴ for non-cancer hazard quotient).

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Comment 105-23
Appendix C (Volume 2) of the Final EIS has been updated to provide further justification of the speciation of mercury emissions.

Comment 105-24
The IRAP fish intake value was corrected to 0.142 mg/day to be consistent with the MPCA fish consumption model value in the revised IRAP analysis and the results are presented in Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS.

Comment 105-25
Because the data was not available from the Wabash River Plant, the risk analysis has been revised to include dioxins and furans from surrogate data approved by MPCA and the results are provided in Section 4.17 (Volume 1) and Appendix C (Volume 2) of the EIS.

Comment 105-26
The revised Cumulative Risk Impacts Evaluation (Volume 2, Appendix D2) was completed by Excelsior's consultant in accordance with guidance provided by MPCA (April 30, 2008). DOE independently reviewed the analysis and summarized its conclusions in Section 5.2.3 (Volume 1).

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(cont'd)

facility in the cumulative effects analysis or provide clear justification for not incorporating the listed facilities in this assessment. Also ambient air monitoring data should be included in the cumulative effects analyses. Finally, as stated earlier, the cumulative effects analysis investigated the inhalation route of exposure. The cumulative effects analysis should also address ingestion pathways.

Air Policy and Mercury

Please contact Anne Jackson (651-296-7949) if you have questions regarding our comments under this section.

105-27

The MPCA is concerned that the DEIS does not acknowledge the need for depositional reductions from all sources in Minnesota of mercury emissions. Minnesota's Total Maximum Daily Load Reduction for Mercury establishes a statewide annual air emissions goal of 789 pounds per year. The TMDL goal of 789 pounds is a challenging 78 percent reduction from an estimated 3,638 pounds emitted in 2000. The addition of new sources like this project further increases the magnitude of the task of implementing the TMDL goal. As a result of three initiatives in Minnesota's existing electric utility sector, significant reductions of mercury will occur in the foreseeable future, however, the reductions still fall far short of achieving the goal of 789 pounds. As of December 2007, a TMDL stakeholder workgroup is meeting on a regular basis with the aim of recommending a plan by March 2008. The plan will likely address how new sources, such as this project, are to be permitted to operate while reducing the overall total mercury emissions in the state. The Final EIS needs to reflect these requirements.

The MPCA, therefore, does not agree with the DEIS' description of additional air quality impacts (Section 4.3.5.7 and 4.8.5.8). First, given the total goal of 789 pounds from all sources in Minnesota, without an offset from other sources of mercury emissions, Mesaba Energy's 52 pounds of mercury represents 6.5 percent of the statewide mercury emissions goal. The Final EIS needs to address how the proposed facility will mitigate mercury emissions to aid in achieving the TMDL goal.

Second, the DEIS assumes the existence of "stringent MACT standards." While EPA has promulgated a new source performance standard for mercury from an IGCC unit, the value essentially reflects no control of mercury, and could hardly be called "stringent." The Clean Air Mercury Rule (CAMR) does not restrict the amount of mercury released by a facility, only that the facility purchase allowances in sufficient quantity to equal the facility's emissions. In order to describe the effectiveness of the NSPS and CAMR, the Final EIS should describe the results of EPA's assessment of the impacts of CAMR on deposition in Northern Minnesota.

Climate Change

Please contact Peter Ciborowski (651-297-5822) if you have questions regarding our comments under this section.

Carbon Footprint

105-28

The DEIS estimates that, when completed in its entirety, the Mesaba Project will emit 9.4 to 10.6 million tons of carbon dioxide (CO₂) annually to the atmosphere. This is in absence of carbon capture and sequestration (CCS). These estimates appear to correspond to annual emissions with subbituminous coal and bituminous coal as fuel sources. Annual emissions are calculated using a 92 percent capacity factor.

