3.0 PROJECT INFORMATION

3.1 Statement of Ownership of the Proposal

Nashwauk Public Utilities Commission (NPUC) is a municipal utility located in Nashwauk, Minnesota. NPUC delivers electric energy through a network of distribution lines and substations within its electric service territory.

Minnesota Power (MP), a division of ALLETE Inc., is an investor-owned utility headquartered in Duluth, Minnesota. The Company provides electricity in a 26,000-square-mile electric service territory located in northeastern Minnesota. Minnesota Power supplies retail electric service to 141,000 customers in northern Minnesota, and wholesale electric service to 16 municipalities in Minnesota and two private utilities in Wisconsin. A portion of the Project would be located in Minnesota Power's service area and would connect to Minnesota Power's existing transmission facilities.

ESM is headquartered in India and is building the new taconite plant and steel mill on the old Butler Mine site. The two substations and sections of the 230 kV transmission lines involved in this Project would be built on the ESM property.

Minnesota Power, ESM, or the NPUC would own the four proposed 230 kV transmission lines and the two proposed 230 kV substations.

3.2 Permittee

The Applicants for the Project are listed below.

Permittee:	Nashwauk Public Utilities Commission 301 Central Avenue Nashwauk, Minnesota 55769
Contact:	Bryan Adams
Phone:	218.885.1210
Fax:	218.885.1305
Email:	badams.nashwauk@mcshi.com
Co-Permittee:	Minnesota Power 30 West Superior Street Duluth, Minnesota 55802
Contact:	Bob Lindholm
Phone:	218.355.3342
Fax:	218.723.3916
Email:	rlindholm@allete.com

3.3 Route Selection Rationale

Transmission planning, designing, engineering, and environmental criteria were used to develop preferred and alternate routes for the Project. State and federal regulatory requirements, as well as input from all stakeholders, were also considered. Based on the information gathered to date, this Route Application focuses on a preferred and an alternative transmission line route for each of the four study areas, based on several factors:

- **Follow existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries when feasible –** A primary factor in identifying alternative routes is Minnesota's policy that new "green field" right-of-way options should be avoided where existing rights-of-way can be used. This is called the nonproliferation policy, adopted by the Minnesota Supreme Court in *People for Environmental Enlightenment and Responsibility, Inc. (PEER) v. Minnesota Environmental Quality Council*, 266 N.W.2d 858, 868 (Minn.1978). In that case, the Supreme Court held that "as a matter of law, [one should] choose a pre-existing route unless there are extremely strong reasons not to do so." *Id.* at 868. The PUC's rules also recognize that nonproliferation is an important consideration in selecting final routes for new transmission. (Minn. R. 7849.5910 H and J). Selecting a route that would result in completely new right-of-way would run counter to the nonproliferation policy. The Applicants used geographic information system (GIS) mapping and field verification to identify existing rights-of-way (transmission lines, pipelines, railroads, roads, etc.), and natural division and field boundaries.
- **Minimize length –** Minimizing the length of a route generally decreases its impacts on the environment. In some situations, however, a longer route or route segment is chosen to avoid specific, undesirable impacts.
- **Avoid populated areas where feasible –** One of the most common comments received at the Applicants' informational meeting was that residences should be avoided where possible.
- **Avoid major environmental features where feasible –** Major natural features include non-fragmented forest land, threatened and endangered species, water bodies, and wetlands.
- **Maximize transmission system reliability and promote system redundancy where feasible –** The Applicants considered locating the Project routes in close proximity to existing 115kV lines or double-circuiting the proposed lines with existing 115kV lines. In some cases, however, there were system reliability and safety concerns that would not support the double-circuit option. Routing options were considered and then excluded from further consideration if the construction or maintenance of the Project as a double-circuit or parallel line with an existing transmission line would compromise system reliability or violate North American Electric Reliability Corporation (NERC) regulations.
- **Avoid airports and other conflicting land uses –** The Applicants worked with federal and state agencies and local governments to identify and map land uses that could conflict with the Project. These included airports, private landing strips, WMAs, SNAs, SGRs, and state designated trails. These land uses were avoided where feasible.

