

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

In the Matter of a Joint LEPGP Site Permit,
HVTL Route Permit and Pipeline (Partial
Exemption) Route Permit Application for
the Mesaba Energy Project

**FINDINGS OF FACT,
CONCLUSIONS AND
RECOMMENDATION**

Administrative Law Judge Steve M. Mihalchick conducted evidentiary and public hearings at 10:00 a.m. and 6:00 p.m., on January 29, 2008, at the Taconite Community Center, in Taconite, Minnesota, and at 10:00 a.m. and 6:00 p.m. on January 30, 2008, at the Hoyt Lakes Arena in the City of Hoyt Lakes.

Byron E. Starns and Matthew B. Seltzer of Leonard, Street and Deinard appeared on behalf of Excelsior Energy Inc. Karen Finstad Hammel, Assistant Attorney General, Minnesota Attorney General's Office, appeared on behalf of the Minnesota Department of Commerce. Bill Storm also appeared on behalf of the Department of Commerce, Energy Facility Permitting.

The Final Environmental Impact Statement (Final EIS or FEIS) was issued on November 16, 2009, and the record remained open until December 2, 2009, for the filing of public comment on the Final EIS. Because of the length of time taken to prepare the FEIS, most of this report was prepared using the Draft EIS. The more significant changes in the FEIS are highlighted here.

STATEMENT OF THE ISSUES

Should the Minnesota Public Utilities Commission (PUC) issue a large electric power generating plant (LEPGP) Site Permit to Excelsior Energy Inc. (Excelsior), and if so, for which site under consideration?

Should the PUC issue a high voltage transmission line (HVTL) Route Permit to Excelsior, and if so, for which route under consideration?

Should the PUC grant Excelsior a partial exemption from the pipeline route selection procedures and issue a Natural Gas Pipeline Routing Permit?

Is the Final EIS prepared by the United States Department of Energy (DOE) and the Minnesota Department of Commerce (DOC) adequate?

Based upon all of the proceedings herein, the Administrative Law Judge makes the following:

FINDINGS OF FACT

Procedural Background

1. Excelsior is an independent energy development company based in Minnetonka, Minnesota. Excelsior and its subsidiaries, MEP-I LLC, and MEP-II LLC (jointly, Excelsior), are proposing to construct, own, and operate two 600-megawatt(net) integrated gasification combined cycle (IGCC) LEPGPs to be located on the Iron Range – Mesaba One and Mesaba Two (collectively, IGCC Power Station or Mesaba).

2. On June 19, 2006, Excelsior filed a Joint Application with the PUC for a LEPGP Site Permit, a HVTL Route Permit, and a Natural Gas Pipeline Route Permit.¹ Excelsior requested a partial exemption for the pipeline routing permit, pursuant to Minn. Stat. § 216G.02, subd. 3(b)(7), and Minn. Rules 7852.0600 and 7852.0700.

3. On July 28, 2006, the PUC issued an order that accepted the Joint Application, called for the creation of a Citizens Advisory Task Force (CATF), authorized the Minnesota Department of Commerce (Department) to select a public advisor for the docket, and authorized Excelsior to submit electronic copies of the Joint Application to all persons Excelsior was required to serve.²

4. The CATF was responsible for: 1) determining whether the site or route information presented within the Joint Permit Application was accurate; 2) evaluating what site and route impacts and issues of local concern should be addressed in the Environmental Impact Statement (EIS); and 3) expressing a preference for the possible sites outlined in the Joint Permit Application.³

5. The CATF issued its recommendations on September 7, 2006. The CATF recommended “that a site or sites be permitted and built on the Iron Range, assuming that all environmental concerns are considered and adequately addressed in the EIS.” The CATF was unable to reach a consensus as to which site was the CATF preferred site.⁴

6. On January 16, 2007, and March 15, 2007, Excelsior filed Direct Testimony and Supplemental Direct Testimony from the twenty expert witnesses who later testified at the hearing.

7. The First Prehearing Order, dated January 19, 2007, specified that “any person desiring to become a formal party must file a Petition to Intervene by February 12, 2007,” and that “any person petitioning to intervene after that date may be restricted as to the scope of their participation.”

¹ EE 1001, § 1, 1.

² PUC Order, July 28, 2006.

³ CATF Final Comments and Recommendations.

⁴ CATF Final Comments and Recommendations.

8. Northern States Power, d/b/a Xcel Energy, Minnesota Power, and Public Energy—Mesaba filed timely petitions to intervene as parties, and the ALJ granted all three petitions.⁵

9. In the Second Prehearing Order, the ALJ required Excelsior to file testimony by January 15, 2007, and all other parties to file by March 1, 2007. Only Excelsior filed testimony.

10. In the Fourth Prehearing Order, dated May 1, 2007, stated that “unless excused by an Administrative Law Judge, failure of a party to file testimony when due shall result in that party being denied further participation as a party.”

11. In the Fifth Prehearing Order, dated November 19, 2007, the ALJ denied the original parties further party status because they had not filed testimony. The ALJ allowed them to participate as members of the public.

12. The ALJ held hearings on January 29, 2008, in Taconite, Minnesota, and on January 30, 2008, in Hoyt Lakes, Minnesota.

Notice

13. On July 3, 2006, Excelsior sent a notice of the application and description of the proposed project to property owners whose property, according to the counties’ tax records, is on or adjacent to either of the proposed sites or along any of the proposed routes for transmission lines. The notice informed the landowners that they could view a copy of the application at the Taconite Community Center Reading Room and the Hoyt Lakes Public Library.⁶

14. On July 3, 2006, Excelsior sent notice of application and a description of the proposed project to all persons on the PUC’s general list of persons wishing to receive notice of proposed large electric generating power plans and high voltage transmission lines.⁷

15. On July 5, 2006, Excelsior sent, by certified mail, a copy of the Joint Application to the Arrowhead Regional Development Commission and all counties, incorporated municipalities, and townships in which any part of the sites and routes are proposed.⁸

16. Excelsior published notice of the Joint Application in the newspapers of general circulation in the counties for the proposed sites and routes, including the East Range Shopper (July 3, 2006), the Duluth News Tribune (July 5, 2006), the Mesabi Daily News (July 5, 2006), the Scenic Range News Forum (July 6, 2006), the Grand

⁵ See Third Prehearing Order.

⁶ DOC 26.

⁷ DOC 26.

⁸ DOC 26.

Rapids Herald-Review (July 6, 2006), the Hibbing Daily Tribune (July 5, 2006), and the Western Itasca Review (July 6, 2006). The notice indicated that the Joint Application was available for review at the Taconite Community Center Reading Room and the Hoyt Lakes Public Library.⁹

17. On July 21, 2006, Excelsior provided electronic copies of the Joint Application, including the partial exemption application, to the state agencies that have regulatory responsibilities for the proposed pipeline; the Minnesota Historical Society; the Arrowhead Regional Development Commission; the Soil and Water Conservation District; the county auditor for each county in which the proposed pipelines would be located; the clerk for each township in which the proposed pipeline would be located; and all persons who made a timely written request.¹⁰

18. On July 21, 2006, Excelsior sent electronic copies of the Joint Application, including the partial exemption application and a description of the procedures for commenting on the partial exemption to affected landowners, the chief executive of the Arrowhead Regional Development Commission, and any county, incorporated municipality, and organized town in which the route is proposed.

19. On August 2, 2006, Excelsior submitted copies of the notices and affidavits of service and publication to the PUC.¹¹

20. Excelsior published notice of the hearings in the newspapers of general circulation in the counties in which the hearings were held, including the Duluth News Tribune (January 10, 2008), the Mesabi Daily News (January 11, 2008), the Scenic Range News Forum (January 10, 2008), the Grand Rapids Herald-Review (January 9, 2008), the East Range Shopper (January 14, 2008), and the Western Itasca Review (January 10, 2008).¹²

21. On January 10, 2008, Excelsior sent notice of the hearing to the ALJ's service list, the Arrowhead Regional Development Commission, and the counties, organized towns, townships, and the incorporated municipalities in which the sites and routes were proposed.¹³

22. Excelsior filed affidavits of service and publication for the notices and they were received as exhibits at the contested case hearings.¹⁴

23. Excelsior's representative testified at the hearing that Excelsior had provided notice to all but two property owners who have interests in property located on or adjacent to the proposed site or transmission lines. These two property owners hold

⁹ DOC 25.

¹⁰ DOC 26.

¹¹ DOC 25; DOC 26.

¹² DOC 42.

¹³ DOC 41.

¹⁴ DOC 41.

a total of 96 acres of severed mineral interests, but they hold no interest in the surface land. Three additional property owners hold a total of eighty acres of severed mineral interests that may or may not be within the West Range Site Footprint and Buffer Land.¹⁵

Project Area and Description

General Description of the Project

24. Mesaba One and Mesaba Two will be feedstock-flexible IGCC plants sized at a commercial scale.¹⁶

25. Power generated by Mesaba will be transferred to the regional electrical grid by generator outlet facilities that will include high voltage transformers, switchgear, and a switchyard located within the Station Footprint (the fenced area within which the IGCC Power Station is located). The HVTL will traverse the distance between the power station and the point of interconnection.¹⁷ Excelsior is applying for a HVTL route permit that will correspond to the site selected by the PUC.

26. Approximately 200 acres will be required for the Power Station Footprint, excluding construction and laydown areas.¹⁸

27. Excelsior has partnered with Fluor Enterprises, Inc. (Fluor) and ConocoPhillips Company (ConocoPhillips) for gasification technology, operations and maintenance, and other design services for Mesaba.¹⁹

28. Natural gas, which will be used as a start-up and backup fuel for Mesaba One and Mesaba Two, will be supplied by a new pipeline that will connect to nearby interstate natural gas pipelines. Excelsior is applying for a pipeline route permit for its West Range Site (the preferred site). If the East Range Site is chosen, a transmission company would obtain the permits necessary to construct the natural gas pipeline.²⁰

29. Both the preferred site, in and around the City of Taconite, and the alternative site, in and around the City of Hoyt Lakes, are located in the Taconite Tax Relief Area (TTRA) of northeastern Minnesota.²¹

30. Excelsior received federal funding from the DOE as part of its Clean Coal Power Initiative (CCPI) to develop and commercialize clean-coal technologies to combat climate change and utilize low-cost electricity from domestic coal sources.²²

¹⁵ Transcript, p. 501-504.

¹⁶ EE 1002.

¹⁷ EE 1002.

¹⁸ EE 1002, I-26.

¹⁹ EE 1001, p. 30.

²⁰ EE 1001, p. 64.

²¹ EE 1002; Minn. Stat. § 216B.1694.

²² EE 1002, p. I-22; EE 1130.

31. Mesaba constitutes an “innovative energy project” under Minn. Stat. § 216B.1694, and has received an appropriate designation by the Commissioner of Iron Range Resources, as required by statute.²³

General Description of IGCC Technology

32. Mesaba will use IGCC technology, which involves the following process. First, the coal is turned into a low-BTU gas, known as “syngas,” in an enclosed, high-temperature, high-pressure gasifier. Then, the syngas is cooled, cleaned of contaminants and burned in a combustion turbine to generate electricity. The hot exhaust from the combustion turbine is used to heat water to produce steam, which in turn produces electricity by using a conventional steam turbine.²⁴

33. The IGCC Power Station will employ ConocoPhillips’ E-Gas technology, which is “feedstock flexible,” meaning that it will allow the plant to process a range of fuels in the gasifier, including bituminous coal, sub-bituminous coal, and certain combinations of sub-bituminous coal and petroleum coke.²⁵

34. Two IGCC demonstration plants are currently operating in the United States: the 250 MW Polk County plant in Florida and the 262 MW Wabash River plant in Indiana. Both plants were partly funded by the DOE and can run on bituminous coal and petroleum coke fuels. The Polk County plant was placed in service in 1996 and utilizes GE (formerly Texaco) gasification technology. The Wabash River plant was placed in service in 1995 and utilizes the ConocoPhillips E-Gas technology that has been selected by Excelsior for the Project.²⁶

35. Mesaba is designed after the 262 MW Wabash River Coal Gasification Repowering Project in Terre Haute, Indiana (Wabash River). The Wabash River plant was built under the DOE’s Clean Coal Technology Program and has been operational since 1995. Following its construction, the technology owners, with some support from the DOE, studied and implemented performance and technological upgrades. Mesaba will integrate numerous design and technology improvements learned since the construction and startup of the Wabash River plant.²⁷

36. Slag and elemental sulfur produced as a byproduct are potentially marketable and will be actively marketed.²⁸

37. Zero Liquid Discharge (ZLD) salts, which are a product of eliminating process water discharges from the gasification island, are expected to be regulated as

²³ PUC Order, Aug. 30, 2007.

²⁴ EE 1023.

²⁵ EE 1059.

²⁶ In the Matter of the Petition of Excelsior Energy Inc. for Approval of a Power Purchase Agreement, Determination of Least Cost Technology, and Establishment Of A Clean Energy Technology Minimum, OAH Docket No. 12-2500-17260-2, p. 5; Public Hearing Ex. 1; EE 1016 at 14 (Fluor Report).

²⁷ EE 1040, p. 5-6.

²⁸ EE 1002, p. I-203.

hazardous waste and will be disposed of in an approved hazardous waste landfill or treated to eliminate the degree of hazard and disposed of in an appropriately licensed facility.²⁹

38. ZLD salts that are produced as a result of eliminating cooling water discharges from the IGCC Power Station will be composed of the naturally occurring minerals in the source of the cooling water. These ZLD salts are expected to be non-hazardous and will be disposed of in a landfill properly licensed to accept such materials.³⁰

IGCC Efficiencies, Economics and Environmental Effects

39. Mesaba is designed to be more efficient than a conventional coal-fueled power plant that uses traditional technologies and a similar coal feedstock. In general, improved efficiency translates into less uses of coal to produce a given amount of energy, and, thus, lower emissions of pollutants including carbon dioxide.³¹

40. The IGCC Power Station will capture carbon dioxide more efficiently and economically than a conventional coal plant because IGCC converts coal to a synthesis gas (the volume and mass of which are less in IGCC plants than conventional coal-fueled power plants) that can be cleaned before combustion in the gas turbines. The IGCC process results in less pollution than conventional coal-fueled power plant technologies and demonstrates a superior criteria pollutant emissions profile when compared to conventional coal plants.³²

41. If CCS ever becomes feasible, Excelsior has developed a plan for carbon capture and sequestration (CCS or CCS Plan) that is designed to allow Mesaba to be adapted to capture and geologically sequester carbon dioxide emissions. The CCS Plan will address global warming issues and enable Excelsior to comply with potential future legislation requiring cuts in carbon dioxide emissions.³³

42. Excelsior is working with the Energy and Environmental Research Center (EERC) to identify specific options by which to implement the CCS Plan. Under Excelsior's initial plan, the captured carbon dioxide would be transported via pipeline to a location in North Dakota or Southwestern Manitoba where it would be sequestered and used for enhanced oil recovery (EOR). According to one study, approximately 93% of the carbon dioxide used for EOR can remain permanently sequestered in certain geological formations.³⁴ However, that level of permanent sequestration in oil wells has not been demonstrated.

²⁹ EE 1002, p. I-203; EE 1128.

³⁰ EE 1131.

³¹ EE 1023, p. 6-7.

³² EE 1023, p. 7; EE 1085, p. 1-2.

³³ EE 1023, p. 7; Transcript, p. 44; EE 1083, p. 4.

³⁴ EE 1023, p. 7; Transcript, p. 475, 547.

Preferred Site

43. Excelsior's preferred Site is located in and around the City of Taconite, Minnesota. The Site is referred to as the "West Range Site."

44. The preferred West Range Site is characterized as a forested setting in northern Minnesota. The IGCC Footprint and Buffer Land (the land contiguous with or adjacent to the IGCC Power Station Footprint, extending to the boundary of the property) is mostly wooded, but zoned for industrial use. Areas within the Buffer Land have been subjected to decades of timber harvesting and the Site is generally lacking old-growth forest cover. The West Range Site is located outside the limits of the Biwabik Iron Formation on undeveloped, unoccupied land but is in the immediate vicinity of former iron-ore mining operations. The Minnesota Department of Natural Resources (DNR) has determined that the IGCC Footprint and Buffer Land will not encumber valuable mineral resources.³⁵

45. The West Range IGCC Power Station Footprint and Buffer Land consist of approximately 1,727 acres that are located mostly within the city limits of the City of Taconite in Itasca County. Approximately 200 acres of the Buffer Land are north of the City of Taconite boundary. The Station Footprint and Buffer Land are generally bounded by County Road 7 to the west, and HVTL corridor to the north, and a township boundary to the east. Excelsior has obtained an option to purchase the interests owned by RGGGS Lands and Minerals Ltd. L.P.³⁶

46. The major components of the West Range Associated Facilities (buildings, equipment and other physical structures necessary to operate the Station) and Additional Lands (the land needed to interconnect Mesaba One and Mesaba Two with existing transportation) include process water pipelines, a potable water pipeline, a domestic wastewater pipeline, railroad spur corridor, and access road corridor. The blowdown pipelines are no longer necessary due to Excelsior's decision to install an enhanced ZLD system that will eliminate the need to discharge any cooling or other process water.³⁷

47. The West Range water resources include three abandoned mine pits – the Canisteo Mine Pit (CMP), the Hill-Annex Mine Pit (HAMP), and the Lind Mine Pit (LMP). All three have filled with water. The Prairie River has been identified as an additional source of water. It is located immediately adjacent to the LMP and typically overflows into that pit each spring.³⁸

³⁵ EE 1035, p. 3; EE 1001, p. 69, EE 1002, p. I-61; DNR Comments, (Feb. 29, 2008).

³⁶ EE 1002, p. I-61; EE 1103; EE 1001, p. 16.

³⁷ EE 1001, p. 45-46; EE 1103; EE 1131, p. 1-2.

³⁸ EE 1001, p. 263-64.

Alternative Site

48. Excelsior's alternative Site is located in and around the City of Hoyt Lakes, Minnesota. This Site is referred to as the "East Range Site."

49. The East Range IGCC Power Station Footprint and Buffer Land are in a forested setting in northern Minnesota and are composed mostly of second-growth forest cover. The area has been subjected to timber harvesting, which has altered upland habitats from their pre-settlement condition.³⁹

50. The East Range IGCC Power Station Footprint and Buffer Land are on undeveloped property located completely within the city limits of Hoyt Lakes, Minnesota. The IGCC Power Station footprint and buffer land is currently owned by Cliffs-Erie, LLC, and is zoned as a mineral mining district. If the East Range Site is selected by the PUC as the preferred LEPGP site, the area will be designated as such and will supersede the current zoning designation, pursuant to Minn. Stat. § 216E.10, subd. 1. Land uses within the IGCC Power Station Footprint and the Buffer Land are natural and no structures have been erected.⁴⁰

51. The East Range IGCC Power Station Footprint and Buffer Land consist of approximately 1,433 acres. The Power Station and Buffer Land are generally bounded by County Road 666 to the east, a railroad to the south, a HVTL corridor to the west, and the Superior National Forest to the north. Excelsior has an option to purchase the interests owned by Cliffs Erie LLC in these 1,433 acres. All this property lies outside the Biwabik Iron Formation.⁴¹

52. Major components of the East Range Associated Facilities and Additional Lands include process water pipelines, potable water pipeline, gravity sewer pipeline, railroad spur, and access road.⁴²

53. The East Range water resources include several abandoned mine pits and Colby Lake. The Water Resources consist of Mine Pit 6, Mine Pit 2 (West Extension), Mine Pit West, Mine Pit 2 East, Mine Pit 3, Donora Mine Pit, Stephens Mine Pit, Know Mine Pit, Mine Pit 2S, Mine Pit 1 Effluent, PolyMet Mining Dewatering Operations, and Colby Lake.⁴³

³⁹ EE 1035, p. 4.

⁴⁰ EE 1002, p. I-93

⁴¹ EE 1002, p. I-93; Supplemental Filing, p. 4; EE 1001, p. 98; EE 1106; DNR Comments (Feb. 29, 2008).

⁴² EE 1001, p. 47-48; EE 1106.

⁴³ EE 1001, p. 268, 270.

High Voltage Transmission Lines

West Range

54. Under Excelsior's preferred HVTL plan for the West Range Site, two 345 kV HVTLs mounted on single steel-pole structures in a single corridor would connect the IGCC Power Station to the Blackberry Substation.⁴⁴

55. The Blackberry Substation is located approximately 8.5 miles (in straight-line distance) from the IGCC Power Station Footprint. The preferred HVTL route would be approximately 8.6 miles in length and would require about 6 miles of new HVTL right-of-way (ROW).⁴⁵

56. The preferred West Range HVTL route extends east from the IGCC Power Station's high voltage switchyard about .8 miles to Minnesota Power's existing 45 Line ROW and then south from the southern boundary of the Buffer Land about 1.6 miles to the retired Greenway Substation. The route continues south from the Greenway Substation approximately 6.2 miles over a new, but relatively remote, ROW to intersect Minnesota Power's 83L and 20L corridors. At that point, the route follows the existing Minnesota Power ROW about one mile east to the Blackberry Substation.⁴⁶

East Range

57. Under Excelsior's preferred HVTL plan for the East Range Site, the IGCC Power Station would be linked to the Forbes Substation through two new 345-kV HVTLs in separate corridors.⁴⁷

58. Each new 345-kV HVTL would mostly follow existing corridors now occupied by 115-kV HVTLs and would be double-circuited with the 115-kV HVTLs, which are owned by Minnesota Power and interconnect the Syl Laskin Generating Station with the Forbes Substation.⁴⁸

59. The preferred HVTL routes would be placed in corridors totaling 68.3 miles in length. The route that uses the existing 38L corridor is 33 miles long, and the route that uses the existing 39L/37L corridor is 35.5 miles long. These routes will require approximately 4 miles of new ROW.⁴⁹

60. The 39L/37L corridor will require an additional 30 feet of ROW to allow for added safety during construction and double circuiting of the 115- and 345-kV HVTL towers.⁵⁰

⁴⁴ EE 1002, p. I-40; EE 1001, p. 50.