Responses

Comment 105-27

To date, Excelsior has met with the MPCA to discuss how to permit the Mesaba Energy Project while working within the framework of evolving guidelines being established for new and expanding sources. The discussions have focused around developing offsets in the amount the Project's expected actual annual emissions exceed the *de minimis* threshold of three pounds per year. Based on discussions at these meetings, MPCA would take into consideration the innovative nature of the Mesaba Energy Project (i.e., the lack of a robust historical testing database) and MPCA would allow Excelsior to establish the Project's expected annual emissions using the best information it can assemble from published research studies, expert testimony, and testing results from similar mercury control technologies applied on sources in different industrial sectors (i.e., technology transfer). See also response to Comment 97-04, which addresses the same concern.

Comment 105-28

A 92 percent capacity factor is consistent with project objectives and represents a reasonable upper bound for estimating emissions of carbon dioxide. The plant capacity was adjusted to reflect ZLD and the heat rate was adjusted to reflect site average conditions and enhanced ZLD. Because the plant capacity and heat rate are fuel-specific (largely dependent on the fuel's heat content), these parameters were adjusted based on preliminary design data for Illinois No. 6 coal, and based on interpolation for 50/50 PRB coal and petroleum coke. Based on these adjustments, which result in capacity factor ranging from 75 to 92 percent, the Final EIS has been updated with the CO₂ emissions that would be emitted from all three fuel sources. New text provided in subsection *Emissions of Greenhouse Gases* under Section 2.2.3.1 (Volume 1) of the Final EIS has been added to provide discussions of non-CO₂ emissions and provide a complete carbon footprint for the Mesaba Energy Project during combustion and as a result of electrical transmission.

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The calculation of annual emissions is sensitive to the choice of capacity factor. The recent experience at the Tampa Electric Co. Polk IGCC unit suggests that 92 percent may overestimate plant availability. Based on DOE Energy Information Agency Form 906 data¹, in years 2004-6, plant capacity factors at the Polk IGCC were: 57 percent, 76 percent, and 56 percent, respectively.

In addition, the DEIS cited three possible fuel sources: subbituminous coal, bituminous coal and a 50:50 mixture of subbituminous coal and petroleum coke. Annual CO₂ emissions are estimated for only two of these possible fuel sources, omitting analysis of the mixture of subbituminous coal and petroleum coke. The Final EIS needs to provide the annual CO₂ emissions analysis for all three possible fuel sources. The Final EIS also needs to include an estimate for non-CO₂ greenhouse gases (GHGs) emitted during the operation of the Mesaba plant.

Below, we estimate annual CO₂ emissions using information taken from the Excelsior-Mesaba air permit application to the MPCA, with three fuel type and three different possible capacity factors (including the FEIS-proposed 92 percent). Estimated annual CO₂ emissions range from 6.02 to 9.86 million tons per year, assuming no carbon capture and storage. Assuming that CCS is implemented after 2014, the earliest year that is identified for commercial availability of CCS, CO₂ emissions would be lower by 30 percent.

Fuel type	MW(e)	cap. factor	MWH	heat rate (btu/kwh)	MMBtu	btu/lb coal	lb CO ₂ /MMBtu	tons CO ₂
Subbituminous	1196	0.75	7,857,720	9397	73,838,995	8900	213	7,863,853
Bituminous	1196	0.75	7,857,720	9397	73,838,995	10982	204	7,531,577
50/50 Subbituminous/petroleum coke	1196	0.75	7,857,720	9397	73,838,995	11450	217.8	8,041,067
Subbituminous	1196	0.60	6,286,176	9397	59,071,196	8900	213	6,291,082
Bituminous	1196	0.60	6,286,176	9397	59,071,196	10982	204	6,025,262
50/50 Subbituminous/petroleum coke	1196	0.60	6,286,176	9397	59,071,196	11450	217.8	6,432,853
Subbituminous	1196	0.92	9,638,803	9397	90,575,834	8900	213	9,646,326
Bituminous	1196	0.92	9,638,803	9397	90,575,834	10982	204	9,238,735
50/50 Subbituminous/petroleum coke	1196	0.92	9,638,803	9397	90,575,834	11450	217.8	9,863,708

¹ http://www.eia.doe.gov/cneaf/electricity/page/eia906_920.html

Responses

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(cont'd)

Non-CO₂ GHGs typically comprise about 1 percent of all GHG emissions from current electric generating plants and associated electricity transmission. If we expand GHG accounting framework to the complete fuel cycle, total non-CO₂ emissions would be larger. Ruether, et al. (2004) estimate that about 3.5 percent of all GHG emissions associated with the operation of an IGCC are associated with coal mining and transportation.² A more complete description of the carbon footprint of the Mesaba project would address these up-stream non-CO₂ GHG emissions, as well as non-CO₂ GHG emissions that are produced during combustion or are emitted to the atmosphere as a result of the electricity transmission. We recommend that the Final EIS explicitly address these issues.