In addition, consideration was given to comments received as a result of the informational meeting held on February 11, 2009. These comments included:

- Utilize existing rights-of-way where feasible.
- Minimize impact to property values.
- Avoid or minimize impacts to water resources and wildlife.

- Avoid or minimize impacts to cultural resources.
- Avoid or minimize impacts to businesses.

3.4 Description of Proposed Routes

The Applicants are proposing to construct four 230 kV transmission lines to provide electric power to the proposed ESM facility. A preferred and an alternate route have been developed for each of the four proposed transmission lines in accordance with Minn. R. 7849.5220. The preferred and alternative routes were selected using the route selection criteria (Minn. Statutes 216E.03 subd. 7). Appendix A includes detailed maps of each route (sheets A1 – A11), as well as the route segments considered and rejected (sheets A12 – A13). The preferred and alternate routes are described below.

3.4.1 Routes 1 and 1A

Route 1 Preferred:

Route 1 would tap into the existing 230 kV Boswell to Shannon 94 Line (94 Line Shannon End) approximately 0.75 mile west of State Highway 65. This route would travel 7.5 miles south to the 230 kV Essar Steel Plant Substation (Appendix A. Maps 2-4). The route follows the west quarter section line of the following T58N, R23W, Sections 24, 25, and 36; T57N, R23W, Sections 1, 12, 13, 24, and 25. The route width would be 3,000 feet wide to allow flexibility in selection of the final alignment due to landowner requests, environmental resource considerations, and transmission line design and constructability factors. The 3,000-foot-wide route width specifically allows the Applicants to evaluate following either the quarter section line east of or west of the proposed route. Figure 1 provides an overview of Routes 1 and 1A.

Route 1A Alternative:

Route 1A would tap into the existing 94 Line Shannon end approximately 1 mile east of TH 65 (Appendix A. Maps 2-4). The route travels south for 0.4 mile following the west side of CR 536 and continues south one mile to CSAH 54. At CSAH 54, the route travels southeast for 0.4 mile until it reaches the quarter section line in Section 32. The route continues south along the quarter section line paralleling and one quarter mile to the east of) CR 564 for 1 mile. At this point the route extends southwest for 0.4 mile until it reaches the section line between Sections 5 and 6. The route then continues south along the section line for 2.25 miles to a point 0.25 miles north of N. Little Sweeden Road. The route then travels west-southwest for 0.7 mile until it reaches N Little Sweeden Road. The route continues west following the north side of N. Little Sweeden Road for 0.45 mile. At this point the route heads northwest for 0.2 mile and west for 0.25 mile to avoid a park and fire station. The route would then proceed south for 1.6 miles following the half-section line of Sections 24 and 25. At this point the route heads southwest for 0.65 mile to the 230 kV Essar Steel Plant Substation. The route for alternate Route 1A is approximately 9.3 miles long and travels through T58N, R22W, Sections 19, 20, 29, 30, 31, and 32; T57N, R22W Sections 5, 6, 7, 8, 17, 18, 19, and 20; and then back to T57N, R23W, through Sections 13, 24 and 25. The proposed route width is 3,000 feet wide where existing roads are followed and 1,500 feet wide in other locations to allow flexibility in determination of the final alignment as described above under Preferred Route 1.