⁴⁵ EE 1002, p. I-40, I-42.

⁴⁶ EE 1001, p. 50, 71, 74-76.

⁴⁷ EE 1001, p. 58, 107-20.

⁴⁸ EE 1001, p. 58.

⁴⁹ EE 1001, p. 62-63; EE 1002, p. I-99.

⁵⁰ EE 1001, p. 305.

61. The 39L/37L corridor emanates southwest from the Station Footprint past the Laskin Generating Station to the Forbes Substation, approximately 35.5 miles away. The first 2 miles of this route are on a new ROW along 43L. The next 23.6 miles run parallel with the existing 39L corridor. The next 2 miles would be on a new ROW connecting to 37L at the Thunderbird Mine Substation. From the Thunderbird Mine Substation and along the next 7.4 miles to the Forbes Substation, the line will run parallel to the existing 37L line.⁵¹

62. The 38L corridor route also emanates southwest from the Station Footprint past the Laskin Generating Station. The first two miles of this route would run parallel to the first segment of a new ROW along 43L. The remaining 31 miles would run parallel to the 38L line.⁵²

63. The alternate configuration of the East Range HVTL routes will require the acquisition of the same two new ROW segments as the preferred configuration.⁵³

Natural Gas Pipeline

West Range

64. At the West Range Site, a new pipeline would connect to two existing 36-inch pipelines owned by Great Lakes Gas Transmission company, approximately 12 miles south of the IGCC Power Station Footprint.⁵⁴

65. The proposed pipeline route for the West Range Site will require approximately 12.3 miles of new pipeline easements along its 13.2-mile proposed route.⁵⁵

66. The proposed gas pipeline route would originate about .6 miles southeast of the Great Lakes Gas block valve station located just south of U.S. Highway 2 near the unincorporated town of Blackberry, Minnesota. The first 2 miles of the route would extend north-northeast to avoid a large wetland bog north of U.S. Highway 2. From there, the proposed route would turn due east approximately 2 miles to be aligned directly south of the West Range IGCC Power Station. The proposed route would extend north from this point about 1.5 miles where it would cross the Swan River and then continue until intersecting with an 8-inch pipeline owned by Northern Natural Gas (NNG). The route would parallel the NNG pipeline .9 miles and then follow the proposed HVTL preferred corridor ROW for 4.2 miles. Within this segment, the route would cross the Swan River a second time. The last 1.3 miles of the proposed route

⁵¹ EE 1001, p. 105.

⁵² EE 1001, p. 105.

⁵³ EE 1001, p. 62.

⁵⁴ EE 1002, p. I-79; EE 1001, p. 86-89.

⁵⁵ EE 1002, p. I-79.

would run within an existing unused HVTL corridor to the West Range Station Footprint.⁵⁶

East Range

67. At the East Range Site, NNG would construct, own, and operate a pipeline as an extension of its interstate pipeline system. The East Range pipeline would not be subject to Minnesota Pipeline Route Permit requirements and would be permitted by NNG under a Federal Energy Regulatory Commission (FERC) review process.⁵⁷

68. At the East Range Site, Mesaba will require installation of approximately 33 miles of new pipe.⁵⁸

69. The East Range pipeline route would run from an interconnection point with the interstate pipeline system near the junction of St. Louis County Roads 454 and 315, about one mile west of Iron Junction, Minnesota. From that point, the route would parallel an existing 10-inch branch line owned by NNG until it reaches the eastern boundary of the Station Footprint.⁵⁹

SITE PERMIT AND HVTL ROUTE PERMIT

Statutory and Rule Considerations for Site and HVTL Route

70. Minn. Stat. § 216E.03, subd. 7, entitled “Considerations in designating sites and routes,” states, in relevant part:

(a) The commission's site and route permit determinations must be guided by the state's goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure.

(b) To facilitate the study, research, evaluation, and designation of sites and routes, the commission shall be guided by, but not limited to, the following considerations:

(1) evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high-voltage transmission lines and the effects of water and air discharges and electric and magnetic fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including

⁵⁶ EE 1001, p. 84.

⁵⁷ EE 1001, p. 64, 122-28; EE 1002, p. I-58.

⁵⁸ EE 1002, p. I-115.

⁵⁹ EE 1001, p. 121.

baseline studies, predictive modeling, and evaluation of new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment;

(2) environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air and human resources of the state;

(3) evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects;

(4) evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;

(5) analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired;

(6) evaluation of adverse direct and indirect environmental effects that cannot be avoided should the proposed site and route be accepted;

(7) evaluation of alternatives to the applicant's proposed site or route proposed pursuant to subdivisions 1 and 2;

(8) evaluation of potential routes that would use or parallel existing railroad and highway rights-of-way;

(9) evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations;

(10) evaluation of the future needs for additional high-voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modifications;

(11) evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved; and

(12) when appropriate, consideration of problems raised by other state and federal agencies and local entities.

71. The Joint Application, Environmental Supplement, and the FEIS contain adequate information to allow the Commission to consider the factors enumerated in Minn. Stat. § 216E.03, subd. 7(b).

72. Minn. R. 7849.5900 requires the PUC to issue a permit when it finds that the facility is consistent with state goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electrical energy security through efficient, cost-effective power supply and electric transmission infrastructure.⁶⁰

73. Minn. R. 7849.5910 requires that the Commission consider fourteen factors in determining whether to issue a LEPGP Site Permit and a HVTL Route Permit:

- A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
- B. effects on public health and safety;
- C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;
- D. effects on archaeological and historic resources;
- E. effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. effects on rare and unique natural resources;
- G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;
- H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;
- I. use of existing large electric power generating plant sites;
- J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way;
- K. electrical system reliability;
- L. costs of constructing, operating, and maintaining the facility which are dependent on design and route;

⁶⁰ See also Minn. Stat. 216E.03, subd. 7(b).

- M. adverse human and natural environmental effects which cannot be avoided; and
- N. irreversible and irretrievable commitments of resources.

Effects on Human Settlement, Including, Displacement, Noise, Aesthetics, Cultural Values, Recreation, and Public Services

74. At the West Range Site, Mesaba will likely create new jobs, increase the demand for housing and, in turn, increase real estate values in the area.⁶¹

75. As with the West Range Site, the influx of temporary and permanent workers at the East Range Site will increase housing demand and property values.⁶²

76. The Bureau of Business and Economic Research at the University of Minnesota Duluth's Labovitz School of Business and Economics concluded that Mesaba One will directly create nearly 1,555 construction jobs on the Iron Range in the peak year of construction. Construction of Mesaba One is expected to indirectly create an additional 2,633 jobs statewide related to construction.⁶³

77. Since 1980, the unemployment rate in the Arrowhead Region has been consistently about 2% higher than the state average. Mesaba will likely have a positive impact on reducing the unemployment rate.⁶⁴

78. Excelsior estimates \$1.6 billion will be spent on the construction of Mesaba One. It anticipates that Mesaba One will also generate indirect economic activity throughout the State. It estimates that it will spend \$2.2 billion on construction expenditures, and \$570 million annually related to the Site's operations.⁶⁵

79. During a typical operating year, Mesaba will directly create 185 jobs, which will indirectly create an additional 287 full-time, part-time, and temporary jobs, of which 247 are anticipated to be in the Arrowhead Region.⁶⁶

80. In a typical operating year, Mesaba will generate over \$800 million in economic activity in Minnesota.⁶⁷

81. Itasca County is a federally-designated "historically underutilized business zone," or HUBZone. Under the HUBZone designation small businesses that have their principal office in Itasca County and hire local workers are able to receive preferential

⁶¹ EE 1002, p. III-337.

⁶² EE 1002, p. III-337.

⁶³ EE 1056, p. 5.

⁶⁴ EE 1056 p. 4.

⁶⁵ EE 1056, p. 5.

⁶⁶ EE 1058, p. A-12, A-13.

⁶⁷ EE 1058, p. A-13.

treatment for certain federal contracts. St. Louis County is not a designated HUBZone.⁶⁸

82. The construction and operation of Mesaba will not displace any resident or business.⁶⁹

83. At the West Range Site, the closest residence is located .7 miles west of the IGCC Power Station footprint. At the East Range Site, the nearest residence is located about 1.6 miles from the IGCC Power Station footprint.⁷⁰

84. Minimal noise impacts may occur during construction, from ongoing Plant operations, and from railroad operations.⁷¹

85. Construction noise levels calculated at the nearby receptor locations were calculated to be below daytime residential standards, as set by the Minnesota Pollution Control Agency (MPCA). Construction noise will be discernible, however, and rail construction will result in short-term, temporary noise impacts.⁷²

86. At the West Range Site, mitigation methods and equipment will alleviate the noise from the IGCC Power Station and it will not be discernible at nearby residences.⁷³ Noise mitigation measures are recommended to ensure compliance with the MPCA standards during Plant operations at all West Range receptor locations. With mitigation, the noise levels would not increase more than one decibel, which is an imperceptible increase. The mitigation measures will be updated, refined, and confirmed during detailed design efforts to ensure project compliance.⁷⁴

87. At the East Range Site, noise levels from the IGCC Power Station are predicted to be below state standards and nearly imperceptible to the nearest residences. Therefore, no mitigation is necessary.⁷⁵

88. Individual rail operations associated with Mesaba One and Mesaba Two are expected to have a 24-hr L_{DN} and L_{max} metrics below applicable train noise criteria.⁷⁶

89. A traffic noise analysis was performed according to Federal Highway Administration, Minnesota Department of Transportation (MDOT) and MPCA guidelines. Noise mitigation measures will be implemented so that routine operation of Mesaba

⁶⁸ Tr. p. 230-31; see also <http://map.sba.gov/hubzone/init.asp>; 13 C.F.R. § 126.100 (stating purpose of HUBZone designation).

⁶⁹ EE 1001, p. 416.

⁷⁰ EE 1001, p. 410, 521.

⁷¹ EE 1042, p. 4.

⁷² EE 1042, p. 4.

⁷³ EE 1001, p. 484.

⁷⁴ EE 1042, p. 4-5.

⁷⁵ EE 1001, p. 554; EE 1042, p. 5.

⁷⁶ EE 1042, p. 5.

One and Mesaba Two will comply with predicted daytime and nighttime guidelines at all potentially affected residences.⁷⁷

90. Short-term, temporary rail construction noise impacts on the two residences closest to the proposed track alignment between Big Diamond and Dunning Lakes will occur when construction activities are near these residences, but will be diminished once the construction operation recedes.⁷⁸

91. Mitigation measures in the form of noise walls for the West Range IGCC Power Station are deemed cost-prohibitive under MDOT standards. A mitigation analysis shows that a noise wall would not meet the MDOT cost-reasonableness criteria because of the lack of noticeable noise attenuation at a majority of receptors.⁷⁹

92. At the East Range Site, predicted noise levels along the existing county access road and the proposed railway are well below state standards because the nearest residences and other receptors are located over one mile from the existing road and the proposed rail route. The remoteness of the East Range IGCC Power Station reduces the potential impact of vehicular noise levels.⁸⁰

93. The IGCC Power Station will not significantly affect traffic patterns in the areas surrounding the proposed sites. Year 2028 traffic forecasts indicate that traffic levels would be only slightly higher than under a no-build scenario for both the West and East Range Sites.⁸¹

94. During construction of Mesaba One and Mesaba Two, there will be a temporary level-of-service degradation on nearby roads at both the East and West Range Sites. At the West Range Site, the northbound lane of County Road 7 would maintain the level of service because passing lanes would be added on hills and at plant turn-offs. A new access road to the IGCC Power Station off County Road 7 will be required.⁸²

95. At the East Range Site, construction would impact County Road 666. The road will require resurfacing, but the roadway would not be realigned. Two roads off County Highway 666 would be constructed to allow access to the East Range IGCC Power Station, and Hampshire Drive would be reconstructed.⁸³

96. Rail use during construction and operations is expected to have minimal adverse impacts to baseline rail traffic conditions.⁸⁴

⁷⁷ EE 1029, p. 4; EE 1001, p. 484, 487-88.

⁷⁸ EE 1093, p. 2-3.

⁷⁹ EE 1029, p. 4.

⁸⁰ EE 1001, p. 554; EE 1029, p. 4..

⁸¹ EE 1029, p. 5.

⁸² DOC 34, p. S-41; Draft EIS § 4.15.3.1, 4.15-5.

⁸³ DOC 34, p. S-41; EE 1088, p. 1-2.

⁸⁴ DOC 34, p. S-41.

97. Temporary and localized traffic congestion is expected during construction of linking water sources and discharges, natural gas facilities, and HVTL corridors to the IGCC Power Station.⁸⁵

98. At both sites, the tallest portions of the IGC Power Station buildings and stack emission points may be visible from the nearby residential areas, high vantage points, and county roads that are located nearby. Where existing 115-kV HVTLs would be upgraded, the new and taller HVTL structures will be more visible.⁸⁶

99. The East Range IGCC Power Station will be more visible to Hoyt Lakes residents than the West Range IGCC Power Station will be to the residents of Taconite.⁸⁷

100. The lower emission rates for the IGCC Power Station allow the stacks to be narrower and shorter than those for conventional coal-fueled facilities. Mesaba One will be served by four main stacks. The tallest will be 210 feet and 5.5 feet in diameter; the second tallest will be 185 feet and 7 feet in diameter; and the remaining two will be 150 feet tall and 22 feet in diameter. Mesaba Two will have four identical stacks.⁸⁸

101. At either site, trees and other vegetative growth will be cleared along new corridors to construct natural gas, water, and domestic wastewater pipelines, HVTLs, new access roadways and rail tracks. Permanently cleared ROWs will be visible. Efforts to plant and cultivate screening trees and reseed and water affected areas are generally successful in reducing visual impacts within one or two growing seasons.⁸⁹

102. Warning lights may be required on tall structures near airports to meet Federal Aviation Administration requirements.⁹⁰

103. Two long corridors would be required for the East Range HVTL generator outlet facilities, each approximately 35 miles long. The corridors would require approximately 624 HVTL towers. The HVTL corridors will impact 1,233 houses located within .5 miles of the corridor centerlines. The HVTL lines serving the East Range site would pass near Sky Harbor Airport and may require night-time lighting. The West Range HVTL generator outlet facilities require only one corridor, about 9 miles long. About 72 towers will be required between the West Range IGCC Power Station, and 66 houses are located within .5 miles from the HVTL centerline.⁹¹

⁸⁵ DOC 34, p. S-41.

⁸⁶ EE 1002, p. III-12, III-25.

⁸⁷ EE 1002, p. III-14, III-27.

⁸⁸ EE 1002, p. III-6.

⁸⁹ EE 1002, p. III-2, III-12, III-25.

⁹⁰ DOC 34, § 4.2.2.2, 4.2-3.

⁹¹ EE 1001, p. 71, 105; EE 1002, p. III-16, III-29, III-31; DOC 34, § 4.2.4.1, 4.2-10

104. At either site, Mesaba will be equipped with nighttime security lighting. A lighting plan will be developed in consultation with the City of Taconite or the City of Hoyt Lakes to minimize aesthetic impacts.⁹²

105. Condensed water vapor plumes generated from Mesaba will be visible on cold days at either site, but similar plumes are currently visible during the winter months along Highway 169, and from the Syl Laskin steam electric generating plant, located about 1.3 miles from the East Range IGCC Power Station Footprint.⁹³

106. Stack emissions from the East Range IGCC Power Station are a greater source of increased modeled visibility impacts on the Boundary Waters Canoe Area Wilderness (BWCW) than the West Range IGCC Power Station.⁹⁴

107. No known Native American cultural resources exist within one mile of the IGCC Power Station footprint at either the West Range or East Range Sites.⁹⁵

108. Further assistance from the federal agencies in addressing Native American tribal and religious practices is necessary. Native American tribes should be invited to consult on Mesaba and explore whether traditional cultural properties exist within the area. All federally recognized tribes with historic or current affiliation with Minnesota and the project area have been invited to participate in the consultation process and to be signatories to a Programmatic Agreement. Excelsior received responses from a few tribes indicating that no known tribal cultural interests are located in the vicinity of the West Range or East Range Sites, although each tribe asked to be notified if Native American artifacts or human remains are uncovered or if the scope of Mesaba One and Mesaba Two significantly changes.⁹⁶

109. Field surveys of the areas with high and medium archaeological potential would be performed before construction begins, further minimizing the likelihood of any impacts to cultural resources.⁹⁷

110. Before 1985, the CMP was actively mined and did not exist as a body of water. Since mining activity ceased, the pit has filled with water and been accessible for recreational use, primarily for trout fishing.

111. The CMP is neither a DNR protected water pursuant to Minn. Stat. chapter 103G, nor a designated Lake Trout lake in Itasca County. It is possible that future mining activity will necessitate its dewatering.

⁹² EE 1002, p. III-15, III-28.

⁹³ EE 1002, p. III-12; DOC 34, § 3.2.2.2, 3.2-7.

⁹⁴ EE 1046 p. 7.

⁹⁵ DOC 34, S-36.

⁹⁶ EE 1002, p. III-326; DOC 34, § 4.9.2.1, 4.9-2.

⁹⁷ DOC 34, § 4.9.1.2.

112. Members of the public expressed a variety of perspectives on the issue of whether the CMP should be closed to the public if the Commission selects the West Range Site. Those who do not want to see the CMP closed cited its potential for recreational use. Others appreciated its recreational value, but observed that industrial and recreational uses of abandoned mining resources need to be balanced.⁹⁸

113. No recreational areas exist within the West Range or East Range Sites. The construction and operation of the IGCC Power Station will not displace existing designated recreation areas or conflict with regional plans for recreation. At the West Range Site, however, two snowmobile trails follow existing transmission line ROWs through the buffer land. Construction and operation of the IGCC Power Station will likely require diverting or closing the trails.⁹⁹

114. Excelsior has requested that the boat landing on the CMP be permanently removed and that recreational activity cease in the pit for operational, security and safety reasons. Further discussion of options available for addressing such concerns is expected as part of the water appropriation permitting process.¹⁰⁰

115. At the East Range Site, the IGCC Power Station will not impede recreational uses or conflict with recreational plans.¹⁰¹

116. Based on conversations with city administrators in the cities of Taconite and Hoyt Lakes, it appears that Mesaba One and Mesaba Two will not strain the ability of either municipality to meet emergency service obligations. Both cities indicated they would be willing to acquire any necessary resources.¹⁰²

117. Potable water service and sanitary sewer collection will be extended from existing utility systems in the Cities of Taconite or Hoyt Lakes to the IGCC Power Station.¹⁰³

118. The potable water systems of both the City of Taconite and the City of Hoyt Lakes have sufficient capacity to serve the IGCC Power Station.¹⁰⁴

119. The Coleraine-Bovey-Taconite wastewater treatment facility has a design capacity of 499,000 gallons per day (gpd) and receives an average flow of 334,000 gpd. During the wettest 30-day period from January 1, 2005, through May 31, 2005, the system received an average of 444,000 gpd with a peak day of 969,000 gpd. The estimated peak wastewater flows from the Mesaba Project would occur during construction and are estimated to be 45,000 gpd. During the wettest period of the year, and during peak construction activities, the Coleraine-Bovey-Taconite treatment facility

⁹⁸ Tr. p. 296, 574-75.

⁹⁹ EE 1001, p. 404; EE 1002, p. III-230; DOC 34, § 4.13.2.2.

¹⁰⁰ EE 1002, p. III-230; Tr. p. 507.

¹⁰¹ DOC 34, § 4.13.4.2.

¹⁰² EE 1002, p. III-337; Tr. p. 239, 553, 555;

¹⁰³ EE 1001, p. 498, 562.

¹⁰⁴ EE 1001, p. 282-84; EE 1002, p. I-375.

would be operating at its peak design capacity. Excelsior has pledged financial assistance to identify and fix the excessive inflow and infiltration that caused the peak flow of 969,000 gpd.¹⁰⁵

120. The City of Hoyt Lakes has a wastewater treatment facility with a design capacity of 680,000 gpd, which currently receives an average flow of 300,000 gpd. The Hoyt Lakes treatment facility has sufficient capacity to handle even the peak flow of 45,000 gpd from the Mesaba Project.¹⁰⁶

Effects on Public Health and Safety

121. Modeling was conducted to determine if emissions from Mesaba, in conjunction with emissions from nearby sources and the regional inventory of air emission sources provided by the MPCA, would exceed Class II Ambient Air Quality Standards, which are set by the federal government. The modeling demonstrated that the highest predicted impacts of these sources are far below the applicable standards.¹⁰⁷

122. An initial Air Emission Risk Assessment (AERA) study considered whether air emissions from the IGCC Power Station could pose an unacceptable health risk to people who live or farm nearby or who eat fish from nearby lakes. The MPCA benchmark for determining whether a facility's emissions presents either an acute, sub-chronic or chronic health risk to nearby residents through inhalation is called a total "hazard index." The total hazard index accounts for the risk due to inhalation of all chemicals of potential concern by a maximally exposed person. The acceptable MPCA total hazard index for chemicals producing a non-carcinogenic effect is 1.0 or less. For chemicals producing carcinogenic effects, the acceptable MPCA benchmark is a total cancer risk of less than one in 100,000 for a maximally exposed person.¹⁰⁸

123. The acute and sub-chronic potential hazard indices were predicted at various receptors. The acute and sub-chronic health risks attributable to chemicals producing non-carcinogenic effects are .52 and .13, respectively, and chronic health risks from non-cancer causing chemicals ranged from .032 to .0028, all below the acceptable MPCA total hazard index of 1.0. Cancer risks from all combined facility emission sources and chemicals of potential concern ranged from 2.9×10^{-7} to 3.8×10^{-8} , also below the MPCA benchmark of 1.0×10^{-6} .¹⁰⁹

124. Excelsior has investigated impacts associated with mercury emissions from Mesaba via fish consumption pathways. In comparison to the existing hazard quotient for subsistence fishers eating fish from a nearby lake (8.5 to 12.2), the

¹⁰⁵ EE 1002, p. I-366, I-367;

¹⁰⁶ EE 1002, p. I-371, I-372.