Regulatory Status

Greenhouse gases are not currently regulated under Federal or State law. However, recent Supreme and Federal district court rulings have thrown into question the regulatory status of CO₂ and other GHGs under the Clean Air Act. In *Massachusetts vs. US Environmental Protection Agency*, the Supreme Court ruled that, unless the USEPA can provide a compelling justification why it should not regulate GHGs under the Clean Air Act, it must regulate the emissions of these pollutants from mobile sources. The full implications of this ruling for stationary sources will likely be determined in subsequent court cases.

105-29

The Final EIS should recognize the present uncertainty of the regulatory status of CO₂ and other GHGs under the Federal PSD program and the possibility that the regulatory status could change quickly as a result of litigation. At this time, to not recognize the potential for regulation sends the message that these pollutants are not, and will not, be subject to regulation, despite the likelihood that GHGs will be regulated.

Other sources of regulatory uncertainty that should be noted include: pending Congressional legislation on GHGs, the Midwest Governor's regional cap-and-trade initiative on GHGs, and possible state-level action. Under virtually all of these programs the Mesaba project would be brought under some sort of state, regional or Federal regulatory program. We recommend that the Final EIS describe the range of possible future regulatory actions that might affect the operation of the Mesaba project and consider generally how the facility's owners/operators might comply.

Cumulative Environmental Impacts

The DEIS for the Mesaba Project addresses environmental impacts only to the extent that it assesses emissions levels. The effects of those air emissions are not considered in any depth. Nor are the cumulative environmental impacts of the operation of the Mesaba project considered. The DEIS does discuss the localized effects of carbon capture, compression, transport, and geologic sequestration, but since those impacts are quite a minor part of the larger impacts picture, this is not an adequate substitute for a full and robust treatment of the Mesaba Project's environmental impacts.

105-30

Generally speaking, in the case of CO₂ the chain of cause and effect linking plant operations to the environment includes: emissions, atmospheric concentration change, climatic change, and impacts from changing climate. Regarding cumulative emissions and concentration change, over its lifetime the Mesaba project will emit roughly 390 million tons of CO₂ to the atmosphere. This assumes a 50-year plant life and a mid-case 75 percent capacity factor. If 55 percent remains airborne, this emission will add roughly 0.05 ppmv to the global atmospheric concentration of CO₂. While small in relation to the expected 150 to 400 ppmv rise in atmospheric CO₂ levels this century, it still would be measurable.

² J. Ruether, et al., "Greenhouse Gas Emissions from Coal Gasification Power Generation Systems," *Journal of Infrastructure Systems* 19 (2004): 111-119.

Responses

Comment 105-29

DOE recognizes the present uncertainties of the regulatory status of CO₂ and other GHGs. Table 3.3-5 (Volume 1) of the Final EIS has been updated with information made available since the publication of the Draft EIS and includes discussions on the Minnesota Legislature's Next Generation Energy Act, the proposed Federal regulation, the America's Climate Security Act, and the Midwestern Greenhouse Gas Reduction Accord signed by Minnesota. In general, the Mesaba Energy Project is considered to have much greater flexibility than existing or new conventional coal-fueled plants in complying with future carbon regulations because of the inherent efficiencies of IGCC technology and the capabilities for pre-combustion carbon capture vs. post-combustion capture.

Comment 105-30

Environmental impacts and cumulative impacts of emissions from the Mesaba Energy Project are discussed in Sections 4.3 and 5.2 of the Draft EIS, respectively. New text regarding the impacts of CO₂ emissions has been added to Sections 2.2.3.1 and 5.2.8 (Volume 1). Additional discussions regarding CO₂ emissions have been included in the Final EIS as provided in responses to Comments 105-28 and 105-29.