3.4.2 Routes 2 and 2A

Route 2 Preferred:

Route 2 would tap into the existing 94 Line Boswell end approximately 1 mile south of where the 94 Line crosses CSAH 60 (T57N, R24W, Section 31). The route would travel south for 1.6 miles to the existing

115 kV 28 Line through Section 6 of T56N, R24W (Appendix A. Maps 5-6). The route extends east, with the route following the south side of the existing 115 kV 28 Line for 8.4 miles through Sections 6, 5, 4, 3, 2, and 1 of T56N, R24W, and Sections 6, 5, and 4 of T56N, R23W. At this point the route continues northeast and then east for 0.75 mile to the 230 kV Essar Mine Substation in Section 3 of T56N, R23W. The route is primarily 500 feet wide, as the route follows an existing transmission line right-of-way and the new right-of-way location would be more predictable. The route width is 1,500 feet at the west and east sections of the route where a new right-of-way would be needed and more alignment flexibility would be desirable. Map 2-2 provides an overview of Routes 2 and 2A.

Route 2A Alternative:

Route 2A would tap into the existing 94 Line Boswell end where the 94 Line crosses CSAH 60 (Clearwater Road) in Section 31 of T57N, R24W (Appendix A. Maps5-6). The route travels east from the 94 Line with the intended centerline located along the south side of CSAH 60 for 0.65 mile. The route angles south along a field line for 0.25 mile and then east along a field line for 0.3 mile to Clearwater Road. At Clearwater Road the route continues east along the south side of CR 328 for 1.25 miles through Sections 32, 33, and 34 of T57N, R24W. The route then heads northeast for 0.35 mile to CSAH 7 where there is the greatest distance between homes. At CSAH 7 the route continues east for 0.6 mile and then southeast for 0.25 mile to CR 336. At CR 336 the route extends east along CR 334 for 4.5 miles to a point approximately 0.1 mile west of Big Sucker Lake, traveling through Sections 35 and 36 of T57N, R24W, and Sections 31, 32, and 33 of T57N, R23W. The route then travels southeast for 1.5 miles to the 230 kV Essar Mine Substation. The route width is 3,000 feet for the west section of the route, which follows county roads. As explained above, the 3,000-foot-wide route provides the flexibility to follow the quarter section line north or south of the county roads, if the landowners oppose locating the Project along the roads. The route width is 1,500 feet for the east section of the route where a sub-division line is followed and there is no existing linear infrastructure and no homes.

3.4.3 Routes 3 and 3A

Route 3 Preferred:

Route 3 would begin at the existing Minnesota Power 230 kV Blackberry Substation (T55N, R23W, Section 19) and travel northeast following the west side of the existing Minnesota Power 115 kV 63 Line for 11.4 miles (Appendix A. Maps 7, 8, 10 and11). Minnesota Power proposes to dismantle the existing 115 kV 62 line, located to the west of 63 Line. The proposed 230 kV transmission line would then be constructed within the present 62 Line right-of-way. The route would travel through Sections 19, 18, 17, 9, 8, 4, and 3 of T55N, R23W, and Sections 34, 35, 27, 26, 24, 23, 13, 12, 7, and 6 of T56N, R22W. The route then travels northwest for 1.9 miles, crossing U.S. Highway 169 and the Hawkins mine, to CSAH 58. The route continues west with the intended route located along the south side of CSAH 58 for 0.3 mile to a point west of the cemetery. The route crosses CSAH 58 and continues west along the north side of the highway for 0.8 mile to the Essar Steel Plant Substation. The route passes through Section 31 of T57N, R22W, and Sections 36 and 25 of T57N, R23W, in the section between U.S. Highway 169 and the 230 kV Essar Steel Plant Substation. The route width would be 500 feet when following existing transmission lines and 3,500 feet in all other locations. Map 2-2 provides an overview of Routes 3 and 3A.