¹⁰⁷ EE 1025, p. 3.

¹⁰⁸ EE 1025, p. 3-4.

¹⁰⁹ EE 1025, p. 4.

incremental hazard quotient predicted for inputs of mercury from Mesaba One and Mesaba Two is negligible (.04 to .06).¹¹⁰

125. Risks to human health and the environment were calculated for Big Diamond Lake, which is located within three kilometers of the West Range IGCC Power Station footprint. The results of the analysis conducted for Big Diamond Lake using MPCA's "Local Mercury Assessment" spreadsheet indicate that mercury loading to the lake of .08 grams per year (g/yr) from Mesaba may occur, in addition to the background mercury loading to the lake of 16.51 g/yr. The incremental increase in mercury in fish tissue resulting from this loading ranges from .002 parts per million (ppm) to .003 ppm, depending on the size of the fish. The studies predict that the risk to a West or East Range subsistence fisherperson due to ingestion of fish tissue is increased roughly .5% from the mercury emissions from Mesaba.¹¹¹

126. Mercury speciation is presumed to be predominately in elemental form based on the reducing atmosphere in the gasifier. Therefore the Project's mercury emissions will have limited solubility in water.¹¹²

127. Facility design features and management programs will be established to address hazardous materials storage locations, emergency response procedures, employee training requirements, hazard recognition, fire control procedures, hazard communications training, personal protection equipment training, and accidental release reporting requirements. Basic approaches to prevent spills to the environment include the initial design of the IGCC Power Station footprint, comprehensive containment structures, and worker training and safety programs.¹¹³

Effects on Land-Based Economies, Including Agriculture, Forestry, Tourism and Mining

128. The IGCC Power Station will generally have neutral or positive effects on area land-based economies.¹¹⁴

129. Portions of the West Range and East Range soils are classified as prime farmland, but no agricultural activity has occurred at either site in recent history.¹¹⁵

130. Timber harvesting is the primary land use of the buffer land. No old-growth forest cover exists within either the West Range Site or the East Range Site IGCC Power Station footprints or buffer lands.¹¹⁶

¹¹⁰ EE 1023, p. 4-5.

¹¹¹ EE 1025, p. 5.

¹¹² EE 1001, p. 435, Appendix 5, p. 7.

¹¹³ EE 1002, p. I-217.

¹¹⁴ EE 1001, p. 372.

¹¹⁵ EE 1001, p. 372.

¹¹⁶ EE 1001, p. 372.

131. The IGCC Power Station footprint will take a relatively small acreage out of potential timber production, but the buffer land is expected to be generally undisturbed.¹¹⁷

132. Area tourism is not expected to be adversely impacted by the IGCC Power Station.¹¹⁸

133. The mining industry will not be adversely impacted by the IGCC Power Station. The DNR, which administers mineral interests owned by the State, observed that the West Range rail alignment crosses some state owned mineral interests in the Biwabik Iron Formation, but it did not request any changes in the rail alignment. The DNR noted that the East Range Site might be near projected blast perimeters for possible future mining operations, and indicated it would review final locations of the Project's facilities on the East Range Site.¹¹⁹

Effects on Archaeological and Historic Resources

134. No archaeological sites are recorded on the West Range Site or its corridors. Excelsior conducted a limited archaeological survey, which concluded that 6 acres have a high potential for the location of archaeological sites, and 25 acres are identified as moderate potential for the location of archaeological sites. No archaeological resources were encountered in either the high or moderate potential areas identified.¹²⁰

135. At the West Range Site, within the visual Area of Potential Effect (APE), two railroad spurs (the Great Northern Railway Nashwauk-Gunn Line and the Duluth, Missabe & Northern Railway Alborn Branch) are eligible for listing on the National Register of Historic Places (NRHP).¹²¹

136. The Minnesota State Historical Preservation Officer has concurred that the Project would have no impact on the archeological and architectural properties of the West Range Site area, including the rail lines.¹²²

137. Surrounding forests would shield from view the emission stacks and HVTL corridors.¹²³

138. Construction will not commence at the West Range Site until appropriate consultation, identification, and treatment of historic, archaeological and cultural resources has occurred.¹²⁴

¹¹⁷ EE 1001, p. 373.

¹¹⁸ EE 1001, p. 373.

¹¹⁹ EE 1001, p. 373; DNR Comments, (Feb. 29, 2008).

¹²⁰ DOC 34, § 3.9.2.1; EE 1001, p. 499.

¹²¹ Doc 34, § 4.9.3.1.

¹²² EE 1089.

¹²³ DOC 34, § 4.9.3.1.

¹²⁴ EE 1001, p. 499.

139. At the East Range Site, two confirmed archaeological sites are located within the APE of an HVTL corridor but are outside the construction ROW. These two archaeological sites consist of two mounds located on the south of Esquagama Lake approximately one-half mile apart.¹²⁵

140. At the East Range Site, one building listed on the NRHP (Eveleth Recreational Building), one potentially eligible building (Eveleth City Hall), and one eligible railroad spur (Duluth, Winnipeg and Pacific Railway Company) are located within the HVTL visual APE. The E.J. Longyear First Diamond Drill Site, which is on the NRHP, is connected to County Road 666 by a series of nature trails. The primary site is shielded by trees, so it would not have line of site views of the proposed power plant.¹²⁶

141. At the East Range Site, the natural gas pipeline and HVTL would be constructed within existing corridors with previous ground disturbance, and would not be expected to contain any archaeological artifacts. Similarly, the process water supply pipelines are primarily located within areas that have been previously disturbed by mining activities, and would not be expected to contain archaeological artifacts.¹²⁷

Effects on the Natural Environment, Including Effects on Air and Water Quality Resources and Flora and Fauna

142. Excelsior's environmental analyses used worst case assumptions regarding air pollutant emission rates; therefore the impacts described during the environmental review process should represent an upper limit for actual emissions.¹²⁸

143. Excelsior's environmental analyses used worst case assumptions regarding air pollutant emission rates; therefore the impacts described during the environmental review process should represent an upper limit for actual emissions.

144. The AERA for Mesaba was prepared in accordance with guidance from the MPCA. The analysis takes into account impacts of virtually all pollutants emitted from the Project and predicts what the potential health risks of inhalation may be according to category (acute, sub-chronic, chronic, and cancer risks).¹²⁹

145. A visibility impact analysis was carried out for the BWCAW and Voyageurs National Park (VNP) for the East and West Range IGCC Power Station sites. The West Range data for Mesaba indicates that calculated visibility impacts greater than 5% or 10% could occur at some locations within the BWCAW and VNP on "a small number of days per year."¹³⁰

¹²⁵ DOC 34 § 4.9.4.1.

¹²⁶ DOC 34 § 4.9.4.1.

¹²⁷ DOC 34 § 4.9.4.1.

¹²⁸ EE 1001, Appendix 5, p. 6-7.

¹²⁹ EE 1086, p. 2.

¹³⁰ EE 1046, p. 7.

146. A significant impact according to the EPA's Best Available Retrofit Technology (BART) is defined as seven or more days a year that exceed a 5% visibility increase.¹³¹

147. George E. McVehil, a Certified Consulting Meteorologist at McVehil-Monnett Associates, Inc., opines that the operation of Mesaba at the West Range Site will not cause a significant impact on the visibility at the BWCAW or VNP.¹³²

148. Data from air dispersion modeling demonstrates that Mesaba, in combination with all other regional Prevention of Significant Deterioration (PSD) sources, will be in full compliance with all state and federal limits established to maintain impacts within the PSD "increment."¹³³

149. Air emissions from the Project on the East Range Site would consume more Class I increments and cause greater visibility impacts than at the West Range Site due to its closer proximity to the Class I areas.¹³⁴

150. The cumulative modeling analyses also demonstrates that future air quality at the BWCAW, VNP, and the Rainbow Lakes Wilderness (RLW) in Wisconsin will comply with all PSD increment and National Ambient Air Quality Standards (NAAQS) when all existing and proposed sources, including Mesaba, are in operation.¹³⁵

151. In comparison to the West Range Site, the operation of Mesaba One and Mesaba Two at the East Range Site will further impact the visibility of the BWCAW and VNP, but mitigation options are available to reduce modeled impacts, including the purchase of offsetting emissions or the addition of further controls.¹³⁶

152. Dr. McVehil analyzed the cumulative visibility impact, taking into account potential new facilities and planned reductions from existing ones. He concluded that the cumulative impacts to visibility in the two nearby Class I areas will decrease over the coming years even if all the proposed facilities are built.¹³⁷

153. Planned emission reductions at Minnesota Power's generating stations will reduce visibility impacts by more than a factor of three compared to the increases caused by Mesaba. Emission controls at other sources, to be achieved by Minnesota BART regulations, but not included in the analysis, will provide additional mitigation of existing visibility impacts.¹³⁸

¹³¹ EE 1046, p. 7.
¹³² EE 1046, p. 7.
¹³³ EE 1046, p. 5; EE 1095, p. 3.
¹³⁴ EE 1001, § 8.4.1.2, p. 527.
¹³⁵ EE 1046, p. 8.
¹³⁶ EE 1046, p. 7; EE 1095, p. 4.
¹³⁷ EE 1095, p. 4.
¹³⁸ EE 1046, p. 8.

154. Because Minnesota Power is expected to reduce its emissions in the future through the implementation of planned pollution control projects, the cumulative air quality modeling analysis (including the proposed additional emission related to Mesaba) indicates that future emissions of all regulated air pollutants associated with known, yet-to-be-constructed projects are expected to be less than existing emission levels.¹³⁹ It is not appropriate, however, to justify the increase in emissions caused by Mesaba by reference to decreases in emissions achieved by Minnesota Power and by BART regulations.

155. Nonetheless, air pollutants released from Mesaba One and Mesaba Two under the worst-case combined operation of the IGCC Power Station will be in compliance with all federal and state ambient air quality standards set to protect public health and welfare. This analysis includes emissions from the flare.¹⁴⁰

156. The Project will need to comply with the flare carbon monoxide destruction rate as it is listed in its Part 70/New Source Review Construction Authorization Permit. If the flare does not perform as the vendor estimates, the Project will still comply with applicable ambient air quality standards.¹⁴¹

157. For each category of health risk, the MPCA has established a benchmark level below which impacts are minimal, and the AERA compares the Project's emissions-related impacts to those benchmarks. The Project is below the benchmarks in every category – 48% below the benchmark for acute risks; 87% below for sub-chronic risks; and 91% below the benchmark for chronic risks and cancer.¹⁴²

158. The AERA included a specific analysis of fish consumption health risks that result from the deposition of mercury from the air into watersheds. According to the analysis, the health risk is above the benchmark levels that the MPCA has set. But, the Mesaba Project's contribution to this health risk would be negligible (less than 1%) based on the MPCA's prescribed modeling.¹⁴³

159. The MPCA has suggested minor changes to the modeling assumptions used in the AERA. Excelsior's consultants believe that the proposed changes will not substantially alter the conclusions regarding air emission health risks.¹⁴⁴

160. Excelsior's use of high pressure natural gas for starting up the gasifiers is designed to reduce air pollutant emissions to the extent possible during the startup process. Emissions that will only occur during startup include: natural gas (or treated syngas) combustion products that are routed to the flare to ensure oxidation; transient

¹³⁹ DOC 34, § 5.2.2.3.

¹⁴⁰ EE 1023, p. 5; EE 1046, p. 5; EE 1001, Appendix 5, p. 129.

¹⁴¹ EE 1001, Appendix 5, p. 71; Tr. p. 340-41.

¹⁴² EE 1086.

¹⁴³ EE 1086.

¹⁴⁴ EE 1025, p. 6.

CO and VOC emissions as the combustion turbine generators are started on natural gas fuel; and flaring or filtered, scrubbed and desulfurized syngas after slurry is introduced to the gasifier, but before the syngas product has reached the specified composition and conditions for use in the combustion turbine.¹⁴⁵

161. During normal operation of the IGCC Power Station, the only significant air pollutant emissions will be generated from the combustion turbine generators and the tank vent boilers.¹⁴⁶

162. Anticipated traffic increases during the construction and operation of the IGCC Power Station at either the West Range or East Range Sites are not expected to create local air quality problems.¹⁴⁷

163. The MPCA will determine the appropriate Best Available Control Technologies (BACT) analysis in consultation with the EPA.¹⁴⁸

164. Mesaba does not constitute a major source of hazardous air pollutants (HAPs) as defined under the National Emissions Standards for HAPs.¹⁴⁹

165. Because of lower quality source water, particulate matter emissions at the East Range Site, generated from the cooling tower drift, would be nearly be twice as high as those generated at the West Range Site.¹⁵⁰

Water Quality – Storm Water

166. Even though Excelsior intends to use a ZLD system to eliminate all industrial wastewater discharges at its West Range Site, it must still obtain a permit under the National Pollutant Discharge Elimination System (NPDES) to discharge storm water associated with industrial activity. Excelsior must prepare and have on file an industrial storm water pollution prevention plan as part of its responsibilities under Minn. R. 7090.3040, subp. 1A.¹⁵¹

167. Before construction begins, Excelsior will identify, adopt and implement Best Management Practices (BMPs) for storm water runoff. In accordance with 40 C.F.R. § 122.26(b)(14)(x), Excelsior will develop and submit a Storm Water Pollution Prevention Plan (SWPPP) to the MPCA before undertaking any construction activities. The SWPPP will identify erosion prevention and sediment BMPs, and will specifically identify foreseeable conditions and propose practices to address all such identified conditions during the various stages of construction and post construction.¹⁵²

¹⁴⁵ EE 1001, Appendix 5, p. 44.

¹⁴⁶ EE 1023, p. 6; EE 1001, Appendix 5, p. 36.

¹⁴⁷ EE 1029, p. 4.

¹⁴⁸ EE 1097; Tr. p. 602.

¹⁴⁹ DOC 34, § 4.3.2.

¹⁵⁰ EE 1001, p. 190.

¹⁵¹ EE 1001, p. 41; Minn. R. 7090.3010, subp. 1A.

¹⁵² EE 1001, p. 201-02.

168. Excelsior will manage storm water generated during operation of the IGCC Power Station in three ways. First, storm water with potential to become contaminated with process solids and liquids will be segregated from process equipment by curbs, elevated drain funnels and other means and returned as make-up to the feedstock slurring system or for other process water use. Second, storm water that could become contaminated with oil (such as water runoff from parking lots) will be routed through an oil and water separator and then to the cooling tower blow down sump before discharge off-site. Finally, storm water from other areas not associated with industrial activity will be routed to the storm water detention pond where settling can occur and initial rainfall can be contained, checked and released in a controlled manner to a permitted outfall. All discharges of storm water must comply with conditions established by the NPDES Permit issued to discharge storm water associated with industrial activity.¹⁵³

Water Quality – West Range Raw Water Supply

169. The West Range IGCC Power Station footprint is located near abundant water sources, including several abandoned mine pits. The results of Excelsior's investigation show that the CMP, the HAMP Complex, the LMP, and Prairie River are the best potential water sources at the West Range Site.¹⁵⁴

170. The CMP is a chain of abandoned mine pits. The CMP water levels are rising and the potential for flooding concerns local residents and governmental entities. As water levels continue to rise, soils supporting the CMP's rock walls could become saturated and unstable if subject to mechanical shocks. The threat of a collapse has prompted closure of an existing rail line running near the edge of the CMP because of the train vibrations. A collapse of a CMP containment wall or overflow from the existing banks would eventually flow through the City of Bovey and potentially damage the City's infrastructure and natural resources.¹⁵⁵

171. DNR currently regulates water levels by pumping water from the HAMP Complex to a nearby lake.¹⁵⁶

172. The LMP is currently filled with water and has an outlet pipe that discharges into the Prairie River. The West Hill Mine Pit discharges into the LMP.¹⁵⁷

173. Mesaba will require pumping stations in the CMP, HAMP, and LMP. An engineered orifice will allow water to flow by gravity from the Prairie River to the LMP.

¹⁵³ EE 1001, p. 202-03.

¹⁵⁴ EE 1021, p. 5.

¹⁵⁵ EE 1021, p. 5.

¹⁵⁶ EE 1021, p. 6.

¹⁵⁷ EE 1021, p. 6.

The pumping stations in the HAMP and LMP will transport water to the CMP as necessary to maintain appropriate water levels in the CMP.¹⁵⁸

174. Mesaba will require four process water supply pipelines. The segment between the CMP and the boundary of the Buffer Land will be 36 inches in diameter and approximately 11,000 feet in length. The segment between the LMP and the CMP will be 24 inches in diameter and approximately 11,300 in length. The segment from the HAMP to the CMP will be 24 inches in diameter and approximately 25,400 feet in length. The segment from the Prairie River to the LMP will be 18 inches in diameter and approximately 200 feet in length. Routing for the process water pipelines will be primarily on public property adjacent to existing transportation corridors.¹⁵⁹

175. Excelsior has applied for a Water Appropriation Permit for the West Range Site from the DNR, pursuant to Minn. Stat. § 103G.265 and Minn. R. 6615.0010.¹⁶⁰

176. In accordance with Minn. Stat. § 103G.265, subd. 3, Excelsior has obtained legislative approval to consume surface water in amounts greater than two million gallons per day at its West Range Site.¹⁶¹

East Range Raw Water Supply

177. Unlike the pits in the HAMP Complex and CMP, the water levels in the pits serving the East Range IGCC Power Station pose no current threat to human health or welfare. None of the pits are used for recreation or support a recreational fishery. The water necessary to sustain the East Range IGCC Power Station is reasonably assured, given the plentiful water sources, their capacity for a wide range of water-level fluctuations, and the option of obtaining supplemental water from Colby Lake. The Project could also meet its water needs with discharges and dewatering sources, which was one of the considerations for originally specifying use of the ZLD treatment system for cooling water at the East Range Site.¹⁶²

178. The IGCC Power Station would use the Mine Pit 2WX as a reservoir from which it would appropriate water to meet its needs. A permanent pumping station in the Mine Pit 2WX would receive input from one or more floating pumping stations placed in the remaining mine pits identified as water sources. In several instances, mine pit water will be relayed from one mine pit to another en route to the 2WX Mine Pit.¹⁶³

179. The pipelines interconnecting the pits with one another and 2WX will be transportable to allow for contingency movements based on varying pit water

¹⁵⁸ EE 1001, p. 275.

¹⁵⁹ EE 1001, p. 276, Appendix B to Appendix 9.

¹⁶⁰ EE 1001, p. 35, Appendix 9.

¹⁶¹ EE 1001, p. 35.

¹⁶² EE 1021, p. 6; EE 1001, p. 223, 266-69; EE 1002, p. I-201, I-353.

¹⁶³ EE 1001, p. 279.

levels and other considerations. The connection between Mine Pit 2WX and the IGCC Power Station will be a buried pipeline.¹⁶⁴

180. Excelsior has not yet submitted an application for a Water Appropriation Permit to the DNR for the East Range Site.¹⁶⁵

Generation and Treatment of Wastewater

181. Water used in the coal gasification process will be treated through use of a ZLD system, thereby eliminating any discharge of water that was used to scrub pollutants from the syngas or that would otherwise come into contact with materials entering or exiting the gasifier. Both the West and East Range Power Stations will employ a ZLD system for the coal gasification process.¹⁶⁶

182. The enhanced ZLD system at both the West and East IGCC Power Station will also treat water used in the cooling tower, thereby eliminating all potential discharges of water used for cooling in the IGCC Power Station. In connection with the West Range Site, Excelsior will sponsor improvements to the Coleraine-Bovey-Taconite joint wastewater treatment facility to help improve local surface water quality.¹⁶⁷

183. Excelsior considered two options to dispose of the domestic wastewaters produced by the West Range IGCC Power Station. The first option involved constructing an on-site wastewater treatment plant to treat waste streams and discharge the treated effluent to local surface waters. The second option involved connecting to the Coleraine-Bovey-Taconite wastewater treatment system. The second approach is preferred because it will avoid the discharge of treated domestic wastewaters into local lakes.¹⁶⁸

184. Excelsior similarly considered two options for the management of domestic water at the East Range IGCC Power Station. The first option relied on on-site wastewater treatment, and the second relied on connecting to the existing Hoyt Lakes wastewater treatment system. The second option is preferred because it will eliminate discharges of treated domestic wastewaters into Colby Lake.¹⁶⁹

Effects on Flora, Fauna and Rare and Unique Natural Resources

185. The United States Fish and Wildlife Service (USFWS) has not identified any federally protected plant species as occurring within Itasca or St. Louis Counties – the counties in which the West Range Site and the East Range Site are located.¹⁷⁰

¹⁶⁴ EE 1001, p. 279; see also EE 1001, Table 3.6-8 (listing the process water supply pipeline segments).