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Regarding climate impacts, the type of environmental impacts that in the scientific literature are typically associated with future climatic change include:

- Agricultural losses
- Forestry losses
- Human health impacts from heat, disease and air pollution
- Impacts to water infrastructure from flooding and low flows
- Losses associated with coastal flooding
- Impacts resulting from forced migrations of human populations
- Losses from increased storm intensity
- Energy costs of increased cost of summer cooling
- Welfare losses associated with lost amenities
- Implicit costs of habitat loss and species extinction

In the Final EIS, we recommend that the cumulative impacts of the operation of the Mesaba plant be evaluated using this framework or a similar framework of impacts found in the scientific literature.³ While the Mesaba plant will contribute only marginally to the aggregate global impacts of climate change over the next 50 years, it will nonetheless still contribute. Recently, in *Center for Biological Diversity v. NHTSA*, the Ninth Circuit Court of Appeals found that the assessment of cumulative effects in federal environmental impact statements is required under NEPA. Consistent with this ruling, the Final EIS for the Mesaba project should analyze the cumulative environmental effects of GHG emissions.

II. WATER

Industrial Water Quality Permit

Please contact Katrina Kessler (651-296-7376) if you have questions regarding our comments under this section.

Section 4.5.2.1 – Permit Authority

The DEIS states that “Discharge limitations for both mercury and phosphorus for the West Range Site would be determined by MNDNR during the National Pollutant Discharge Elimination System (NPDES) and State Disposal System (SDS) permit development process and may vary from the expected levels presented in this EIS.” The MPCA, not the Minnesota Department of Natural Resources (MNDNR), is the state agency responsible for implementing the NPDES/SDS Program. This reference should be corrected.

Section 4.5.2.1 – Zero Liquid Discharge (ZLD) System

The DEIS includes little or no information about the design of the ZLD for both the east and west range sites. It is important to understand the design and operation of the system for both potential locations, as it is an integral part of the proposed project. What is the design flow for the ZLD for the east and west range? What individual treatment units are included in the design? The Final EIS should include a flow and solids balance for the ZLD system for both sites, including the design for the west site discharge alternatives described in Appendix H. For the west range site, the DEIS lists a brine concentrator and a heated rotary drum dryer/crystallizer; for the east site, the DEIS mentions a clarifier, a reverse osmosis system, and a brine concentration/crystallizer. Does the design include multiple clarifiers, reverse

³ For instance, Intergovernmental Panel on Climate Change, *Fourth Assessment Report, Working Group II. Report on Impacts, Adaptation and Vulnerability*, <http://www.ipcc.ch/ipccreports/ar4-wg2.htm>

Responses

Comment 105-31

Text in Section 4.5.2.1 (Volume 1) has been revised due to Excelsior's announcement to implement an enhanced ZLD system at the West Range Site and reference to MNDNR as the state agency responsible for the NPDES/SDS Program has been deleted. New text in Section 4.5.2.5 acknowledges that MPCA is the agency responsible for implementing the NPDES/SDS Program.

Comment 105-32

In formulating its decision to use an enhanced ZLD system to eliminate all industrial wastewater discharges from the proposed West Range IGCC Power Plant, Excelsior commissioned an independent engineering consultant to study and confirm the economic implications associated with the ZLD system. The details and findings of the report will be reflected in an updated permit application submitted to the MPCA, which will be made publicly available. New text has been added to Section 4.5.2.1 (Volume 1), which discusses the enhanced ZLD system. Also, Appendix H (Volume 2) has been updated in the Final EIS, to describe in more detail the conceptual design of the ZLD unit that treats the non-contact wastewater. The ZLD system would be equipped such that equipment redundancy would be provided throughout the system (e.g., pumps throughout the systems including for chemical feed would have spares installed and a surge and equalization pond would be a single pond which would be divided into two areas so that cleaning of solids could occur in one side while the other is in use). The ZLD unit to be used for the Mesaba Generating Station would be the same system that has been successfully employed at the Wabash River Plant to control permit exceedances of metals in that plant's discharges. The Wabash River Plant has never experienced a shutdown due to the ZLD unit not being available (Lynch, 2009).