Route 3A Alternative:

Route 3A also originates at the existing Minnesota Power 230 kV Blackberry Substation and travels west with the intended centerline located along the north side of the existing Minnesota Power 115 kV 20 line for 1.75 miles to a point 0.25 mile west of North Road (Appendix A. Maps 6-9). The route then travels

north for one mile along the quarter section line to an existing natural gas pipeline. The route follows the pipeline northeast for 0.8 miles. The route travels north for one mile, then northeast for 0.35 miles to Birch Drive. The route crosses Birch Drive and extends north following the half-section line for 1.4 miles. The route heads northwest for 1.65 miles to the location of the former Minnesota Power 115 kV Greenway Substation. From the Greenway Substation, the route crosses U.S. Highway 169 and travels north following the existing Minnesota Power 115 kV right-of-way for 2.8 miles to the existing Minnesota Power 115 kV 28 Line. This 115 kV right-of-way includes two de-energized 115 kV lines that could be dismantled to provide a cleared right-of-way for a new 230 kV transmission line. The route then extends east, following the Minnesota Power 115 kV 28 Line for 4.1 miles. At this point the route continues east for an additional 0.75 mile to bypass the 230 kV Essar Mine Substation and then continue 2.8 miles following the ESM railroad, underground utilities and haul road right-of-way to the 230 kV Essar Steel Plant Substation. The route extends through Sections 24, 23, 14, 13, 12, and 1 of T55N, R24W; 36, 26, 25, 23, 14, 11, 2 and 1 of T56N, R24W; and Sections 6, 5, 4, 3 and 2 of T56N, R23W, and Sections 36, 35, 34, 26, and 25 of T57N, R23W. The route width is 3,000 feet when following existing roads, 500 feet when following existing transmission lines, and 1,500 feet in all other locations.

3.4.4 Routes 4 and 4A

Route 4 Preferred:

Route 4 begins at the proposed 230 kV Essar Mine Substation and travels northeast for approximately 2.5 miles along the west side of proposed ESM railroad, underground utilities and haul road right-of-way to CSAH 58 (Appendix A. Map 6). At CSAH 58, the route heads east for 0.35 mile along the north side of the highway to the 230 kV Essar Steel Plant Substation. The route extends through Sections 2 and 3 of T56N, R23W and Sections 36, 35, 34, 26, and 25 of T57N, R23W. The route width is 3,000 feet. Figure 1 provides an overview of Routes 4 and 4A.

Route 4A Alternative:

Route 4A begins at the proposed 230 kV Essar Mine Substation and travels northeast for two miles, going between Big Sucker Lake and Little Sucker Lake, to CSAH 58 (Appendix A. Map 6). The route then heads east along the north side of CSAH 58 for 1.1 miles to the 230 kV Essar Steel Plant Substation. The route extends through Section 3 of T56N, R23W and Sections 25, 26, 27, 34, 35 and 36 of T57N, R23W. The route width is 3,000 feet except near the Sucker Lakes where the route width is reduced to exclude the lakes from the route.

3.4.5 Route Segments Considered and Rejected

The Applicants eliminated several route segment alternatives using the Route Selection Rationale .The common reasons for eliminating the route segments were to avoid residential impacts, wetlands, lakes, and large forest complexes. A number of segments were also rejected because adjacent segments were eliminated and there was no longer a connection to the route. A list of the rejected segments is included in Appendix B.

3.5 Associated Facilities

3.5.1 Substations

The Applicants are proposing to construct two 230 substations and modify the MP 230 kV Blackberry Substation. The Essar Mine Substation would occupy approximately 1.4 acres of land immediately west of the proposed Essar Mine Substation. The Essar Steel Plant Substation would occupy approximately 4.5 acres of land northeast of the intersection of CSAH 58 and Hilltop Road (Map 2-2). Construction

would occur entirely within the proposed substation boundaries. The fenced substations would be located adjacent to existing and future roadways and mining facilities. The Mine Substation would be located between a new access road on the west side and the Taconite Plant to the east, entirely within the operational area of the proposed project. The Steel Plant Substation would be located at the north edge of the steel plant operations area on lands owned by the mining company. See Appendix B for diagrams of substation plans.

The substations would be built in compliance with the applicable requirements of the National Electrical Safety Code (NESC), Occupational Safety and Health Act (OSHA), and state and local regulations. The final design of new substations would take the local conditions of the sites into consideration, and where warranted, would include safety provisions beyond the minimum requirements established in the various applicable safety codes. Contractors would be required to adhere to all such safe working practices.