¹⁶⁵ EE 1001, p. 35.

¹⁶⁶ EE 1023, p. 7-8.

¹⁶⁷ EE 1002, p. I-141; EE 1131, p. 1-2.

¹⁶⁸ EE 1021, p. 9.

¹⁶⁹ EE 1021, p. 9.

¹⁷⁰ EE 1090, p. 3-4.

186. No designated federal Wildlife Refuges, Waterfowl Areas, or National Preserves are within or immediately adjacent to the West or East Range Sites or their Associated Facilities or Interconnection Corridors. No DNR Wildlife Management Areas, State Natural Areas, designated Game Lakes or Designated Trout Streams are within or immediately adjacent to either Site.¹⁷¹

187. According to the DNR Natural Heritage Information System, no records of state-listed species or rare features exist within the vicinity of the East Range IGCC Power Station Footprint and Buffer Land.¹⁷²

188. Past mining, existing roads, and transmission lines have resulted in relatively minor habitat fragmentation and alteration in the vicinity of the West Range IGCC Power Station Footprint and Buffer Land and surrounding area.¹⁷³

189. The quality wildlife habitat within the vicinity of the East Range IGCC Power Station footprint and buffer land is similar to habitat quality found in the surrounding areas and region.¹⁷⁴

190. Some areas of Itasca and St. Louis Counties provide potential habitat for federally protected species of fauna. The range of the Canadian Lynx, a federally protected species, includes the East Range Site. The USFWS has indicated that the lynx will require a Section 7 consultation as required by the Endangered Species Act to ensure no adverse effects.¹⁷⁵

191. The Biological Assessment conducted for the proposed Minnesota Steel project found little to no lynx activity in the vicinity of the West Range Site. The USFWS concluded that the Project was unlikely to affect the Canada lynx. The West Range Site is further away from confirmed occurrences of the lynx than the East Range Site.¹⁷⁶

192. Excelsior will consult with the DNR and the USFWS to determine whether additional coordination is necessary to determine the presence of any protected species and their habitats at both sites.¹⁷⁷

193. The IGCC Power Station was planned to minimize wetland impacts through avoidance, minimization and mitigation. Wetland avoidance and minimization will be refined through the final design process for Mesaba.¹⁷⁸

194. At the West Range Site, the worst-case total impacts on wetlands from Excelsior's preferred alternatives would be approximately 172 acres, of which

¹⁷¹ EE 1001, p. 404, 518.

¹⁷² EE 1035, p. 5.

¹⁷³ EE 1035, p. 32.

¹⁷⁴ EE 1035, p. 4.

¹⁷⁵ EE 1035, p. 4; EE 1090, p. 3-4; EE 1131, p. 6-7.

¹⁷⁶ EE 1131, p. 6-7.

¹⁷⁷ EE 1035, p. 5.

¹⁷⁸ EE 1002, p. III-125.

approximately 63 acres would be permanent. The wetland impacts on the West Range Site would decrease by up to 17 acres through the use of an enhanced ZLD system, which would eliminate the need for pipelines to discharge cooling tower blowdown.¹⁷⁹

195. At the East Range Site, the worst-case total impacts on wetlands from Excelsior's preferred alternatives would be approximately 133 acres.¹⁸⁰

196. As required by the Minnesota Wetland Conservation Act, compensatory wetland mitigation will be provided for all wetland acreage that is drained or filled. Therefore, the Project will result in no net loss of wetlands.¹⁸¹

197. The DNR Natural Heritage and Information System (NHIS) database shows no bald eagle nesting areas within the two-mile radius of the Site boundaries. The NHIS database shows five bald eagle nesting areas within a one-mile radius of the transportation and utility corridors of the East Range Site.¹⁸²

198. Excelsior will limit its timber and land-clearing activities to periods outside of the songbird-nesting season to minimize the potential for the incidental taking of songbird nests, according to the federal Migratory Bird Treaty Act.¹⁸³

199. PSD regulations require analysis of air quality impacts on sensitive vegetation and soil types. The three-hour and one-hour SO₂ sensitive vegetation screening levels are more stringent than comparable NAAQS and State Ambient Air Quality Standards. Modeling shows that maximum impacts from the IGCC Power Station for the one-hour and three-hour averaging periods are less than 15% of vegetation screening levels.¹⁸⁴

200. A CALPUFF modeling analysis was conducted to estimate impacts of Mesaba One and Mesaba Two on air quality in the BWCAW, VNP and RLW – all Class I areas. Maximum impacts are below allowable increments for all pollutants and Class I areas. Impacts are also below the Significant Impact Level (SIL) in most cases. But, for short-term SO₂ concentrations, impacts are indicated to exceed the SIL in the BWCAW and VNP. A cumulative PSD increment analysis was conducted, and the maximum predicted increment consumption in each of the Class I areas was shown to be within the PSD Class I limits. The analysis concluded that Mesaba will not cause or contribute to any violation of Class I PSD increments.¹⁸⁵

¹⁷⁹ EE 1087, p. 2; EE 1131, p. 2; EE 1027, p. 3.

¹⁸⁰ EE 1027, p. 4.

¹⁸¹ EE 1002, p. III-185, III-200, III-202.

¹⁸² EE 1002, p. III-258, III-268.

¹⁸³ EE 1035, p. 5.

¹⁸⁴ EE 1046, p. 6.

¹⁸⁵ EE 1046, p. 6.

Application of Design Options that Maximize Energy Efficiencies, Mitigate Adverse Environmental Effects, and Could Accommodate Expansion of Transmission of Generating Capacity

Maximize Energy Efficiencies

201. Mesaba will optimize the fuel inputs into each stage of the gasifier. Two gasifiers will be operated simultaneously to supply two combustion turbine generators and one steam turbine generator.¹⁸⁶

202. Excelsior's design will include one spare gasifier for each nominal 600-MW LEPGP to achieve reliability, eliminate numerous startups and shutdowns and improve the efficiency of Mesaba One and Mesaba Two.¹⁸⁷

203. Fluor and ConocoPhillips have jointly devised a fuel-flexible configuration for Mesaba that will minimize emissions and optimize efficiency. The emissions that have been projected for Mesaba are based on conservative assumptions, and improvements may be realized as the design matures during detailed engineering.¹⁸⁸

204. The carbon dioxide emissions from Mesaba are expected to be 15 to 20% lower than the current average for U.S. coal-based power plants fueled by similar feedstocks.¹⁸⁹

205. Because of the better source water quality at the West Range Site, the enhanced ZLD system would consume 1 MW per phase. The East Range Site would consume 2 MW per phase. The West Range Site is less than ten miles from the point of interconnection to the grid at the Blackberry substation. The East Range Site is approximately 35 miles from the point of interconnect to the grid. The added distance results in an additional 8 MW of line losses at the East Range Site. The Project would consume the same fuel at either site, but the West Range Site would provide an additional 9 MW of electricity.¹⁹⁰

Mitigating Adverse Environmental Effects

206. The IGCC Power Station's design will minimize process-related discharges to the environment and incorporate pollution prevention concepts into most aspects of the IGCC Power Station's design and operational plan, including gasification technology, the sour-water recycling and removal system, the ZLD unit, COS hydrolysis, mercury removal features, acid gas removal, the sulfur recovery unit, and the marketing of secondary products that otherwise would be wastes.¹⁹¹

¹⁸⁶ EE 1002, p. I-24.

¹⁸⁷ EE 1001, Appendix 5, p. 43-45.

¹⁸⁸ EE 1019, p. 4.

¹⁸⁹ EE 1002, p. I-24.

¹⁹⁰ EE 1131, p. 2, 10; EE 1001, p. 266.

¹⁹¹ EE 1052, p. 6.

207. Key technology aspects of Mesaba One and Two that allow it to be an inherently lower-polluting process include syngas cleanup and desulfurization systems, such as processes for syngas cooling, particulate matter removal, syngas scrubbing, acid gas removal, mercury removal, and the potential to retrofit for carbon capture.¹⁹²

Carbon Capture and Sequestration

208. Excelsior's CCS Plan will identify the opportunities for capture and sequestration of carbon dioxide emissions from its Phase I and Phase II IGCC Power Station. The CCS Plan evaluates two options for capturing carbon dioxide from the syngas produced by Mesaba, evaluates where the captured carbon dioxide could be sequestered, and addresses the economic realities that will dictate the Plan's implementation.¹⁹³

209. The Plan identifies a recommended technical option for Mesaba that involves installing an amine scrubber downstream of the acid gas removal system to remove up to 85% of the carbon dioxide in the syngas produced in the gasification process. For the preferred feedstock (100% PRB coal), such removal would represent an overall 30% (by weight) capture of the total carbon processed by the Plant.¹⁹⁴

210. The second option for carbon capture and sequestration would reduce CO₂ emissions by up to 90%. The costs of this option are significantly higher than the 30% capture approach using current technology. Research and development by the utility consortium EPRI, sponsored by the DOE, had expected to result in commercially available technology around 2020.¹⁹⁵ That is now described by the EPRI President as a "very aggressive" target.¹⁹⁶

211. Excelsior plans to transport the captured carbon dioxide to depleted oil fields in North Dakota, southwestern Manitoba, or southeastern Saskatchewan where it will be sequestered underground and used in the oil recovery process.¹⁹⁷

212. It is envisioned that, at some point, the program could be financed through a combination of revenue from the sale of carbon dioxide to oil companies, sale of carbon credits once greenhouse gas regulations are promulgated, and through possible government funding (e.g., Phase III of U.S. DOE's Carbon Sequestration Program).¹⁹⁸

¹⁹² EE 1040, p. 5.

¹⁹³ EE 1061, p. 1-2; EE 1059, p. 7.

¹⁹⁴ EE 1059, p. 7.

¹⁹⁵ EE 1061, p. 1-2.

¹⁹⁶ "Mounting Costs Show the Push for Clean Coal," *NY Times*, May 30, 2008.

¹⁹⁷ EE 1059, p. 7.

¹⁹⁸ EE 1059, p. 7.

Construction Process

213. Environmentally sensitive areas at construction sites will be identified in detail before construction begins. Construction preparation will not disturb the areas, which will be flagged.¹⁹⁹

214. Construction activities will be governed either by a general or individual NPDES permit. The permit will include a storm water pollution prevention plan, which imposes best management practices for control of storm water runoff and erosion protection. Best management practices will be installed and implemented prior to construction.²⁰⁰

215. During construction, certified environmental personnel will be on site to coordinate emergency response activities. Temporary sanitation facilities will be provided and cleaned daily, with waste hauled to a local disposal facility. All spent construction and hydro-test water will be sampled and tested, and if not suitable for routing to the retention basin, will be transported by truck to a licensed off-site treatment facility.²⁰¹

Mitigating Air Emissions

216. Air emissions are primarily controlled through use of the inherently lower-polluting IGCC technology.²⁰²

217. The volume of pre-combustion syngas present at the time of its clean-up in the E-Gas process is about one hundred times less than the volume of the post-combustion gas handled in a conventional pulverized coal-fired boiler. IGCC technology gas clean-up equipment is smaller in size and the residence time for allowing contact between a chemical and an absorbent can be increased, thereby providing for greater pollutant removal efficiency.²⁰³

218. With respect to criteria pollutants, combustion turbine generator (CTG) emissions are substantially controlled through the use of syngas fuel that is extensively treated for the removal of sulfur compounds and particulate matter. Emissions of nitrogen oxides from the CTGs are reduced by moisturizing the syngas fuel and diluting it with nitrogen. The tank vent boilers will be designed to safely and efficiently dispose of recovered process vapors from various process tanks and vessels associated with the gasification process. The tank vent boilers prevent the atmospheric emission of trace amounts of reduced sulfur compounds and other gaseous constituents that could cause nuisance odors and other undesirable environmental consequences. The

¹⁹⁹ EE 1059, p. 5.

²⁰⁰ EE 1059, p. 5.

²⁰¹ EE 1059, p. 5.

²⁰² EE 1040, p. 4.

²⁰³ EE 1040, p. 4-5.

elevated flares will be designed for high efficiency destruction of carbon monoxide and hydrogen sulfide.²⁰⁴

219. With respect to criteria pollutants, the IGCC Power Station will reduce its emissions of HAPs by using the inherently low-emitting IGCC process and many of the same process features that control criteria pollutant emissions. A large portion of the heavy metals and other undesirable constituents of the feedstock will be immobilized in the nonhazardous, vitreous slag byproduct and prevented from causing adverse environmental effects. Gaseous and particle-bound HAPs that may be contained in the raw syngas exiting the gasifiers will be mostly removed in the syngas particulate matter removal system, water scrubber, and acid gas removal systems.²⁰⁵

220. The mercury removal carbon absorption beds will be designed to control mercury emissions from the IGCC Power Station to less than 10% of the mercury in the as received feedstock.²⁰⁶

221. Mesaba will apply BACT to mitigate adverse effects of air pollutant emissions from the IGCC Power Station. Excelsior's Air Permit application analyzes the BACT emission limit for each emissions source and each regulated pollutant. Ongoing discussions with the MPCA in the context of Excelsior's air permit application will determine the BACT emission limits for each emission source.²⁰⁷

Mitigating Water Use and Discharge

222. Mesaba will comply with the Clean Water Act's Section 316(b) requirements regarding intake structures. Mesaba has conceptual designs for the intake system: the caisson intake system or directional drilling, which will be considered for use in the CMP pumping station, and the floating intake system, which will be used in the HAMP Complex and LMP pumping stations. Both of these systems will use the best technology available (BTA) such as intake structures that are designed to achieve low intake velocities consistent with regulatory requirements (to avoid entrainment of fish larvae) and screens that avoid impinging fish.²⁰⁸

223. Water used by Mesaba to slurry coal, clean syngas, in processes where water comes into direct contact with industrial waste streams or residues, or for non-contact cooling water, will be returned to the environment by evaporation or be retained as residual moisture in filter cake material destined for treatment and disposal in a landfill approved to accept it. Potable water used for domestic purposes will be discharged to publicly owned treatment works, treated, and discharged to local surface waters.²⁰⁹

²⁰⁴ EE 1052, p. 3-4.

²⁰⁵ EE 1052, p. 4.

²⁰⁶ EE 1052, p. 4.

²⁰⁷ EE 1050, p. 6.

²⁰⁸ EE 1037, p. 7.

²⁰⁹ DOC 34, § 5.3-5.4; EE 1131, p. 1-2; EE 1001, p. 156-58.

224. Wastewater generated from the gasification island, containing certain levels of heavy metals and other contaminants from the feedstocks, will be treated in a ZLD process that will recover distilled water for reuse in the IGCC Power Station (reducing fresh water consumption) and, more importantly, concentrate heavy metals and other contaminants of concern into a solid waste stream. This solid waste will be treated and disposed of in an approved solid waste management facility. Elimination of cooling tower blowdown will eliminate the remaining potential discharge to local surface waters.²¹⁰

Mitigating Impacts on Wetlands

225. Excelsior's proposed railroad alignment minimizes the impacts to wetlands and water bodies but maintains the engineering criteria necessary to accommodate unit coal trains.²¹¹

226. The worst-case total impacts of Excelsior's preferred alternatives at the West Range Site would be approximately 172 acres, but Excelsior will attempt to avoid wetland impacts within the railroad center loop and reduce the worst-case impact by approximately 63 acres.²¹²

227. The worst-case total impacts of Excelsior's preferred alternatives at the East Range Site would be approximately 133 acres, but Excelsior will attempt to minimize impacts to wetlands within the rail loop, which could reduce this total.²¹³

228. Excelsior will adjust the site layout to straddle two large wetland complexes to minimize the wetland impacts associated with the West Range IGCC Power Station Footprint and Buffer Land. Excelsior will also use existing and proposed roadways, railroads and utility ROWs for routing utility lines as mitigation measures.²¹⁴

229. Mitigation of wetland impacts will be in the form of direct replacement or through purchase of credits through an approved wetland bank. Mitigation will comport with requirements of the United States Army Corps of Engineers and the Minnesota Board of Water and Soil Resources as well as permits and approvals issued under the federal and state programs. Proposed wetland replacement will be designed to replace wetland types, functions and values to the greatest extent feasible.²¹⁵

²¹⁰ EE 1052, p. 5; EE 1131, p. 1; DOC 34, § 5.2.3.1, 5.3.

²¹¹ EE 1044, p. 3.

²¹² EE 1027, p.3; EE 1087, p. 2.

²¹³ EE 1027, p. 4.

²¹⁴ EE 1027, p. 5.

²¹⁵ EE 1027, p. 5-6.

Impacts on Threatened, Endangered or Otherwise Rare Species

230. In the year before construction, Excelsior will work with the USFWS and DNR to ascertain whether new occurrences of threatened, endangered or otherwise rare species have been recorded. Excelsior will consider the potential presence of any state or federally listed species in planning the final layout of the IGCC Power Station Footprint, its Associated Facilities, its Additional Lands, and its selected HVTL and pipeline routes.²¹⁶

231. To minimize impacts on flora and fauna, Excelsior will use impact-minimization and replacement standards set forth in federal and state regulations. Excelsior will mitigate effects on fish and wildlife resources at wetland and water body crossings by meeting the requirements of the NPDES permit, wetland permits, and other environmental permits. Specific mitigation measures could include replacement of wetland habitats when permanent dredge and fill impacts are involved; implementation of erosion, sedimentation, and turbidity-control standards; erosion control plans; and restoration of grades and bottom-contour topographies of water bodies. Additionally, when water and wetland crossings are necessary for utilities, Excelsior will employ minimally invasive construction techniques such as directional drilling to minimize effects on aquatic resources and habitats.²¹⁷

232. To avoid and minimize impacts on threatened, endangered, or otherwise rare species, Excelsior will continue to coordinate with the DNR to determine whether formal surveys and additional reviews are necessary for state-listed Threatened or Endangered species or Species of Special Concern. For federally-protected species, Section 7 Formal Consultation will occur to obtain a Determination of Effect Decision and identify specific coordination needs and identify appropriate mitigation measures from the USFWS. For both state and federally listed species, potential mitigation measures may include seasonal changes in construction schedules, salvage and relocation, habitat preservation, operational-related measures, and other project-specific measures defined through the consultation process with the agencies. To protect bald eagles, Excelsior will comply with federal requirements by coordinating with agencies to obtain updated information about nesting sites before construction.²¹⁸

Mitigating Exposure to Electric and Magnetic Fields

233. Excelsior has considered using distance as a mitigation factor in reducing exposure to electric and magnetic fields in HVTL route and design selections, in part to avoid residences. Because the configuration and distance between phases can impact exposure, Excelsior has proposed a double-circuit configuration for both the West and East Range Sites and utilized A-B-C, C-B-A phasing arrangements to reduce potential for magnetic field exposure.²¹⁹

²¹⁶ EE 1035, p. 6.

²¹⁷ EE 1035, p. 5-6.

²¹⁸ EE 1035, p. 6-7.

²¹⁹ EE 1062, p. 4.

234. Independent of the LEPGP site and corresponding HVTL route and tower structure considered, the electric and magnetic fields and noise levels at the ROW boundary will comply with all applicable state and federal laws.²²⁰

Design Options Accommodating Expansion of Transmission or Generating Capacity

235. Both the West and East Range Sites are capable of hosting at least 1,200 MW(net) of new electric generating capacity.²²¹

236. The natural gas pipeline serving the West Range IGCC Power Station will be oversized to allow sufficient additional capacity for use by others should such use be consistent with permit conditions and mutually agreeable to the parties. On the West Range Site, it is possible that a local gas utility or municipal entity may own and construct a natural gas pipeline that would jointly serve the IGCC Power Station and the proposed Minnesota Steel project located nearby.²²²

237. Natural gas would be supplied to the East Range IGCC Power Station via a new pipeline by NNG.²²³

238. Construction of Mesaba on the West Range Site would benefit the regional transmission grid with the potential addition of the Minnesota Steel project, which would have a load of 500 MW and be located 10 miles from the West Range Site.²²⁴

239. The HVTL Network Upgrades associated with Mesaba One would provide transmission system benefits, which is why FERC would require the Midwest Independent Transmission System Operator (MISO) to compensate 50% of the Network Upgrade costs to Mesaba One. The MISO system studies associated with Mesaba Two are not yet complete so it is unknown what Network Upgrades may be required.²²⁵

240. The regional high voltage system on the Iron Range operates mainly at 115-kV and 230-kV. Efforts to bolster Minnesota's ability to exchange power between regions and with fewer attendant losses will dictate that new transmission developments in the region operate at higher voltages. Excelsior believes that 345-kV will be the future standard on which such transmission developments on the Iron Range and elsewhere will be focused and has based its decision for the IGCC Power Station's interconnection voltage on that premise.²²⁶

²²⁰ EE 1102, p. 1-2.

²²¹ EE 1001, p. 33-34.

²²² EE 1001, p. 34.

²²³ EE 1001, p. 37.

²²⁴ EE 1099, p. 2; Tr. p. 449-451.

²²⁵ EE 1099, p. 2.

²²⁶ EE 1001, p. 289-90.