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osmosis, concentrator dryer/crystallizer units such that if one goes down, the remaining units can effectively treat the maximum design flow? The Final EIS should explain the contingency plans for the proposed facility in the event that one of the units is undergoing maintenance. If one of the concentrators needs maintenance, will the entire facility shut down? If not, where will the un-concentrated brine be stored? What is the capacity of that storage unit? Where duplicate units are not provided, structures must be provided so that each unit operation of the plant can be independently removed from service. Where duplicate units are provided, a single flow splitting device must be provided before each unit operation. Duplicate units must be designed such that, with the largest unit out of service, the hydraulic capacity of the interconnecting piping will be sufficient to handle peak design flow through the remaining units. The Final EIS should also include a description of the final disposal plan for the solids generated from the ZLD system from both the west and east range.

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Section 4.5 – General Comments to Water Resources

MPCA staff disagrees with the logic behind the Water Resource Management Plan and water discharge scenarios in the DEIS. The water resources section of the DEIS maintains that the proposed project will not increase the pollutant load to the Swan River watershed above the load authorized in the NPDES/SDS Permit issued to the MDNR for the Hill Annex Mine Pit (HAMP) MN0030198. It is not appropriate to compare the proposed water management plan to ongoing MDNR activities at the HAMP and discharges currently permitted in the Swan River watershed. The NPDES/SDS Permit Program does not allow Excelsior Energy to assume any of the flow or pollutant load associated with MN0030198. The proposed project represents a new discharge to the Swan River watershed. The Swan River is impaired for excess nutrients and is subject to a fish consumption advisory due to mercury. Until there is an approved waste load allocation implementation plan for the approved TMDL to address these impairments, the MPCA cannot permit any new or expanded discharges upstream of the impairment that may cause or contribute to the existing impairments. The Final EIS should include operating and discharge scenarios that recognize these permitting restrictions. All scenarios included in the Final EIS should be designed to meet water quality standards and sustain the designated use of the potential receiving waters. The primary goal of the federal and state NPDES/SDS Program is to maintain water quality consistent with beneficial uses.

Data included in the Water Resources Management Plan section of the DEIS suggest that over the long term (14 -24 years), the proposed discharge to the Canisteo Mine Pit (CMP) will result in exceedances of the hardness, total dissolved solids (TDS), and specific conductivity water quality standards and that the discharge to Holman Lake would result in exceedances of the same parameters within three years. The DEIS also suggests that the mercury and phosphorus levels in the CMP and Holman Lake will increase as a result of the proposed discharges in such a way that may not be permitted under the NPDES/SDS Program. In its current form, the Water Resource Management Plan included in the DEIS is not consistent with state and federal regulations governing water discharges.

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Section 4.5.2.1 –TDS and Hardness

The proposed project includes two potential receiving waters, the CMP and Holman Lake. The CMP is considered a lake/reservoir by the MPCA, and both the CMP and Holman Lake are classified as 2B, 3B, 4A, 4B, 5, and 6 waters of the state. Section 4.5.2.1 predict that the TDS concentration in Holman Lake will reach the applicable class 4A water quality standard of 700 mg/L within the first two years of operation of the proposed facility. The DEIS states that Excelsior will request a variance from the Class 3B TDS and Class 4A hardness water quality standards. The existing Class 4A hardness water quality standard is 250 mg/L. Changes proposed to Minn. R. ch. 7050 include a reclassification of most Waters of the State from Class 3B to Class 3C, which would result in a change to a 500 mg/L hardness standard.

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As stated in response to Comment 6-01, Excelsior has agreed to implement an enhance ZLD system at the West Range Site. The Final EIS has been updated in Section 2.2 (Volume 1) to describe the use of the enhanced ZLD system, which would eliminate the majority of water quality concerns as originally discussed in the Draft EIS. Section 4.5 (Volume 1) has been revised to describe the changes in water quality impacts anticipated with the enhanced ZLD system at the West Range Site.