Use or Paralleling of Existing Rights-of-Way, Survey Lines, Natural Division Lines, and Agricultural Field Boundaries

241. The West Range IGCC Station Footprint and Buffer Land are generally bounded by County Road 7 to the west, an existing 115-kV HVTL corridor to the north, and the Township boundary to the east. A second existing 115-kV HVTL corridor containing side-by-side abandoned 115-kV HVTL structures with conductors traverses the Buffer Land in a due north-south direction.²²⁷

242. The East Range IGCC Power Station Footprint and Buffer Land are generally bounded by County Road 666 and NNG's existing 10-inch natural gas pipeline to the east, and active BNSF railroad to the south, and a HVTL corridor to the west, and the Superior National Forest to the north.²²⁸

243. To minimize the construction of new rail track, Excelsior sought to minimize the distance between potential LEPGP sites and existing trackage capable of accommodating unit train shipments of coal.²²⁹

244. The preferred HVTL route on the West Range Site extends east from the IGCC Power Station about .8 miles to Minnesota Power's existing 45 Line ROW and then south from the southern boundary of the Buffer Land about 1.6 miles to the retired Greenway Substation. The route continues south from the Greenway Substation approximately 6.2 miles over new, but relatively remote, ROW to intersect Minnesota Power's 83L and 20L. At that point, the route follows the existing Minnesota Power ROW about 1 mile east to the Blackberry Substation. The route follows surveyed property boundaries where it passes through most properties owned by private citizens along the due north-south portion to the Blackberry Substation.²³⁰

245. The preferred HVTL route on the East Range Site involves two 345-kV HVTLs in separate corridors (ER Route A and ER Route B). ER Route A uses existing 39L/37L ROW for most of its length. The first two miles of this route are on a new ROW along 43L. The next 23.6 miles would parallel the existing 39L ROW. The next 2 miles would use new ROW to connect to the existing 37L corridor. The final 7.4 miles of this corridor would use the existing 37L corridor. The first two miles of the ER Route B would share the new 43L ROW with ER Route A. The remainder of ER Route B would use the existing 38L ROW.

246. The proposed natural gas pipeline route on the West Range Site would follow .9 miles of existing pipeline ROW, 4.2 miles of new HVTL ROW, and about 1.3 miles of existing HVTL ROW; the route will require approximately 12.3 miles of new pipeline easements. The Nashwauk PUC has proposed a nearly identical natural gas

²²⁷ EE 1001, p. 69.

²²⁸ EE 1001, p. 98; EE 1106 (East Range Project Site Map).

²²⁹ EE 1044, p. 3.

²³⁰ EE 1001, p. 71; EE 1104 (West Range Corridors Map).

pipeline route to serve the Minnesota Steel project. Therefore, the potential exists to minimize new pipeline route construction.²³¹

247. The natural gas pipeline route on the East Range Site would likely be installed alongside an existing 33-mile NNG pipeline that services a Cliffs Erie facility near the East Range IGCC Power Station.²³²

248. Routing for the process water pipelines on the West Range Site will be primarily on public property adjacent to existing transportation corridors.²³³

249. On the East Range Site, process water pipelines interconnecting the abandoned mine pits that would provide process water to the IGCC Power Station will be transportable to allow for contingency movements. The connection between Mine Pit 2WX and the Station will be a buried pipeline.²³⁴

250. The proposed sewer and potable water pipelines on the West Range Site will be constructed from the City of Taconite's existing system to the Station Footprint. The preferred route will share a corridor with a process water pipeline and will take the most direct route from the City to the Station Footprint.²³⁵

251. The proposed sewer and potable water pipelines on the East Range Site would parallel the proposed HVTL route until it reached the City of Hoyt Lakes systems.²³⁶

Use of Existing LEPGP Sites

252. Both the West and the East Range Sites are capable of holding at least two LEPGP units.²³⁷ Both are capable of hosting both Mesaba One and Mesaba Two, which together would provide a net nominal 1,200 MW of baseload electric generation.²³⁸

Use of Existing Transportation, Pipeline, and Electrical Transmission Systems or Rights-of-Way

253. At the West Range Site, coal could be delivered by either BNSF or CN, which operate on a single track located less than two miles from the West Range Site. Direct access to the site would be provided by the construction of short spurs (two miles

²³¹ EE 1001, p. 84; Tr. p. 377-78, 567-68.

²³² EE 1001, p. 121.

²³³ EE 1001, p. 276.

²³⁴ EE 1001, p. 279.

²³⁵ EE 1001, p. 46, 283.

²³⁶ EE 1001, p. 48.

²³⁷ EE 1001, p. 33.

²³⁸ EE 1001, p. 33-34.

of new track) from the mainline tracks to the site boundary. An additional four miles of new track would be required for the portion of the rail loop within the site boundaries.²³⁹

254. Coal would be delivered to the East Range Station by a subsidiary of the CN Railway that serves the area. The GCC Power Station Footprint is located approximately 1 mile north and 1 mile west of two CN railroad tracks. Under the preferred rail alignment, approximately 3.4 miles of new track would be constructed to connect to the Station to the existing CN track.²⁴⁰

255. Regardless of which site is selected, the IGCC power station would be located near county highways.²⁴¹

256. On the West Range Site, the Itasca County Engineer has indicated interest in constructing a 3.2-mile road connecting County Road 7 to State Highway 169, which would serve as part of the access road to the West Range IGCC facility. This new route would address safety concerns associated with the existing intersection of County Road 7 and State Highway 169. Alternatively, an access road would serve the plant off the existing alignment of County Road 7 if the rerouting of County Road 7 does not occur.²⁴²

257. On the East Range Site, grading and resurfacing Kensington Drive (County Highway 110) would be required, but the roadway would not need to be realigned. Additionally, a Station loop road having two access points off County Highway 666 would be constructed.²⁴³

258. At the West Range Site, the natural gas pipeline constructed, owned and operated by Excelsior would tap the two existing Great Lakes Gas pipelines approximately 12 miles due south of the West Range Site.²⁴⁴

259. At the East Range Site, the natural gas pipeline that would serve the Power Station would likely be installed alongside an existing 33-mile NNG pipeline that services a Cliffs Erie facility near the East Range IGCC Power Station Footprint.²⁴⁵

260. At the West Range Site, new transmission lines totaling 9.6 miles in length are required to interconnect to the transmission grid at the Blackberry substation.²⁴⁶

261. At the East Range Site, new transmission lines about 70 miles in length are required to interconnect to the transmission grid at the Forbes Substation.²⁴⁷

²³⁹ DOC 34, p. S-12.

²⁴⁰ DOC 34, p. S-17.

²⁴¹ EE 1088, p. 1.

²⁴² EE 1088, p. 1.

²⁴³ EE 1088, p. 2.

²⁴⁴ EE 1001, p. 121.

²⁴⁵ EE 1001, p. 121.

²⁴⁶ EE 1001, p. 71.

²⁴⁷ EE 1001, p. 105.

Electrical System Reliability

262. Mesaba One and Mesaba Two will be designed according to the single failure criterion, which requires that the power system withstand the loss of a single line, generator, transformer or bus bar without any severe disturbance of power supply.²⁴⁸

263. The MISO system studies associated with Mesaba Two are not yet complete so it is unknown what Network Upgrades may be required.²⁴⁹

264. The MISO Large Generator Interconnection Process has been completed with the signing of a Large Generator Interconnection Agreement for Mesaba One on the West Range Site on July 9, 2007. Beyond the interconnection upgrades at Blackberry Substation, MISO determined that a new 75-mile, 230-kV HVTL between Minnesota Power's Boswell and Riverton Substations resolves all adverse system impacts. This 75-mile, 230-kV HVTL will be examined and permitted in a separate proceeding.²⁵⁰

265. The MISO Large Generator Interconnection Process has been completed with the signing of a Large Generator Interconnection Agreement for Mesaba One on the East Range Site on July 9, 2007. No Network Upgrades beyond those required at Forbes to interconnect the Mesaba generator outlet transmission facilities are required.²⁵¹

Cost of Constructing, Operating, and Maintaining the Facilities Dependent on Design and Route

266. Construction costs are higher at the East Range Site than at the West Range Site, largely because of longer transmission lines. Based on completed MISO studies and preparing updated cost estimates for the generator outlet (GO) facilities, using the same methodology used by MISO, the costs for all the HVTL infrastructure associated with Mesaba One are \$96 million for the West Range site and \$102 million for the East Range site. Factoring in the 50% reimbursement MISO is required by FERC to compensate for the system benefits Network Upgrades, the final cost to Excelsior for the HVTL infrastructure for Mesaba One is \$57.5 million for West Range and \$99.7 million for the East Range.²⁵²

267. As part of the comparison of the Preferred and Alternate Sites, Excelsior evaluated the cost differences of developing each Site and operating each IGCC Power Station and its associated facilities.²⁵³

²⁴⁸ EE 1001, p. 49.

²⁴⁹ EE 1099, p. 2.

²⁵⁰ EE 1099, p. 2-3.

²⁵¹ EE 1099, p. 4.

²⁵² EE 1001, p. E-7; EE 1099, p. 2.

²⁵³ EE 1001, p. 136.

268. The ongoing operational costs and site development capital cost differences, which are approximately \$210 million more for the East Range Site, are driven by additional costs related to delivery of primary feedstocks to the site, disposal of ZLD solids, higher losses over HVTLs, and increased auxiliary power use at the East Range Site, as well as additional capital costs associated with longer generator outlet HVTLs and natural gas pipeline facilities and the need to eliminate process water discharge.²⁵⁴

269. The fact that there is more than one rail provider for the West Range Site adds to the assurance that stable, economical, long-term fuel pricing can be maintained over the lifetime of the IGCC Power Station.²⁵⁵

Adverse Human and Natural Environmental Effects Which Cannot Be Avoided

270. “Steam blows” during commissioning of the IGCC Power Station will be an unavoidable adverse impact. “Steam blow” discharge piping will be equipped with silencers that will reduce noise levels by 20dB to 30 dB at each receptor location, and local residents will be warned in advance of the events.²⁵⁶

271. With respect to rail operations in connection with Mesaba One and Mesaba Two, train whistles are an unavoidable adverse impact, but an allowable condition pursuant to the Federal Railroad Administration regulations. Train horns are normally used at public grade crossings, and none exist on any new tracks associated with the Mesaba Project.²⁵⁷

272. To the extent practicable, Excelsior has attempted to avoid and minimize wetland impacts at both sites. Unavoidable impacts at the West Range Site are estimated to be 172 acres, and unavoidable impacts at the East Range Site are estimated to be 133 acres. All such wetland impacts will be mitigated in accordance with federal and state standards.²⁵⁸

273. Visible plumes resulting from the condensation of moisture in stack emissions and cooling tower exhaust cannot be avoided in cold weather climates. Since both sites are located at essentially the same latitude, they do not differ in the extent to which such plumes will be visible.²⁵⁹

²⁵⁴ EE 1001, p. 137; EE 1131, p. 6.

²⁵⁵ EE 1094, p. 2.

²⁵⁶ EE 1042, p. 4.

²⁵⁷ EE 1042, p. 5; DOC 34, p. S-45, Figures 3.15.

²⁵⁸ EE 1023, p. 8.

²⁵⁹ EE 1001, p. 528-29.

Irreversible and Irretrievable Commitments of Resources

274. Site preparation would include the filling of low-lying areas and grading to provide a developable site, which would impact wetlands, vegetation, and wildlife habitat. Although it is unlikely that they would be restored to their original conditions and functionality, in theory these resources could be reclaimed at some point.²⁶⁰

275. The construction of Mesaba One and Two would potentially result in the irretrievable commitment of building materials, although many of the materials could be reused or recycled at a future date.²⁶¹

276. Operation of Mesaba One and Mesaba Two would require the irretrievable commitment of coal or petroleum coke, natural gas, and small quantities of process chemicals, paints, degreasers, and lubricants. None of these resources is in short supply relative to the size and location of Mesaba One and Mesaba Two.²⁶²

Prohibited and Excluded Sites and Routes

277. The “prime farmland exclusion” in Minn. R. 7849.5940, subp. 4, prohibits a LEPPG site from including more than .5 acres of prime farmland per megawatt of net generating capacity. This prime farmland calculus does not apply to prime farmland located within statutory cities.

278. The majority of land identified for the West Range and East Range IGCC Power Station Footprint and Buffer Land is located within the boundaries of the statutory cities of Taconite and Hoyt Lakes, respectively.²⁶³

279. Minn. R. Ch. 7849 specifically identifies prohibited HVTL routes and power plant sites. None of the proposed sites or routes violates any of the provisions within these rules.²⁶⁴

280. The list of prohibited sites in Minn. R. 7849.5940 includes state parks. Excelsior proposes to pump water from the Hill-Annex State Park, but the prohibited power plant site areas may be used for water intake or discharge facilities. The Hill-Annex State Park currently pumps water out of the HAMP to allow visitors to the Park access to some of the former mining facilities. Part of the water supply infrastructure for the West Range Site may be partially located within the Hill-Annex State Park.²⁶⁵

²⁶⁰ DOC 34, § 5.4.

²⁶¹ DOC 34, § 5.4.

²⁶² DOC 34, § 5.4.

²⁶³ EE 1001, p. 45-47.

²⁶⁴ Minn. R. 7849.5930; Minn. R. 7849.5940.

²⁶⁵ Minn. R. 7849.5940, subp. 2; EE 1001, p. 68.

NATURAL GAS PIPELINE ROUTE PERMIT

Statutory and Rule Criteria for Route Permit

281. Minn. Stat. § 216G.02, subd. 3(b)(7), provides that the PUC's rules governing the routing of pipelines must "provide criteria that the commission will use in determining pipeline routes, which must include the existence of populated areas, consideration of local government land use laws...and the impact of the proposed pipeline on the natural environment."

282. Minn. Stat. § 216G.02, subd. 3(b)(7) and Minn. R. 7852.0600, subp. 1, allow Excelsior to apply to the PUC for a partial exemption from the pipeline route selection procedures for the issuance of a pipeline routing permit.

283. Minn. Stat. § 216G.02, subd. 3(b)(7) and Minn. R. 7852.0700, subp. 2, require the PUC to determine that the proposed pipeline will not have a significant impact on humans or the environment to grant the partial exemption. In making this determination, the PUC must consider the criteria set forth in Minn. R. 7852.0700, subp. 3, and Minn. R. 7852.1900, subp. 3.

284. Minn. R. 7852.0700, subp. 3 and Minn. R. 7852.1900, subp. 3, establish the ten criteria that the PUC must consider to designate a route and issue a routing permit for a gas pipeline. According to the rules, the PUC must consider:

- a. Human settlement, existence and density of populated areas, existing and planned future land use, and management plans;
- b. The natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water and recreational lands;
- c. Lands of historical, archaeological, and cultural significance;
- d. Economies within the route, including agricultural, commercial or industrial, forestry, recreational and mining operations;
- e. Pipeline cost and accessibility;
- f. Use of existing rights-of-way and right-of-way sharing or paralleling; Natural resources and features;
- g. The extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 7852.3400 for pipeline right-of-way preparation, construction, cleanup and restoration practices;

- h. Cumulative potential effects of related or anticipated future pipeline construction; and
- i. The relevant applicable policies, rules and regulations of other state and federal agencies, and local government land use laws including ordinances adopted under Minnesota Statute § 299J.05 relating to the location, design, construction, or operation of the proposed pipeline and associated facilities.

Impact on Human Settlement, Existence and Density of Populated Areas, Existing and Planned Future Land Use, and Management Plans

285. All significant receptors located within one-half mile of the centerline of the Proposed Natural Gas Pipeline Route are located greater than 100 feet from its proposed centerline. The Trout Lake Church and Trout Lake Cemetery are about 470 feet and 720 feet away from the centerline of the Pipeline Route alignment.²⁶⁶

286. There are 3 residences within 100-300 feet, 14 residences within 300-500 feet, 61 residences within 500-1320 feet, and 75 residences within 1320-2640 feet of the centerline of the Proposed Natural Gas Pipeline Route.²⁶⁷

287. No member of the public opposed Excelsior's request for a partial exemption from pipeline route selection procedures.

288. Homes near the West Range Site may be reduced in value because of the proximity of the rail operations and the view of the IGCC Power Station itself. In general, however, the influx of construction and operation jobs, and the associated economic benefits of Mesaba One and Mesaba Two, will create housing demand in the area, increase income and raise property values in the area.²⁶⁸

289. The location of the Proposed Natural Gas Pipeline Route will not have a disparate impact on a racial minority or low-income group of residents. Nearly 95% of the population is Caucasian. The minority population in the census tract throughout the West Range Site, including the associated facility areas, ranges between 2% to 3.6%. The overall minority population for Itasca County is 4.1%.²⁶⁹

290. The Proposed Natural Gas Pipeline Route traverses land that falls within the following zoning classifications: Industrial, Heavy Industrial, and Farm Residential.²⁷⁰

291. During construction of the pipeline, existing fences will be adequately braced before any needed opening is made, and locking gates or appropriate fencing

²⁶⁶ EE 1001, p. 413.

²⁶⁷ EE 1001, p. 413.

²⁶⁸ EE 1002, p. III-337.

²⁶⁹ EE 1056, p. 3; EE 1001, p. 501.

²⁷⁰ EE 1001, p. 408-09.

will be installed when construction in the area is finished. Any damage to fences, gates and cattle guards would be restored to the original condition or replaced. Access and livestock control would be employed during construction to limit impact to the use of the land.²⁷¹

292. Clearing of the ROW would follow accepted industry practices and construction guidelines. In areas where timbering is required, trees would be cut in uniform length and stacked along the ROW based on the owner's preference. The profile of stumps left from timbering would be as low as possible, but the removal of stumps would be limited to only that necessitated by pipeline installation.²⁷²

293. The final phase of the pipeline construction involves clean up and restoration of the ROW. Removal and disposal of construction debris and any surplus materials will be a part of the clean up. Restoration of the ROW surface involves smoothing by chisel plow or disc harrows or other equipment, and stabilizing when necessary. In non-cropland, the ROW will be re-vegetated according to agreement with the landowner or appropriate government agency.²⁷³

294. The pipeline is regulated by the Minnesota Office of Pipeline Safety (MOPS). All facilities proposed for the pipeline project will be designed, operated and maintained according to the United States Department of Transportation Minimum Federal Safety Standards, set forth in 49 C.F.R. 192. These regulations are meant to ensure adequate protection to the public from failures of natural gas pipelines and related facilities. Part 192 includes the establishment of an Emergency Plan, which will provide written procedures to minimize hazards if a gas pipeline emergency occurs.²⁷⁴

295. Pipeline facilities will be operated and maintained in compliance with MOPS regulations. Excelsior or its operator will become a member of the Gopher State Excavators One-Call system, which is vital in helping to prevent damage to underground pipelines by excavators and others engaged in construction activities. Semi-annual inspections of the pipeline ROW will be conducted for gas leak detection, and cathodic protection surveys would be conducted annually.²⁷⁵

Impact on the Natural Environment, Public and Designated Lands, Including but Not Limited to Natural Areas, Wildlife Habitat, Water, and Recreational Lands

296. Nine known occurrences of state-listed species are documented within one mile of the Natural Gas Pipeline Alternative 1. Of greatest concern are those records for the state-listed endangered orchid species, *Platanthera flava* var. *herbiola* (tubercledrein orchid), that have colonized in disturbed mine spoil areas. Typical habitat

²⁷¹ EE 1001, p. 358.

²⁷² EE 1001, p. 358.

²⁷³ EE 1001, p. 360.

²⁷⁴ 49 C.F.R. §§ 192.1-.951; EE 1001, p. 360.

²⁷⁵ EE 1001, p. 361.

for this species is within fringe wetland habitats such as wet meadow habitats dominated by native graminoids and sedges. However, the known records for this species near the Natural Gas Pipeline are within mine spoil areas, and there are no mine spoil areas within the alignment for the Natural Gas Pipeline Alternative. Because of the rarity of *Platanthera flava* var. *herbiola* in the state, the probability is low for encountering this species in wet meadow habitat within the Natural Gas Pipeline Route.²⁷⁶

297. The remaining records of state-listed species within one mile of the Natural Gas Pipeline Route are listed as species of special concern or non-status. Although impacts to these species or their habitats are not regulated, coordination with the DNR will be completed to determine the potential effects on these species or their habitats within the Natural Gas Pipeline Route, particularly for the state-listed endangered *Platanthera flava* var. *herbiola*.²⁷⁷

298. The natural gas pipeline at the West Range Site includes a total of 24.69 acres of wetland habitat that is located in the proposed temporary ROW. Impacts to these wetlands would be temporary. Efforts will be made to minimize disturbance to wetlands during construction and disturbed wetland habitat would be restored following completion of construction.²⁷⁸

299. Construction in wetland areas will be done in a manner that minimizes soil compaction. Crane mats, low ground pressure equipment, and limiting construction in wetland areas to winter months when the ground is frozen can minimize impacts to the soft, compressible, wet soils found in wetlands.²⁷⁹

300. To minimize wetland impacts at water crossings, the natural gas pipeline will be directionally drilled under the water body starting at approximately 100 feet from the edge of each bank. Wetland impacts associated with water crossings will include 1.34 acres in the temporary ROW and 0.94 acres in the permanent ROW. Impacts to wetlands would be temporary and disturbed wetlands would be restored after completion of construction.²⁸⁰

301. A total of four river or stream crossings are associated with the proposed Natural Gas Pipeline. Two of these crossings are under the Swan River (perennial.) The other crossings are under a tributary of the Swan River (perennial) and a perennial stream between Big and Little Diamond Lakes. The Swan River is the only water body that is listed on the MNDNR Public Waters Inventory. Therefore, Excelsior would need to obtain a license to cross this water body for the Natural Gas Pipeline. The total length of water crossings for the pipeline is estimated at 133 linear feet.²⁸¹

²⁷⁶ EE 1001, p. 480–81.

²⁷⁷ EE 1001, p. 481.

²⁷⁸ EE 1001, p. 468.

²⁷⁹ EE 1002, p. III-57.

²⁸⁰ EE 1001, p. 468.

²⁸¹ EE 1001, p. 460-61.

302. Apart from directionally drilled water crossings, the Proposed Natural Gas Pipeline will be constructed using open trench installation techniques. Soils disturbed in wetlands will be segregated from upland soils and replaced so as to restore pre-construction conditions. Soils and vegetation that become compacted as a result of construction will be restored by loosening such soils and reseeded the area with grasses and broad-leafed herbaceous plants native to the region and appropriate to the habitat (i.e., wetland versus upland).²⁸²

303. There are no designated Federal Wildlife Refuges, Waterfowl Production Areas, or National Preserves within or immediately adjacent to the Proposed Natural Gas Pipeline Route. No DNR Wildlife Management Areas, Wildlife Refuges, state Scientific and Natural Areas, designated Game Lakes, or Designated Trout Streams are within or immediately adjacent to the Proposed Natural Gas Pipeline Route.²⁸³

Impact on Lands of Historical, Archaeological, and Cultural Significance

304. Excelsior used an archaeological resource model developed based on the experience of the Minnesota State Historic Preservation Office to identify areas of high and moderate potential for archaeological sites. During June and July 2005, an initial screening-level cultural resources assessment of the West Range Site and portions of associated corridors was conducted. A survey of 31 acres within the Station Footprint and Buffer Land did not yield any archaeological resources.²⁸⁴

305. The Minnesota State Historic Preservation Office and appropriate federal agencies and tribes will be consulted to address the proposed strategy area prior to any additional archaeological testing. Construction will not commence until appropriate consultation, identification, and treatment of historic, archaeological and cultural resources has occurred.²⁸⁵

306. As to architectural resources, since the area of potential impact of the pipeline is limited to the corridor itself, no historic buildings will be affected as no buildings are located within the corridor of the proposed pipeline route.²⁸⁶

Impact on Economies Within the Route, Including Agricultural, Commercial or Industrial, Forestry, Recreational, and Mining Operations

307. There are no anticipated land use impacts to industrial areas on the pipeline route (or, for that matter, the West Range Site, the East Range Site, or their other associated corridors.)²⁸⁷

²⁸² EE 1001, p. 468.

²⁸³ EE 1001, p. 404.

²⁸⁴ EE 1001, p. 498-99.

²⁸⁵ EE 1001, p. 499.

²⁸⁶ EE 1001, p. 500.

²⁸⁷ EE 1002, p. III-230.

308. Approximately 91 acres of forested land will be cleared in creating the pipeline route. Of this land, 63 acres will be permanently impacted (and not available for forestry), with 28 acres reverting back to original condition.²⁸⁸

309. Although there are cultivated tracts of farmland within one mile of the pipeline corridor, there are no anticipated land use impacts to farmland on the pipeline route.²⁸⁹

310. There are no anticipated land use impacts to recreational areas on the pipeline route.²⁹⁰

311. The DNR did not indicate that there would be any unacceptable impacts to future mining activities associated with the proposed pipeline route.²⁹¹

Impact on Pipeline Cost and Accessibility

312. The estimated construction cost of the proposed West Range pipeline is \$10.2 million. Cost sharing in the pipeline is likely given the potential interest shown by nearby municipal authorities.²⁹²

313. The administrative law judge presiding over the Nashwauk Public Utilities Commission's request for a natural gas pipeline route permit has recently concluded that the preferred route for the Minnesota Steel project follows essentially the same route as that proposed to supply Mesaba One and Mesaba Two.²⁹³

314. Access will be provided by the existing roadway system and along the Company's existing pipeline ROW. As design and construction progress, temporary access roads may need to be constructed to facilitate installation of the pipeline.²⁹⁴

315. Impact on Use of Existing Rights-of-Way and Right-of-Way Sharing or Paralleling.

316. The proposed pipeline route would follow .9 mile of an existing pipeline ROW.²⁹⁵

317. The proposed pipeline route would follow the Mesaba Project's proposed HVTL preferred corridor for 4.2 miles.²⁹⁶

²⁸⁸ EE 1001, p. 392.

²⁸⁹ EE 1002, p. III-229.

²⁹⁰ EE 1002, p. III-230.

²⁹¹ DNR Comments (Feb. 29, 2008).

²⁹² EE 1001, p. 34, 361.

²⁹³ OAH Docket No.: 12-2500-19166-2, MPUC Docket No.: PL, E-280/GP-06-1481, Feb. 22, 2008.

²⁹⁴ DOC 34, § 4.15.

²⁹⁵ EE 1001, p. 84.

²⁹⁶ EE 1001, p. 84.

318. The proposed pipeline route would follow 1.3 miles of an existing, unused HVTL corridor.²⁹⁷

Impact on Natural Resources and Features

319. Land uses traversed by the proposed route include grasslands, regeneration/young forest, deciduous forest land and smaller tracts of agricultural lands and wetlands. Grasslands comprise approximately 30 acres or 19 percent of the route. Approximately 91 acres of forested land will be cleared in creating the pipeline route of which 63 acres will be permanently impacted; 28 acres will be allowed to revert back to its original condition.²⁹⁸

320. A total of four river or stream crossings are associated with Natural Gas Pipeline for the West Range Site. The wetland habitat for the two Swan River crossings is mapped by NWI as Type 1 (PFO1A) seasonally flooded and Type 6 (PSS/EM5C) scrub-shrub habitats. The wetland habitat at the tributary to the Swan River is mapped by NWI as Type 2 (PEM5Bd) wet meadow habitat. The perennial stream between Big and Little Diamond Lake was mapped during the 2005 field surveys and included Type 3 (PEMC) shallow marsh habitat. Total length of water crossings for this alternative is estimated at 133 linear feet.²⁹⁹

321. Temporary wetland impacts will result from construction activities and will be mitigated by restoring wetland areas after construction is completed. Temporary wetland impacts will include tree and shrub clearing for construction staging areas paralleling the pipeline corridor.³⁰⁰

322. The MNDNR recently confirmed that the natural gas pipeline route proposed for the Minnesota Steel project did not encumber valuable mineral resources until approaching the City of Nashwauk. The pipeline route to be used for Mesaba One and Mesaba Two terminates prior to that point.³⁰¹

Impact on the Extent to Which Human or Environmental Effects are Subject to Mitigation by Regulatory Control and by Application of the Permit Conditions for Pipeline Right-of-Way Preparation, Construction, Cleanup, and Restoration Practices

323. To mitigate human and environmental effects and comply with regulatory controls, Excelsior will need to obtain the following permits: MNDNR license to cross public lands and waters, MNDNR public waters work permit, a Corps Section 10 work in

²⁹⁷ EE 1001, p. 84.

²⁹⁸ EE 1001, p. 85, 392.

²⁹⁹ EE 1001, p. 460-61.

³⁰⁰ EE 1001, p. 468.

³⁰¹ Compare OAH Docket No.: 12-2500-19166-2, MPUC Docket No.: PL, E-280/GP-06-1481, Feb. 22, 2008, Finding Nos. 35–36 with EE 1104, West Range Corridors Map.

navigable waters permit and Section 404 wetland permit, Minnesota Wetland Conservation Act Replacement Plan approval, FERC sales tap approval, and MNDOT construction of tunnels under highways permit.³⁰²

324. Excelsior must notify the Commissioner of the Department of Agriculture if burial of the pipeline will impact cultivated land. The Commissioner may participate and advise the MPUC as to whether to grant a permit for the project and the best options for mitigating adverse impacts to agricultural lands.³⁰³

325. Mitigation of wetland impacts will be provided in accordance with requirements of the United States Army Corps of Engineers, the Minnesota Board of Water and Soil Resources, and permits and approvals issued under the federal and state programs. Proposed wetland replacement will be designed to replace wetlands types, functions, and values to the greatest extent feasible.³⁰⁴

326. The pipeline is regulated by the Minnesota Office of Pipeline Safety (MOPS.) All facilities proposed for the pipeline project will be designed, operated and maintained in accordance with U.S. Department of Transportation Minimum Federal Safety Standards in Title 49 of the C.F.R., Part 192. These regulations are meant to ensure adequate protection to the public from failures of natural gas pipelines and related facilities. Part 192 defines and specifies the minimum standards for operating and maintaining pipeline facilities, including the establishment of an Emergency Plan which will provide written procedures to minimize hazards in the event of a gas pipeline emergency.³⁰⁵

327. Pipeline facilities will be operated and maintained in compliance with MOPS regulations. The Applicant or its operator will become a member of the Gopher State Excavators One-Call system that is vital in helping to prevent damage to underground pipelines by excavators and others engaged in construction activities. Semi-annual inspections of the pipeline right-of-way will be conducted for gas leak detection, and cathodic protection surveys would be conducted annually.³⁰⁶

328. Excelsior will be required to obtain legal access across private lands and provide payment for crop loss or other merchantable item loss.³⁰⁷

329. Most of the impacts associated with pipeline construction will cause only a temporary disturbance or disruption. Many of the impacts will be mitigated through strict adherence to the construction specifications, and compliance with the pipeline routing permit conditions. Permits from other federal and state agencies and units of

³⁰² EE 1001, p. 35-42.

³⁰³ EE 1001, p. 359.

³⁰⁴ EE 1087, p. 3.

³⁰⁵ EE 1001, p. 360.

³⁰⁶ EE 1001, p. 361.

³⁰⁷ EE 1001, p. 356.

government are also designed to reduce or mitigate the impact of pipeline construction.³⁰⁸

330. When encountered along a ROW, fences would be adequately braced before any opening to the fence is made. Locking gates or appropriate fencing would be installed when construction in the area has been completed. Any damage to fences, gates and cattle guards would be restored to the original condition or replaced. Access and livestock control would be employed during construction to limit impact to the use of the land. Aboveground vegetation and obstacles would only be cleared as necessary to allow safe and efficient use of construction equipment.³⁰⁹

331. Clearing of the ROW would follow accepted industry practices and sound construction guidelines. In areas where timbering is required, trees would be cut in uniform length and stacked along the ROW based on the owner's preferences. The profile of stumps left from timbering would be as low as possible, and the removal of stumps would be limited to only that necessitated by pipeline installation. Debris created from preparation of the ROW would be disposed of using approved methods during restoration.³¹⁰

332. The State of Minnesota requires a 54-inch minimum depth of cover in certain areas. Specifications will provide for a minimum of 54 inches of ground cover for this proposed pipeline unless waived by the landowner, or to accommodate special construction needs. Federal minimum cover requirements range from 18 inches to 48 inches depending on the circumstances encountered. For most of the proposed route it is anticipated that requirements will call for at least 48 inches of cover over the pipeline.³¹¹

333. Tree clearing activities will be completed during the winter months to avoid disturbance to wetlands, and avoid the bird nesting season to comply with the federal Migratory Bird Treaty Act.³¹²

334. Grading and cut-and-fill excavation would be performed to minimize effects on natural drainage and slope stability. On steep terrain or in wet areas where the ROW must be graded at two elevations (i.e., two-toning) or where diversion dams must be built to facilitate construction, the areas would be restored upon completion of construction to original conditions. Excavation and grading would only be undertaken where necessary to increase stability and decrease the gradient of unstable slopes.³¹³

335. Where the Natural Gas Pipeline Route crosses peat, mitigation measures will address peat's highly compressible properties. Construction during the winter

³⁰⁸ See 1087, p. 2; DOC 34, § 5.3.1.

³⁰⁹ EE 1001, p. 358.

³¹⁰ EE 1001, p. 358.

³¹¹ Minn. Stat. § 216G.07, subds. 1-3; 49 C.F.R. § 192.327; EE 1001, p. 358.

³¹² EE 1087, p. 3.

³¹³ EE 1001, p. 358.

months will alleviate the difficulty of construction in peat areas. If winter construction is not possible, crane mats and/or low ground pressure equipment will likely be used.³¹⁴

336. To minimize wetland impacts at water crossings, the natural gas pipeline will be directionally drilled under the water body starting at approximately 100 feet from the edge of each bank. In this instance, wetland impacts associated with water crossings will include 1.34 acres in the temporary ROW and 0.94 acres in the permanent ROW.³¹⁵

337. The final phase of pipeline construction involves clean up and restoration of the ROW. Removal and disposal of construction debris and any surplus materials will be a part of the clean up. Restoration of the ROW surface involves smoothing by chisel plow or disc harrows or other equipment, and stabilizing when necessary. In non-cropland, the ROW will be re-vegetated according to agreement with the landowner or appropriate government agency.³¹⁶

Impact on Cumulative Potential Effect of Related or Anticipated Future Pipeline Construction

338. While the gas Pipeline route and ROW is intended to serve only Mesaba One and Mesaba Two, the Pipeline will be oversized to allow sufficient capability for use by others, should such actions be consistent with permit conditions and mutually agreeable to the parties.³¹⁷

Impact on Relevant Policies, Rules, and Regulations of the State and Federal Agencies and Local Government Land Use Laws Relating to the Location, Design, Construction and Operation of the Proposed Pipeline and Associated Facilities

339. As part of the contested case hearing process, the U.S. DOE provided written testimony regarding its support of the Project noting that the improvements in coal-fired electric generation that the Project is intended to demonstrate are of critical importance to Minnesota and the nation. In particular, the Project is part of a DOE program designed to develop coal-fired electric generation plants that have high plant efficiency and operating availability, produce near-zero emissions, manage carbon emissions, and provide economically competitive cost of electricity to ratepayers. The DOE also stated, “[T]he commercialization of IGCC is a vital milestone toward meeting the growing demand for electric power generation capacity, ensuring the nation’s energy security (through co-production), and enabling more stringent future environmental regulation(s) (through carbon capture and sequestration technologies).”³¹⁸

³¹⁴ EE 1001, p. 392.

³¹⁵ EE 1001, p. 468.

³¹⁶ EE 1001, p. 360.

³¹⁷ EE 1001, p. 34.

³¹⁸ EE 1130, p. 1, 6.

340. The record in this proceeding demonstrates the importance of having a high pressure natural gas supply to start up the gasification island and combustion turbine generators in a manner that minimizes emissions during start up of the IGCC Power Station and is supportive of the goals the DOE has articulated in their testimony.³¹⁹

341. The record shows widespread support of the Project from elected officials representing local communities surrounding the West Range Site, Itasca County, and Minnesota.³²⁰

342. The ALJ presiding over the Nashwauk PUC's application for Pipeline Route Permit under the full selection process has recommended that the pipeline route virtually identical to the route selected to supply natural gas to the IGCC Power Station be designated by the MPUC as the preferred route above five others identified as part of the full selection process.³²¹

343. Granting the Project a Partial Exemption from the pipeline route selection procedures is consistent with all of the above findings.

344. Granting the Project a Pipeline Route Permit is also consistent with all of the above findings.

345. In addition to a route permit from the Commission, Excelsior will need to obtain the following permits: DNR license to cross public lands and waters, DNR public waters work permit, a Corps Section 10 work in navigable waters permit and Section 404 wetland permit, Federal Energy Regulatory Commission sales tap approval, MNDOT construction of tunnels under highways permit.³²²

346. Neither Itasca County nor the City of Taconite has adopted a pipeline setback ordinance, as provided for in Minn. Stat. § 299J.05.

347. Every significant receptor near the Proposed Natural Gas Pipeline Route is located at a distance greater than 100 feet from its proposed centerline. (EE 1001, Joint Application, § 7.2.3, 413.) Since the temporary and permanent ROWs extend no further than 50 feet from the proposed centerline, they will not violate Minn. R. Ch. 7535, which is the model setback ordinance that applies when a statutory or home rule charter city, town, or county that has planning and zoning authority has not adopted its own setback ordinance.³²³

³¹⁹ EE 1001, p. 175.

³²⁰ Tr., p. 227–228, 267–268, 297, 251, 254; Letter from U.S. Sen. Norm Coleman to the Hon. Steve M. Mihalchick (Jan. 30, 2008).

³²¹ OAH Docket No.: 12-2500-19166-2, MPUC Docket No.: PL, E-280/GP-06-1481, Feb. 22, 2008.

³²² EE 1001, p. 35-42.

³²³ EE 1001, p. 356.

Public Comment

348. Many members of the public spoke in favor of the Project.³²⁴ In general, the cities and townships located near the two proposed sites expressed support for the Project. The municipalities cited the economic boost and employment opportunities the Project would provide to their communities.³²⁵

349. Many comments were likewise received in opposition to the Project. Numerous comments expressed concern that Mesaba will produce harmful air and water pollution and result in ill-health effects for people on the Iron Range. Many of the commenters stated that they did not believe Excelsior had fully analyzed Mesaba's environmental ramifications, and specifically expressed concerns over carbon dioxide emissions, and mercury emissions into the local waters.³²⁶ The Citizens Against the Mesaba Project (CAMP) asserts that the economic impacts of the Project are less than estimated and that no cost-benefit analysis has been conducted.³²⁷

350. Numerous commenters stated that Mesaba should not be sited at either the West or East Range Site. Rather, they suggested, it should be located near a coal source, and that the transportation of the coal to fuel Mesaba at the West or East Ranges Sites would needlessly contribute to global warming.³²⁸ Others suggested Mesaba should be located where geological sequestration is feasible.³²⁹

351. David Lick, of Grand Rapids, Minnesota, expressed concern that the CCS technology is unproved and pointed out that the DOE has withdrawn its funding for the FutureGen IGCC plant.³³⁰

352. A few members of the public stated that the CMP should not be closed to recreational use if the West Range Site is chosen.³³¹ Others expressed that industrial and recreational uses of abandoned mining resources need to be balanced.³³²

DNR

353. The DNR commented that the West Range rail alignment "may encumber some state-owned tax-forfeit iron-bearing mineral resources." It commented that the East Range Site is in close proximity to a possible future mining, and noted that taconite mining operations require blast perimeters and buffer areas. DNR requested that it

³²⁴ See e.g., Public Hearing Ex 7-9; Tr. 196-202.

³²⁵ See e.g., Public Hearing Ex. 4.

³²⁶ See e.g., Comments from Darrell and Delores White, Feb. 28, 2008; Jean Halverson, Feb. 28, 2008; Colleen Blade, June 1, 2007; Frank R. Weber, undated, received Feb. 6, 2008; CAMP, Feb. 29, 2008.

³²⁷ CAMP, Comment, Feb. 29, 2008.

³²⁸ See e.g., Comment from Ed and Sue Stish, Feb. 29, 2008.

³²⁹ See e.g., Comment from Peter M. Leschak, Jan. 20, 2008.

³³⁰ Comment, Feb. 28, 2008; see also Comment from Elanne Palcich, Feb. 3, 2008.

³³¹ See e.g., Tr. p. 574-75.

³³² See Tr. p. 296.

review the final locations of the facilities if the East Range Site is chosen to ensure that the Project does not restrict the State's royalty revenue.³³³

MCGP and CAMP

354. In its written comments, Mncoalgasplant.com (MCGP) expressed that the procedure in this case and the PPA case unnecessarily limited public participation. MCGP asserts that it was unfairly denied party status and that it should have been able to question witnesses during both the public and evidentiary hearings.³³⁴

355. MCGP submits that the Wabash River IGCC plant, which Excelsior claims is a prototypical IGCC plant, has produced a substantial amount of air pollution and generally operated unreliably. MCGP asserts that Wabash River violated its water permits, and states that Wabash River "has left a legacy that must be noted in the Mesaba record."³³⁵

356. MCGP submits that Excelsior's proposed ZLD system "has not been vetted."³³⁶ CAMP also asserts that the Application and DEIS are deficient because they do not sufficiently assess the ZLD. CAMP asserts that enhanced ZLD will increase solid waste and air emissions. It asserts that enhanced ZLD has not been designed and permitting agencies have not reviewed the new plan.³³⁷

357. In his testimony on January 29, Ronald Rich raised the issue of flare emissions. He stated that the flares at start-up cause substantial emissions, and that the Wabash River plant had to be started many times over the demonstration phase and beyond, and each time it emitted immense amounts of carbon monoxide, carbon dioxide, particulate matter, and nitrogen oxides.³³⁸

358. MCGP submitted that start-up problems contributed to the failure of the Pinon Pine project, and expressed concerns that the flare emissions are not calculated into Mesaba's operating emissions.³³⁹

359. MCGP and Dr. Edwin Anderson of CAMP have submitted comments expressing their concerns that the health impacts of the Project have not been adequately addressed. Dr. Anderson has specifically stated that he is concerned Mesaba will damage people's health and will increase instances of diseases such as asthma, Chronic Obstructive Pulmonary Disease, Myocardial Infarction, and other diseases associated with inhaling particulate matter and other regulated air pollutants.³⁴⁰

³³³ DNR, Comment, Feb. 29, 2008.

³³⁴ MCGP, Comment, Feb. 29, 2008.

³³⁵ MCGP, Comment, Feb. 29, 2008.

³³⁶ MCGP, Comment, Feb. 29, 2008.

³³⁷ CAMP, Comment, Feb. 29, 2008.

³³⁸ Tr. p. 51-55, 124-26, 205-10.

³³⁹ MCGP, Comment, Feb. 29, 2008.

³⁴⁰ CAMP, Comment, Feb. 29, 2008; MCGP, Comment, Feb. 29, 2008.