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The Final EIS has been updated in Section 2.2 (Volume 1) to describe the use of the enhanced ZLD system, which would eliminate the majority of water quality concerns as originally discussed in the Draft EIS. Section 4.5 (Volume 1) has been revised to describe the changes in water quality impacts anticipated with the enhanced ZLD system at the West Range Site.

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Even if the hardness water quality standard for the CMP and Holman Lake is changed to 500 mg/L, the DEIS indicates the proposed discharge to Holman Lake would exceed the 500 mg/L standard within two years of initiation of operation. Modeling data for the proposed discharge to the CMP included in the DEIS indicates that the discharge would result in exceedances of the TDS and hardness standard in year 26 and year 14, respectively.

The DEIS indicates that either treatment would be required for the cooling tower blowdown discharge to comply with water quality standards or Excelsior would have to apply for, and receive, a variance from water quality standards. Applying for and obtaining a variance from water quality standards is a time-consuming process. Water quality variances are rarely granted. In the exceptional cases when a variance is approved, the variance represents a temporary change in the water quality standard. 40 CFR 131.20 requires that the temporary water quality standard change must be reviewed every three years. The intent is that over time there will be a solution to the problem that created the need for the variance, and eventually the underlying water quality standard will be achieved. The DEIS does not include any discussion of methods, technologies, or treatments Excelsior Energy plans to evaluate for compliance with the TDS and hardness standard.

If Excelsior Energy plans to request a variance from water quality standards, the Final EIS should discuss the criteria Excelsior Energy plans to use to complete the variance request. Variance requests should be prepared consistent with Minn. R. 7000.7000 and Minn. R. 7050.0190. All water quality standard variance requests must be reviewed and approved by the EPA following approval by the MPCA Citizen's Board. The Final EIS should include the treatment technologies being considered to comply with water quality standards. If the proposed project includes a variance from water quality standards, the Final EIS should include a description of how the variance criteria will be satisfied.

Section 4.5.3.2 – Hardness, TDS, Sulfate, Conductivity

Section 4.5.3.2 and Table 4.5-6 of the DEIS suggest that the proposed discharge to Holman Lake will not meet the water quality standards for hardness, TDS, sulfate, and conductivity. The DEIS states that once the Holman Lake discharge mixes with the Swan River, the concentrations would be below standards. Please note that the MPCA has not approved the use of a mixing zone in Holman Lake, the CMP, or Swan River for the proposed project. On a case-by-case basis, MPCA staff may approve of mixing zones consistent with Minn. R. 7050.0210 only if the proposed discharge will not violate applicable water quality standards. As discussed above in relation to Section 4.5.2.1 of the DEIS, modeling data shows that the proposed discharge will result in a violation of TDS and hardness water quality standards.

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Table 4.5-6 indicates that the proposed discharge will also result in an exceedance of the specific conductivity standard. The Final EIS should indicate how Excelsior Energy plans to meet the applicable water quality standards or include the specific criteria that will be used to apply for a variance from the water quality standards.

The sulfate standard for Class 4A, 10 mg/L, does not apply to the proposed discharge. The Class 4A standard is only applicable to discharges to areas where wild rice is growing. Comments on potential impacts from the proposed discharge related to sulfate are included below with comments to Section 4.5.3.4 on mercury discharges.

Section 4.5.3.2 – Mercury and Phosphorus Loading

This section of the DEIS states that the proposed project would not add mercury, phosphorus, or other pollutants associated with impairment concerns to the receiving waters. This is not true. The proposal calls for a withdrawal of water from the CMP for use in the plant and a discharge of concentrated

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The Final EIS has been updated in Section 2.2 (Volume 1) to describe the use of the enhanced ZLD system, which would eliminate the majority of water quality concerns as originally discussed in the Draft EIS. Section 4.5 (Volume 1) has been revised to describe the changes in water quality impacts anticipated with the enhanced ZLD system at the West Range Site.