360. In its written comments, CAMP asserts that Excelsior's Application is inadequate, as evidenced by the concerns from the DNR, MPCA, MDH and the Department of Interior regarding the scoping of the DEIS and the DEIS itself. It argues that the Application and DEIS should be resubmitted to reflect the current project proposed.³⁴¹

361. CAMP asserts that there is an inadequate water supply for Mesaba at both the East and West Range Sites. CAMP cites to DNR comments that Mesaba "relies on water that is not readily available for the project."³⁴²

362. CAMP asserts that Excelsior (Evans) has not adequately addressed the adverse impacts from cooling tower blowdown, despite the fact that the MPCA, DNR and MDH have voiced concerns regarding these impacts.³⁴³

363. CAMP asserts that the full recreational value of the CMP has not been realized. Dr. Anderson submits that the CMP is one of four trout-fed lakes managed by the DNR in Itasca County, and he takes umbrage with the fact that the recreational value is not mentioned in the DEIS.³⁴⁴

364. CAMP argues that the Project should not be located at either the West or East Range Sites. It argues the West Range Site is particularly inappropriate because it is not a Brownfield site and there is not adequate infrastructure in place. CAMP, citing testimony by Robert Norgord, argues that the Project may preclude future mining expansion near the West Range Site.³⁴⁵

365. MCGP and CAMP stated that the DEIS is insufficient and that further testimony should be received to address the insufficiency. Further, they argued that the comments from the MPCA and the DNR regarding the DEIS should be included in this record.³⁴⁶

366. Finally, CAMP submitted comments regarding the CCS process. It argues Excelsior's CCS plan is vague and poorly developed. It argues CCS is not feasible for Mesaba and that if CCS were a viable option, its specifics for routing, cost, and environmental impacts should be part of this application.³⁴⁷

Environmental Impact Statement

367. The EIS for the Mesaba Project was prepared as a joint federal and state document. The federal EIS scoping period extended through November 14, 2005, and

³⁴¹ CAMP, Comment, Feb. 29, 2008; MCGP, Comment, Feb. 29, 2008.

³⁴² CAMP, Comment, Feb. 29, 2008.

³⁴³ CAMP, Comment, Feb. 29, 2008.

³⁴⁴ CAMP, Comment, Feb. 29, 2008.

³⁴⁵ CAMP, Comment, Feb. 29, 2008.

³⁴⁶ CAMP, Comment, Feb. 29, 2008; MCGP, Comment, Feb. 29, 2008.

³⁴⁷ CAMP, Comment, Feb. 29, 2008.

included two scoping meetings on October 25-26, 2005. The DOC held two public scoping meetings for the project on August 22-23, 2006. Approximately 300 individuals attended the DOC's public scoping meetings. Additionally, a CATF was established by the PUC to provide input to the scope of the EIS.³⁴⁸ Numerous comments were received from members of the public regarding the scope of the EIS during the scoping period.³⁴⁹

368. The Commissioner of Commerce issued an EIS Scoping Decision on September 13, 2006. The decision identified two alternatives to be reviewed in the EIS: Proposed Action (by which the DOE would continue cost-shared funding beyond the preliminary design and project definition) and the No-Action Alternative (by which the DOE would not proceed with the cooperative agreement).³⁵⁰

369. The Draft EIS was published in November 2007. DOE and DOC jointly held two public hearings for the Draft EIS on November 27-28, 2007, and comments on the DEIS were received from the public until January 11, 2008. DOE and DOC received 122 oral statements and comment documents, which they subdivided into 770 comments.³⁵¹ The Final EIS was issued in November 2009. Principal changes between the Draft EIS and Final EIS, which occurred as a result of comments on the Draft EIS and unforeseen circumstances, are summarized in the Final EIS at Table S-7.³⁵²

370. In the FEIS, the DOE and DOC found that the project, at either the West Range Site or the East Range Site, would result in impacts to all resource areas, but that the East Range Site would impact more resource areas than the West Range Site. For the No-Action Alternative, the Departments found that there would be no direct or indirect impacts to resources, but that "there could be delays in commercialization of the E-Gas IGCC technology, and the potential benefits of deployment and widespread commercialization would likewise be delayed or jeopardized...includ[ing] more cost-effective CCS options, progress in reducing greenhouse gas emissions in comparison to traditional coal-based electric power plants, and cost-effective reductions of emissions of criteria pollutants beyond levels required by regulatory caps."³⁵³

371. The DOE acknowledged certain areas of controversy regarding the project, including the contribution to nationwide and global greenhouse gas emissions, mainly carbon dioxide, and to global climate change. The DOE noted that: "Members of the public would have preferred that the project implement carbon capture and storage for carbon dioxide emissions. However DOE conducted an analysis of the feasibility of incorporating CCS and concluded that CCS is not considered feasible for the Mesaba Energy Project at this time."³⁵⁴

³⁴⁸ See Findings of Fact 3-5.

³⁴⁹ FEIS at S-25.

³⁵⁰ FEIS at Appendix G.

³⁵¹ FEIS at S-29, Table S-6.

³⁵² FEIS at S-31.

³⁵³ FEIS at S-62-63.

³⁵⁴ FEIS at S-65.

372. In its analysis of the feasibility of CCS for the Mesaba Project, the DOE elaborated, that even though CCS is not currently feasible for Mesaba, “the carbon management plan for the Mesaba Energy Project is a logical starting point from which the PUC can derive findings and thereby establish the appropriate timing and price at which carbon capture and sequestration becomes in the Minnesota ratepayers’ interest. Without an order from the PUC that incorporates the costs associated with CCS within the power purchase agreement, the Mesaba Energy Project would not be economically viable.”³⁵⁵

373. The Departments concluded that although no issues remain to be resolved for the Final EIS, other issues must be resolved for the project to go forward. “These issues include the negotiation of a power purchase agreement...approval of the joint permit (for siting and routing) by the PUC, and approval of permits by other agencies (e.g. a Section 404 permit by the U.S. Army Corps of Engineers, an air permit by the MPCA, etc.).”³⁵⁶

Comments on FEIS

374. A number of people commented that the EIS process is inadequate because the DOE is biased in favor of building the Mesaba project to facilitate its organizational goals.³⁵⁷ Charlotte Neigh, Co-Chair of CAMP, commented that DOE glossed over serious concerns and produced an FEIS designed to support the Mesaba project rather than to honestly assess its impact on people and the natural environment. She stated that the DOE’s inherent bias stems from its longstanding commitment to the Clean Coal Power Initiative (CCPI) and she pointed out that the DOE has already invested over \$20 million in the Mesaba Project. Ms. Neigh outlined the instances of bias which undermine the reliability of the FEIS. According to her, the DOE: erroneously assumed that the United States has approximately 240 years of recoverable coal reserves; glossed over the Army Corps of Engineers concerns that the project is environmentally damaging to the proposed sites and not justified by its purpose; falsely claimed that the ConocoPhillips technology may not be demonstrated elsewhere if Mesaba is cancelled; bolstered the need for the project; disregarded the five million tons per year of carbon dioxide that would be released from Unit 1 of the Mesaba, despite acknowledging that carbon capture and sequestration is not feasible for Mesaba; and assumed that Mesaba is an Innovative Energy Project.³⁵⁸ Ms. Neigh highlighted that the Army Corps of Engineers noted in its reviews under National Energy Policy Act (NEPA) and the Clean Water Act that there was no justification for siting the project within the TTRA, and that the proposed sites are within an area of Minnesota

³⁵⁵ FEIS, Vol. 2, Appendix A2.

³⁵⁶ FEIS at S-65.

³⁵⁷ See e.g., Public Comment on FEIS 9; Public Comment on FEIS 11; Public Comment on FEIS 12 citing FEIS at S-63; Public Comment on FEIS 15; Public Comment on FEIS 16.

³⁵⁸ Public Comment on FEIS 9.

that is particularly rich in aquatic resources so the applicant must overcome a presumption that an alternative upland site would be less environmentally damaging.³⁵⁹

375. Amanda Nesheim also commented that the DOE grossly overestimated the supply of coal in the United States and failed to explain their 240-year estimate despite the DEIS comments on the estimated supply. She further commented that the DOE ignored statements from the United States Forest Service that impacts modeled to visibility at either site require mitigation.³⁶⁰

376. Ms. Neigh pointed out that the FEIS states that the overall purpose and need of the project is to “confirm the commercial viability of generating electrical power by means of a fuel flexible [IGCC] technology in a utility-scale application,” and to “help satisfy Minnesota’s need for new and diverse sources of baseload electrical power.”³⁶¹ Ms. Neigh pointed out that the viability of IGCC technology has already been confirmed. According to the National Energy Technology Laboratory (NETL) in April 2009, there were six IGCC plants operating in the United States and eighteen active IGCC projects underway.³⁶²

377. Ed Anderson, Co-Chair of CAMP, commented that the FEIS ignored public comment and comments from public agencies regarding water discharge, mercury deposition, air emissions, and the impact on the CMP trout fishery and local recreation. Mr. Anderson criticized the fact that the proposed ZLD system has not been designed or engineered even though the MPCA has requested the design information. He also commented that the FEIS inadequately addressed Excelsior’s claims regarding need for power and positive economic impact. Finally, Mr. Anderson commented that the FEIS is inadequate because it did not fully address BACT, but instead left the topic to be addressed by the MPCA.³⁶³

378. Ronald Rich commented that the FEIS is inadequate because it underestimates the worst case and average annual criteria and hazardous air emissions. Mr. Rich is especially concerned regarding the proposed flaring of gasifier syngas. He claims the FEIS makes three major assumption errors. First he takes issue with the flare destruction efficiency estimated in the FEIS. The FEIS states: “The elevated flares for each phase would be designed for a minimum 99 percent destruction efficiency for CO and H₂S.”³⁶⁴ Mr. Rich claims that the 99% destruction efficiency is impossible and that a more realistic estimate of 87.5% would result in levels of air emissions 12.5% higher than estimated in the FEIS. Second he takes issue with the fact that there is no allowance made for continual flaring of syngas from the third gasifier. According to Mr. Rich, the FEIS considers only a short and infrequent startup and shutdown period, and implies that the third gasifier will not operate when the other

³⁵⁹ Public Comment on FEIS 9, citing USACE letter to Excelsior Energy dated Dec. 13, 2006.

³⁶⁰ Public Comment on FEIS 12.

³⁶¹ Public Comment on FEIS 9, citing FEIS at Vol. 2, Appendix F1.

³⁶² Public Comment on FEIS 9.

³⁶³ Public Comment on FEIS 5.

³⁶⁴ FEIS at p. 2-39.

two are operating.³⁶⁵ Mr. Rich argues such an operational mode is unlikely because gasifiers require significant time to start and stop. As a result, average air emissions will be much higher than estimated in the FEIS. Third, Mr. Rich argues that the worst-case air emission scenarios do not take into account the drastic increase in air emissions from the flare stack during unplanned events. Mr. Rich commented that no public comment on the inadequacy of the flare emission assessment was included in the FEIS Public Comments section. He argues that the inadequate assessment of the flare air emissions in the FEIS are significant and render all air emissions estimates suspect.

379. Ron Gustafson and Linda Castagneri commented that the FEIS was inadequate because it failed to address concerns that the rail used to serve Mesaba will pass within 400 feet of one residence and within 1000 feet of three residences. They commented that the FEIS did not address the health and well-being of the people in the area.³⁶⁶ They also commented that the FEIS failed to adequately address traffic and noise impacts, required mitigation measures, and the costs associated with additional personnel, training, and equipment for local and regional emergency response agencies.³⁶⁷

380. Mr. Gustafson and Ms. Castagneri also stated that the FEIS fails to take into account the impact of the 214 million tons of carbon dioxide generated over the 20-year commercial life of the generating plant.

381. Ms. Nesheim commented that Mesaba's estimated 20-year life expectancy is unlikely and suggested that any environmental and economic feasibility projections should be based on a 50-year operational life expectancy. She suggested that no carbon dioxide should be added to the environment in light of Minnesota's long-term goals of reducing greenhouse gases. She stated that there are no plans to retire any current power-generating facilities in the state.³⁶⁸ She also commented that CCS technology has not been appropriately studied or tested, and certainly not to the extent required for the sequestration of the estimated 59,148,000 tons of carbon dioxide that would be sequestered from Mesaba over a 20-year period. She stated that further review should be done to evaluate the potential for earth fracture and groundwater contamination as a result of carbon sequestration.

382. The Fond du Lac Environmental Program commented that issues of regional haze were not fully addressed in the FEIS. The FEIS shows that there may be visibility issues at BWCAW and VNP because of emissions from either the West or East Site. Mesaba proposes to purchase offsets to mitigate the effects of these emissions, but Fond du Lac is concerned that there will not be enough local credits available because two other facilities (Essar Steel and Mesabi Nugget Phase I) have recently

³⁶⁵ Public Comment on FEIS 6, citing FEIS at p. 2-28; 2-39; Section 3.3-1; and 2.2.5.2.

³⁶⁶ Public Comment on FEIS 11.

³⁶⁷ Public Comment on FEIS 11.

³⁶⁸ Public Comment on FEIS 12.

proposed to purchase offsets to fulfill mitigation requirements in their air permits. Fond du Lac also expressed concern about any mercury releases in the area.³⁶⁹

383. The DNR expressed several concerns with the FEIS, including the analysis of process water supply, water quality, water levels, fish habitat, wildlife habitat corridors, mineral leases, and mining compatibility. Regarding process water supply, the DNR stated that the FEIS did not fully consider the elimination of water from the HAMP due to operation of the new Essar Steel Minnesota taconite mine. Mining of the CMP should be considered a possibility and alternative water sources should be explored. The DNR stated that it has concerns about waiting until the permitting process begins to confirm that there is an ample water supply.³⁷⁰

384. The DNR also commented that the change to ZLD has not negated water quality issues because there is still a need for Prairie River water. The DNR suggests, at a minimum, a complete list of water quality parameters and monitoring schedule should be included for the CMP and Panasa Lakes. More detailed information about phosphorous modeling will be needed for the CMP and Panasa Lakes before any water appropriation permit can be issued. The use of Prairie River water should be minimized or eliminated and strict guidelines and controls may need to be considered in the permitting process.³⁷¹

385. The DNR commented that the West Site would be located in one of the few remaining wildlife travel corridors.³⁷² It stated that migrant neo-tropical passerines have the highest rate of mortality from bird strikes on stacks and transmission lines, and that those populations are in serious decline, but that this declining population is not addressed in the FEIS.³⁷³

386. The DNR also commented on the lack of clarity about the demonstration status of the project. The stated life of the project is 20 to 30 years, but it is unclear what will occur at the end of that period when the demonstration is complete.

387. The MPCA submitted a comment on the FEIS. It stated that it will await the submittal of revised permit applications containing definitive project information before conducting further review.

³⁶⁹ Public Comment on FEIS, dated Dec. 2, 2009.

³⁷⁰ DNR Comment on FEIS, dated Dec. 2, 2009, citing FEIS Comments 76-01, 76-03, 76-26.

³⁷¹ DNR Comment, citing FEIS Comments 76-05, 76-09, 76-11, 76-22 and 76-23.

³⁷² DNR Comment, citing FEIS Comment 76-21.

³⁷³ DNR Comment, citing FEIS Comment 76-27.

CONCLUSIONS

PROCEDURAL REQUIREMENTS

1. Excelsior has complied with the notice provisions of Minn. Stat. § 216E.03, subd. 4 and Minn. R. 7850.5240, which specify the various requirements for providing notice of the applications for the LEPGP Site Permit and HVTL Route Permit.

2. Excelsior has complied with Minn. R. 7852.0600, subp. 2, which specifies the notice requirements for partial exemption from the pipeline routing procedures.

3. Excelsior has complied with Minn. Stat. § 216E.03, subd. 6, and Minn. R. 7850.2600, which provide the notice requirements for the contested case hearings on the site and routing for a proposed project.

4. Minn. R. 7850.2500, subp. 10, requires the PUC to make a determination of the adequacy of the EIS prepared on the proposed project. The Final EIS is adequate if it:

- a. addresses the issues and alternatives raised in scoping to a reasonable extent considering the availability of information and the time limitations for considering the permit application;
- b. provides responses to the timely substantive comments received during the draft environmental impact statement review process; and
- c. was prepared in compliance with the procedures in parts 7850.1000 to 7850.5600.³⁷⁴

5. The section of the Final EIS responding to the substantive comments on the Draft EIS provided a sufficient response to the substantive comments that were received that related to the scope of the EIS, in accordance with Minn. R. 7850.2500, subp. 9.

6. The Department followed all the procedures established for preparation of an EIS, including notification to the public and opportunities for submission of public comments. The Final EIS adequately addresses the environmental, social and economic impacts of the proposed project.

LEPGP Site Permit and HVTL Route Permit

7. The Project will not have a disparate impact on a racial minority or low-income group of residents. Either Site is acceptable with regard to displacement impacts because no displacement is necessary.

³⁷⁴ Minn. R. 7850.2500, subp. 10.

8. The Project will provide economic stimulus at either Site. The federal government HUBZone designation in Itasca County weighs in favor of the West Range Site.

9. With noise mitigation equipment installed at the West Range Site, time-averaged noise from the IGCC Power Station will be imperceptible at nearby homes during normal operations. Still, noise impacts from rail and road traffic may be greater at the West Range Site than at the East Range Site. Such impacts would be observed at a small number of homes and would remain within applicable standards.

10. Construction of the IGCC Power Station at either site would cause slightly higher traffic volumes and congestion than under the no-build scenario. Impacts are minimal and both sites are acceptable with regard to traffic impacts.

11. The preferred West Range HVTL route is superior to the alternative West Range HVTL route because it traverses area that is less developed and more remote, has fewer water crossings, crosses fewer open fields, avoids gravel mining operations, and would generally be less visible.

12. Direct aesthetic impacts from the IGCC Power Station and associated infrastructure are minimal for a facility of its size. Impacts will be greater at the East Range Site because Colby Lake residents may have a clear line of sight to the plant stacks, the increased number of residents affected by the additional 533 HVTL towers, and because of the approximately 60 miles of additional HVTL lines. The West Range Site is preferable with regard to aesthetic impacts.

13. No significant differences exist among the proposed sites and routes with regard to impacts on cultural resources. No effects on archaeological and historic resources are anticipated for any site or route.

14. The Project will not directly affect recreation at the East Range Site. At the West Range Site, recreational activity at the CMP would be restricted if the pit is closed.

15. Communities near both sites are capable of meeting the emergency response needs of Mesaba. Hoyt Lakes has adequate capacity for meeting municipal water and wastewater needs at the East Range Site. Excelsior has pledged to upgrade Taconite's wastewater collection system, and with the committed upgrades, Taconite and other local communities have adequate capacity to meet municipal water and wastewater needs at the West Range Site.

16. Mesaba is expected to have human health risks below applicable state standards. Health and safety policies and programs conforming to rules governing such programs will be implemented. With mitigation, Mesaba would not result in unacceptable adverse human or natural environmental effects.

17. Mesaba will comply with all applicable ambient air quality standards and meet the case-by-case BACT emission limits established by the MPCA in connection with regulations governing the PSD. The West Range IGCC Power Station would have lower pollutant emission rates per unit of energy produced because of the lower source water quality at the East Range Site. Additionally, the West Range Site would have lower impacts on visibility in Class I areas because it is farther away from the Class I areas than the East Range Site. Differential impacts could be reduced through mitigation, but at significant cost. The West Range Site is favored from the standpoint of ambient air quality and air quality related values.

18. The Project will draw its process water from nearby, abandoned mine pits that have filled with water. By using enhanced ZLD systems, the Project will avoid discharging any water used in the IGCC Power Station. The Project will treat domestic wastewater in local municipal wastewater treatment facilities. Storm water management will comply with water discharge permit requirements to avoid degradation of local water quality.

19. The West Range Site would have a greater impact on wetlands. But, statutorily, Excelsior must compensate for lost wetlands to ensure no net loss results.

20. The East Range Site impacts the habitat of the Canadian Lynx. The West Range Site is therefore favored with regard to effects on flora and fauna.

21. The Project at the West Range Site, using the same amount of fuel at the East Range Site, will be able to deliver an additional 10 MW. The West Range Site is preferable to maximize energy efficiency.

22. Either site is able to accommodate 1200 MW of generation and meet anticipated future voltage standards. The additional pipeline capacity and benefits to the grid result in the West Range Site being favorable.

23. For all proposed project elements, efforts have been undertaken to use or parallel existing rights-of-way, survey lines, natural division lines, and field boundaries.

24. The West and East Range Sites will utilize existing transportation, pipeline, and transmission ROWs to the extent possible.

25. The capital and operating cost savings offered at the West Range Site are considerable.

26. No unacceptable commitments of resources would be made in association with construction and operation of Mesaba One and Mesaba Two.

Natural Gas Pipeline Route

27. The natural gas pipeline route selected for the West Range Site maintains an adequate distance from the closest residential dwellings, affects a minimum number of residents, and will not conflict with the predominant land uses currently in place or planned.

28. The natural gas pipeline selected for the West Range Site does not cross designated lands, minimizes the number and length of river and stream crossings, has a low probability of disturbing habitat for state-listed endangered plant species, and includes no areas within a one-mile radius where regulations apply to state-listed species. Pipeline construction techniques will minimize soil compaction in wetland areas and minimize disturbances to streams and rivers that the pipeline must traverse.

29. Construction of the natural gas pipeline within the route selected for the West Range Site will not commence until all applicable governmental entities that have jurisdiction over historical, archaeological and cultural significance have been consulted. Such consultations will include affected Native American tribes.

30. The natural gas pipeline route selected for the West Range Site will have no anticipated land use impacts on industrial areas, farmland, recreation sites, or mining operations. Impacts on forested land will be minimal and can be mitigated through tree planting in other appropriate areas.

31. The natural gas pipeline route selected for the West Range Site essentially coincides with the pipeline route preferred for the Minnesota Steel project. Pipeline construction costs are likely to be lowered as a result of the mutual interest in identical routes. Almost one-half of the natural gas pipeline route selected for the West Range Site follows ROW devoted to other elements of the Project's infrastructure.

32. The natural gas pipeline route selected for the West Range Site will traverse forested lands, wetlands, agricultural lands, and grass lands, but the only permanent loss of functionality with respect to natural resources is the loss of trees within the permanent pipeline ROW. The affected areas will be replanted with other native vegetation.

33. Construction and operation of the natural gas pipeline within the route selected for the West Range Site is subject to significant regulatory and legal oversight designed to mitigate human and environmental impacts. Such mitigation includes replacement of wetland functionality, restricting tree cutting activities to times outside nesting season, construction techniques to avoid compressing wetland soils, compensating landowners for crop or other losses, re-vegetation of affected areas with native grasses, and notifying the Commissioner of the Department of Agriculture of mitigation options if burial of the pipeline will impact cultivated farmland.

34. The pipeline will be constructed to accommodate quantities of natural gas beyond the requirements of Mesaba One and Mesaba Two to avoid proliferation of pipeline infrastructure.

35. Approval of the Partial Exemption from the pipeline route selection process is warranted by the route's preferred designation in a parallel regulatory process. Issuance of a Route Permit is warranted on the basis that the Project is consistent with all local, state, and federal policies and priorities.

RECOMMENDATION

Excelsior's application for a power LEPGP Site Permit, a HVTL Route Permit, and a pipeline Route Permit for the West Range Site should be GRANTED.

Dated: December 28th, 2009.

/s/ Steve M. Mihalchick
STEVE M. MIHALCHICK
Administrative Law Judge

Reported: Shaddix and Associates
Transcript prepared, 4 volumes

NOTICE

Notice is hereby given that, pursuant to Minn. Stat. § 14.61, and the Rules of Practice of the Minnesota Public Utilities Commission ("Commission") and the Office of Administrative Hearings, exceptions to this Report, if any, by any party adversely affected must be filed according to the schedule which the Commission will announce. Exceptions must be specific and stated and numbered separately. Proposed Findings of Fact, Conclusions and Order should be included, and copies thereof shall be served upon all parties. Oral argument before a majority of the Commission will be permitted to all parties adversely affected by the Administrative Law Judge's recommendation who request such argument. Such request must accompany the filed exceptions or reply (if any), and an original and 15 copies of each document should be filed with the Commission.

The Commission will make the final determination of the matter after the expiration of the period for filing exceptions as set forth above, or after oral argument, if one is held.

Further notice is hereby given that the Commission may, at its own discretion, accept or reject the Administrative Law Judge's recommendations and that the recommendations have no legal effect unless expressly adopted by the Commission as its final order.

MEMORANDUM

Excelsior proposes to build two nominal 600-megawatt IGCC power plants on the Iron Range. Excelsior has applied to the PUC for 1) a LEPGP Site Permit; 2) a HVTL Route Permit, and 3) a natural gas pipeline Route Permit (only for the West Range Site).

IGCC Technology and Federal Support

Use of the IGCC technology will minimize Mesaba's air pollutant emissions. Carbon dioxide will be emitted at rates that are about 10-15% lower than traditional coal-fired power plants using similar feedstocks because of the efficiency of the IGCC process. In an IGCC plant, coal is first converted to a low-BTU gas, known as "syngas," in a high temperature, high-pressure gasification process. The syngas is then cooled, cleaned of contaminants, and burned in a combustion turbine connected to an electric generator. The exhaust from the combustion turbine is used to produce steam, which in turn produces electricity using a conventional steam turbine.

Mesaba can be retrofitted for pre-combustion carbon capture and sequestration. IGCC technology can capture approximately 20-30% of the carbon dioxide present in the syngas produced by the gasifiers. IGCC facilities are capable of pre-combustion capture, meaning that they can capture the carbon dioxide before combustion of the syngas, when the volume of gas containing the carbon dioxide is relatively small and the pressure and carbon dioxide concentration are high. Once the carbon dioxide is captured, it can be transported to sequestration sites for permanent storage. The captured carbon dioxide from Mesaba would be transported via pipeline to a location in North Dakota or southeastern Saskatchewan. The Project will be designed with appropriate tie-ins and adequate space reserved to construct carbon capture equipment alongside the operating facility without requiring an extended plant shutdown.

The Wabash River Coal Gasification Repowering Project, in Terre Haute, Indiana, has used IGCC technology since 1995. It is a second generation IGCC power station. ConocoPhillips, which will provide the gasification technology for Mesaba, assists in the operation of Wabash River. Mesaba will be a third-generation E-Gas facility and will implement the improvements that have been made to Wabash River.

The federal government supports the Project and its IGCC technology. The DOE has selected the Project to receive \$36 million of federal funding, and Congress granted the Project a specific authorization for a federal loan guarantee.³⁷⁵ The DOE projects that coal use will need to increase by 25 percent to meet a 34 percent increase in U.S. demand for electricity by 2030. The Project represents a step forward for IGCC technology.

³⁷⁵ See 42 U.S.C. §§ 16513(c)(1)(C) and 16514(b).

Environmental Impacts

Air Emissions

The Project's overall emissions profile is better than those from any comparably sized conventional pulverized coal plant, and emissions of all types of pollutants will be below all applicable federal and state thresholds. IGCC technology will allow Mesaba to reduce four categories of pollutants in comparison to conventional coal plants: sulfur emissions, particulate matter, mercury, and hazardous air pollutants (HAP). The Project will be a new emission source in the region, but the current levels of air pollution will have a net reduction after taking into consideration the emissions reductions planned for existing northeastern Minnesota coal plants.

If the Project is located at the West Range Site, precursors of fine particulate matter emissions would contribute minimally to visibility-impairing haze in Voyageurs National Park (VNP) and the BWCAW. Visibility impacts on these two Class I areas are expected to be limited to a small number of days per year when natural weather conditions would be expected to impair visibility. Modeling indicates that at the East Range Site, the Project would cause greater visibility impacts to the Class I areas because of its closer proximity thereto.

Water Quality and Sources

The Project will not impact ground or surface water. Industrial wastewater and thermal discharges from the Project will be eliminated through the use of ZLD systems. Storm water runoff from the Project will be subject to a storm water pollution prevention plan. Storm water associated with industrial activity will be isolated and treated.

Regarding water sources, the West Range Site is preferable to the East Range Site because more water sources are available at the West Range Site. The Project would draw water from the CMP, which would reduce the threat of its flooding. Additionally, the Project would pump water from the Hill-Annex Mine Pit. That task is currently performed by a local state park at considerable cost. Finally, Excelsior has pledged to improve the Coleraine-Bovey-Taconite joint wastewater treatment facility, and the local surface water quality will benefit as a result.

Wetlands Impacts

Excelsior has located the proposed sites and routes away from wetlands to the extent feasible. Excelsior will restore temporarily affected wetlands and will replace all permanently affected wetlands in accordance with state and federal laws, by restoring wetlands or purchasing wetland banking credits.

Ecological Impacts

Although the Project will result in the clearing of some forested land, no adverse impacts to the forestry industry or any endangered species or other unique resource will occur. Excelsior has configured the HVTL routes to maximize the use of existing corridors. There are no federally protected plant species on the West Range Site. The USFWS has indicated that only the Canada Lynx requires a formal biological opinion, and the West Range Site is further away from confirmed lynx activity than the East Range Site. Ecological impacts favor locating the Project on the West Range Site.

Mercury

Numerous commenters voiced concerns regarding Mesaba's mercury pollution. Excelsior estimates that the Project will capture at least 90 percent of the mercury in its feedstock and it will take measures to ensure the captured mercury is permanently stored. The IGCC-based technology captures mercury from the syngas in a pre-combustion clean-up step that allows for extended contact between the syngas and the activated carbon substrate. Because of the extended contact times, Excelsior expects stack emissions of mercury to be less than 54 pounds per year, which is less than 10 percent of the mercury contained in the 6.24 million tons of sub-bituminous coal that would be processed annually, assuming maximum capacity. Virtually all mercury emitted from IGCC plants is in its elemental form, which has a very low deposition rate.

The ZLD system will prevent coal-derived mercury contained in process waters from being discharged into the environment and will prevent process-related transfers of mercury from one surface water source to another. Spent beds of activated carbon containing mercury removed from syngas or wastewater cleanup will be stabilized and placed in a properly licensed solid waste disposal facility approved to accept such substances or otherwise treated to recover the mercury therefrom.

The incremental hazard quotient for subsistence fishers eating fish from a lake near the IGCC Power Station predicted for inputs of mercury from Mesaba One and Mesaba Two is minimal (.04 to .06 addition to the total hazard quotient). Under the MPCA draft local impact mercury assessment protocol, mercury deposition into local lakes attributable to the Project was estimated to be .08 gram per year. Background mercury deposition from rainfall and runoff was estimated to be 16.51 grams per year.

Though the Project will produce some mercury emissions, they are substantially less than would be produced from a conventional coal plant, and the overall mercury deposition into nearby lakes attributable to the Project is nearly negligible.

Community Impacts and Aesthetics

No resident or business will be displaced at either Site, and relatively few residences will be affected. No residences are located within a half-mile of the West Range Site and approximately fifty residences are located within one mile of the West

Range Site footprint. There are 300 residences within half-mile of the natural gas and HVTL corridors on the West Range Site, and 2,089 residences within half-mile of the natural gas and HVTL corridors on the East Range Site. Because the Sites are sparsely populated, visual impacts will be minimal, but some lighting, building and stacks will be visible to several nearby homes and businesses. The need for two corridors to serve the East Range Site will increase HVTL aesthetic impacts there. Noise impacts from the Project will not be significant and will be mitigated. At the West Range Site, noise-reduction equipment will be installed so that plant-related operational noises will meet state standards. The Project will not affect any archaeological or historic resources.

Cost and Efficiency

The cost of the Project substantially increases on the East Range Site because of the availability of the infrastructure on the West Range Site. The HVTL corridor is 60 miles shorter and the pipeline corridor is 20 miles shorter on the West Range Site. The West Range rail infrastructure, which is accessible by the BNSF and CN railroads, would enable more competitive coal transportation rates. The Project's costs are significantly lower at the West Range Site.

The West Range Site is also more energy efficient than the East Range Site because of transmission losses and lower quality water on the East Range Site. Excelsior estimates the East Range Site will deliver 1,197 megawatts of net capacity in comparison to the 1,204 megawatts of net capacity at the West Range Site. The West Range Site is also closer to the Powder River Basin and the Williston Basin oil fields.

Mining

The West Range Plant Footprint is located north of the Biwabik Iron Foundation. The DNR commented that the West Range rail alignment "may encumber some state-owned tax-forfeit iron-bearing mineral resources." It did not suggest modifying the alignment, and it did not express concern that the State would lose significant mineral royalties if the rail alignment was constructed.

With respect to the East Range Site, DNR has indicated its interest in reviewing the final locations of the facilities to ensure that the State's royalty revenue is not restricted by the presence of the Project. DNR commented that the East Range Site is in close proximity to a possible future mining area and also noted the need to maintain blast perimeters and buffer areas for taconite mining operations. Because of the proximity to a future mining area on the East Range Site, the West Range Site is preferable.

Canisteo Mine Pit

Some members of the public expressed concern about the availability of CMP for recreational uses if the West Range Site is chosen.³⁷⁶ Excelsior has proposed to lower and maintain water levels in the CMP and the Hill-Annex Mine Pit Complex, and it originally proposed closing the CMP to recreational use to address safety and security concerns.³⁷⁷ At the hearings, Excelsior indicated it would discuss options with the DNR to continue to allow recreational use of the CMP. Representatives from Excelsior met with representatives from the Division of Waters on February 19, 2008, to discuss options to allow recreational access to CMP. Discussions are ongoing.³⁷⁸

Economic Impacts

The communities of the Iron Range will accrue economic benefits from the Project. The construction of the Project will cost more than \$2 billion per phase, which would provide a substantial boost to the economically depressed Iron Range region. The study by the University of Minnesota – Duluth forecasts that Mesaba’s spending and profits in a typical year of operation will total \$652 million. Taking into consideration the economic multiplier effect, it is estimated that Mesaba will generate an additional \$111 million per year in the Arrowhead region. The construction of Mesaba One will create 1,950 construction jobs, although some of those jobs will be filled by out-of-state laborers. The operation of Mesaba One and Two will create approximately 180 full-time positions. It is anticipated that Mesaba will create another 288 permanent jobs in the state during its forty years of expected operations.

Health and Welfare Costs

Some commenters expressed concerns that the health and welfare costs associated with the Project are not adequately addressed and that Excelsior’s analysis and Application have focused too much on the economic development benefits.³⁷⁹ Minnesota statutes and rules that apply to the siting of LEPGPs and routing of HVTL and natural gas pipelines direct the PUC to qualitatively assess the potential negative impacts associated with a project, such as effects on land, water, air resources, aesthetic values, and agricultural operations, and the irreversible and irretrievable commitments of resources.³⁸⁰ The quantification of these values would be difficult, and the rules do not require a cost-benefit analysis.³⁸¹ The record is complete, and the ALJ has been able to assess the qualitative factors set forth in the rules.

³⁷⁶ See e.g., Tr. 574-75.

³⁷⁷ EE 1001, p. 449; EE 1002, p. III-230.

³⁷⁸ See Post-Hearing Brief, p. 9; FEIS at S-64.

³⁷⁹ See e.g., CAMP, Public Comments, February 29, 2008, p. 4.

³⁸⁰ See Minn. R. 7849.5910, 7852.0700, 7852.1900.

³⁸¹ See also Tr. p. 81.

Updated Acreage Information and Notice

The DOC has expressed concern that because Excelsior revised the acreage information for the West Range Station and Footprint shortly before the hearing, not all affected landowners received notice. In this testimony at the hearing, Robert Evans noted that a review of the Itasca County property tax records and recipients of the joint permitting proceeding revealed that at most five property owners had not received a direct mailing from Excelsior. None of these property owners have surface interests; they only own severed mineral interests.³⁸² Though Excelsior updated the acreage information, the boundaries of the West Range Station Footprint and Buffer Land did not change.³⁸³ Based on Excelsior's good faith effort to notify all property owners and because of the widespread published notice and publicity that this project has received, the ALJ finds that notice was adequate.

Flare Carbon Monoxide Destruction Efficiency

One member of the public, Ronald Rich, claimed that the carbon monoxide destruction rate contained in the Joint Application is unattainable.³⁸⁴ Excelsior's use of high pressure natural gas for starting the gasifiers will allow them to reach their normal operating temperature and pressure while firing only natural gas, thereby minimizing start-up emissions.³⁸⁵ After the hearing, Robert Schwartz, a representative of the flare vendor John Zink LLC, confirmed the carbon monoxide destruction efficiency.³⁸⁶ Ultimately, the Project must comply with the carbon monoxide destruction rate contained in its air permit application and with applicable ambient air quality standards.³⁸⁷

ZLD System

A number of commenters have expressed concern that the enhanced ZLD system proposed for the West Range Site has not been adequately addressed. The DEIS, however, specifically addressed the enhanced ZLD system.³⁸⁸ Excelsior has conducted preliminary engineering studies on the enhanced ZLD system and it is in the process of updating its NPDES permit application to reflect these changes.

MCGP's Comments

Mncoalgasplant.com (MCGP) has submitted many concerns regarding the Project. Some are not relevant to this proceeding. For instance, MCGP references MPCA testimony in the PPA Case relating to whether emission rates should be

³⁸² Tr. p. 503-04.

³⁸³ EE 1131, p. 3; Tr. p. 501-02.

³⁸⁴ Tr. p. 51-55, 124-26, 205-10.

³⁸⁵ EE 1001, Appendix 5, p. 44-45.

³⁸⁶ EE 1132; EE 1133; EE 1135.

³⁸⁷ See EE 1001, Appendix 5, p. 71; Tr. p. 340-41.

³⁸⁸ DOC 34, § 5.3.2.1, 5.3-14 to 5.3-15.

compared on a gross versus net generating capacity.³⁸⁹ This issue was related to Excelsior's demonstration that the Project provides a superior emissions profile to conventional coal-fueled power plant technologies; the emission profile's superiority is not at issue under the applicable siting and routing rules.

Excelsior has rebutted other MCGP concerns. MCGP cites Edwin Anderson's testimony from the PPA Case to demonstrate the health impacts of the Project.³⁹⁰ MPCA air permitting requirements address these concerns by requiring the completion of an Air Emissions Risk Analysis (AERA). The Project's AERA, conducted according to MPCA standards, indicates that ambient air quality impacts from the Project will be below applicable state and federal standards – 48 percent below the benchmark for acute risks; 87 percent below for sub-chronic risks; and 91 percent below the benchmark for chronic risks and cancer.³⁹¹

MCGP insinuates that because the Wabash River IGCC facility had water permit violations in its early years of operation, Mesaba could too.³⁹² Thomas Lynch, who has worked at Wabash River since it started, testified that the ZLD system used to treat process water from the gasification island eliminated the source of the permit violations to which MCGP refers.³⁹³ A ZLD system serving the gasification island has been part of the Project proposal ever since the filing of the Joint Application on June 18, 2006.³⁹⁴ The Project's design should dispel MCGP's concerns regarding water permit violations.

MCGP also suggests that Excelsior's decision to implement enhanced ZLD treatment to eliminate discharges of cooling tower blowdown at the West Range Site is problematic in light of the water permit violations at the Wabash River IGCC facility. As discussed, the Wabash permit violations were caused by the process water from the gasification island, and not cooling tower blowdown. The decision to implement ZLD to treat cooling tower blowdown water is not problematic in light of Wabash River.

MCGP compares the Pinon Pine Project to the Mesaba Project to demonstrate that the flare is likely to experience problems. The comparison fails because Pinon Pine used a technology demonstration project using the KBR, Inc., air-blown pressurized fluidized-bed gasification technology. Mesaba is proposing the ConocoPhillips oxygen-blown entrained flow gasification technology. The two technologies are fundamentally different, and the Wabash River IGCC facility has successfully demonstrated the ConocoPhillips gasification technology.

³⁸⁹ MCGP, Comment, Feb. 29, 2008, p. 3-4.

³⁹⁰ MCGP, Comment, Feb. 29, 2008, p. 8.

³⁹¹ EE 1086, p. 1-2.

³⁹² MCGP, Comment, Feb. 29, 2008, p. 4-5.

³⁹³ Tr. p. 189.

³⁹⁴ EE 1001, p. 157.

EIS Process

Finally, MCGP suggests that the Draft EIS comments submitted by the MPCA and MNDNR should have been addressed by taking additional testimony.³⁹⁵ Members of CAMP also sought to include agency comments on the Draft EIS in the hearing record.³⁹⁶ The EIS procedure, however, is specified by state and federal law, and the development of the EIS is separate from the development of the record in this contested case proceeding. That is, the EIS is not developed from this record. The DOC and the DOE responded to MPCA and DNR Draft EIS comments in the FEIS. Efforts to interject those comments into this record are unnecessary.

Final Environmental Impact Statement

The ALJ has determined that the FEIS is adequate. The FEIS was prepared in part by the DOE, which as some commentators appropriately noted, has an interest in allowing the demonstration project to proceed. Nonetheless, the EIS is not meant to address the need for the project, and that determination is not at issue in this proceeding.

It should also be noted that the site alternatives that were included within the scoping decision were severely limited to the sites chosen by Excelsior within taconite tax relief zone in Minnesota so Excelsior could obtain legislative and taxation advantages. Despite the narrow scoping decision, the FEIS adequately addressed the environmental issues associated with the two alternative sites. Important considerations remain for the permitting agencies such as the MPCA, DNR and the Army Corps of Engineers, which must determine the conditions to be imposed on the necessary environmental permits.

Conclusion

The siting and routing proceeding does not address or analyze the question of whether these facilities should be built. Rather, the proceeding provides a forum in which to find the best alternatives and mitigation practices for the facilities if it is built. This has been accomplished here.

The West and East Range Sites satisfy the standards set forth in the Power Plant Siting Act (Minnesota Statutes Chapter 216E) and the statute which governs natural gas pipelines (Minnesota Statutes Chapter 216G). Both sites are in areas zoned for industrial purposes; take advantage of existing infrastructure that has served heavy industry in the region; provide access to sufficient water supplies; minimize impacts on the natural environment; limit negative community impacts; and provide environmentally sensitive economic development in the Taconite Tax Relief Area (as directed by the IEP Statute).

³⁹⁵ MCGP, Comment, Feb. 29, 2008, p. 3.

³⁹⁶ See *e.g.*, Email from Charlotte Neigh to Judge Mihalchick, Mar. 13, 2008.

The record demonstrates that the West Range Site is a better option than the East Range Site. The costs of construction and operations are less at the West Range Site, and it is more energy efficient because HVTL losses are smaller. The West Range Site impacts fewer local residents, has a smaller effect on visibility in Class I areas, and may mitigate flooding in the Canisteo and Hill-Annex Mine Pits. The natural gas pipeline and HVTL corridors are shorter on the West Range, and it offers access to two competing rail carriers. The pipeline to transport carbon dioxide to North Dakota will be approximately 100 miles shorter from the West Range Site than the East Range Site. Finally, more people appeared at the evidentiary hearings to support the construction of the Project on the West Range Site.

If the project proceeds, the PUC should issue a power LEPGP Site Permit, a HVTL Route Permit, and a pipeline Route Permit for the West Range Site.

S.M.M.