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The Final EIS has been updated in Section 2.2 (Volume 1) to describe the use of the enhanced ZLD system, which would eliminate the majority of water quality concerns as originally discussed in the Draft EIS. Section 4.5 (Volume 1) has been revised to describe the changes in water quality impacts anticipated with the enhanced ZLD system at the West Range Site. Re-modeling of phosphorus levels in the CMP, based on the updated water balance, was conducted to analyze impacts to water quality in the CMP. In general, use of the enhanced ZLD system at the West Range Site would eliminate discharge and phosphorous levels in the CMP would be within state standards. New text has been added to Section 4.5.3.2 (Volume 1) regarding new analysis on phosphorous levels in the CMP.

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constituents to the CMP and Holman Lake. The proposed project represents a new discharge of pollutants to Holman Lake. There is currently no discharge from CMP or any of the other potential water sources to Holman Lake. Therefore, the proposed discharge of concentrated cooling tower blowdown to Holman Lake represents an addition of pollutants.

Section 4.5.3.2 states that the proposed project would not increase the mass of mercury or phosphorus discharged to the Swan River watershed above the load currently authorized by NPDES/SDS Permit MN0030198 issued to the MDNR permit for the HAMP. While it is important to limit the mass of mercury and phosphorus discharged to the Swan River, it is equally important that the discharge not contribute to a local impairment of any of the designated uses for Holman Lake or the CMP. In the absence of a completed implementation plan for the statewide mercury TMDL, the 6.9 ng/L water quality mercury limit cited in the DEIS should be viewed as an upper limit. Similarly, the 1 mg/L phosphorus limited referenced in the DEIS should be regarded as a potential limit. The 1 mg/L limit should be evaluated concurrently with the existing phosphorus data from Holman Lake and the proposed standards for lakes located in the Northern Lakes and Forest Ecoregion. Using very basic modeling, MPCA staff calculated an annual phosphorus load of 68 kg/yr to Holman Lake. Holman Lake is located in the Northern Lakes and Forest Ecoregion. The proposed phosphorus standard for lakes greater than 15 feet deep in this ecoregion is 30 ug/L. The standard for lake trout lakes in this ecoregion is 12 ug/L. The projected concentration of phosphorus in the discharge (30 ug/L – 70 ug/L) will likely increase the concentration of phosphorus in both Holman Lake and the CMP. Consequently, algal levels will increase and secchi depth (measure of transparency) will decrease. This could ultimately lead to the listing of these waters on the state's Impaired Waters List. Therefore the Final EIS needs to address the addition of mercury, phosphorus, and other pollutants to these receiving waters.

The December 7, 2006, *Response to NPDES-Related Questions*, prepared by Excelsior Energy and submitted to the MPCA, noted that to better characterize the raw water source and resulting effluent water quality, samples were collected from the CMP and the HAMP for analysis using an analytical method with a lower phosphorus detection limit. Additional samples were to be taken of other potential cooling water blowdown receiving waters. The results of all of the additional sampling work were to be submitted to the MPCA as soon as the analysis of the samples was complete. The MPCA has not received the results. Without this additional information, it is not possible to comment further on the assumptions related to the proposed discharge scenarios and potential phosphorus limits included in the DEIS. The Final EIS should include the results of these analyses and the proposed discharge scenarios should reflect the most current and relevant data.

Consistent with Federal Regulation C.F.R. 122.4(i), the MPCA cannot authorize a new discharge to impaired waters before a TMDL is complete. To fulfill the Clean Water Act objective to restore and maintain, physical, and biological integrity of Waters of the U.S., federal regulations are in place to make sure that waters are not further impaired while a TMDL is developed and implemented. These regulations prohibit discharges that will cause or contribute to an existing impairment. Lake Pepin is impaired for excess nutrients, including phosphorus. New discharges to the Lake Pepin watershed, including the Mississippi River Basin above Lake Pepin, that are proposing a discharge of at least 1,800 pounds of phosphorus per year to or upstream of Lake Pepin are subject to the 40 C.F.R. 122.4(i). New discharges may choose to meet the requirements by using land treatment options, such as spray irrigation or rapid infiltration basins, enact treatment to eliminate phosphorus, discharge to a permitted wastewater treatment facility with capacity to accommodate the proposed load, or participate in pre-TMDL trading by purchasing pollutant load from another permitted facility. The MPCA developed Pre-TMDL Phosphorus

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