Essar Mine Substation

The new substation would include two 230 kV line exits and be designed and constructed with a 230 kV five breaker ring bus and associated 230 kV switches. Initially four of the five circuit breakers would be installed with the remaining one installed as part of the ESM Phase III additions. The facility would initially include two 230/13.8 kV transformers approximately 90 MVA. The new substation would also require a control house, relay panels, associated control and communication cables, foundations, steel structures, 13.8 kV breakers, switches and transmission line exits. The substation yard would be approximately 350 feet by 300 feet of yard fence and require an access road.

The 230 kV line exits, 230 kV circuit breakers, and 230 kV bus up to the transformer high side disconnect switches; are estimated to be $3.5 million. The 230 kV transformers' high side switches, 230 kV transformers and low side distribution facilities are estimated to cost $10.3 million, for a total substation cost of $13.8 million.

Essar Steel Plant Substation

The new substation would include three 230 kV line exits and be designed and constructed with a 230 kV four bay breaker and one half scheme with eleven circuit breakers and associated 230 kV switches and controls. Initially nine of the eleven circuit breakers would be installed with the remaining two breakers installed as part of the ESM Phase II and Phase III additions. The facility would initially include a single 230/13.8 kV transformer approximately 90 MVA. A second 230/13.8 kV transformer would be added as part of the Phase II DRI facility additions. As part of the Phase III steel plant additions a third transformer would be added. This transformer would be a 230/34.5 kV transformer approximately 100 MVA in size. The new substation would also require a control house, relay panels, associated control and communication cables, foundations, steel structures, 13.8 kV breakers, switches and transmission line exits. The substation yard would be approximately 600 feet by 500 feet of yard fence and require an access road.

The 230 kV line exits, 230 kV circuit breakers, and 230 kV bus up to the transformer high side disconnect switches are estimated to cost $6.4 million. The 230 kV high side transformer switches, 230 kV transformers, and low side distribution facilities are estimated to cost $25.0 million for a total substation cost of $31.4 million.

Construction of both the substations would occur entirely within the proposed substation boundaries located on the ESM property. The fenced substations would be located adjacent to existing and future roadways and mining facilities.

Blackberry Substation

No land procurement is anticipated as the expansion of the substation would be on Minnesota Power-owned property and within the existing substation fence line. The required modifications include a new 230 kV line exit and a new 230 kV circuit breaker and associated relay, controls and communications. This would involve installing a 230 kV dead end line entrance structure, 230 kV circuit breaker and associated foundations, and 230 kV switches. A new control panel would be installed within the existing substation control house as well as associated control and communications cables. The cost for equipment and construction is estimated to be $1.1 million.

3.5.2 Transmission Line Modifications

There are several modifications to existing transmission lines that would be required for the preferred and alternative routes. See Appendix C for diagrams of structure types.

Route 1– The new 230 kV transmission line would need to connect to or "tap" into the existing 94 Line. The new "tap" structure would be located within or adjacent to the existing 94 Line right-of-way (Shannon end) and assure the continued safe, reliable flow of electricity on the existing 94 Line and proposed transmission line – 94 Line tap point to proposed Essar Steel Plant Substation. An example of a tap structure is shown in Appendix C.

Route 1A – The proposed transmission line for Route 1A, would also require a "tap" off of the 94 Line as described above.

Route 2 – The new 230 kV transmission line would need to connect to or "tap" into the existing 230 kV 94 Line. The new "tap" structure would be located within or adjacent to the existing 94 Line right-of-way (Boswell end) and assure the continued safe, reliable flow of electricity on the existing 94 Line and proposed transmission – 94 Line tap point to proposed Essar Mine Substation. Additionally, at restricted right-of-way areas, there may be a need to install double-circuit 230/115 kV structures to accommodate the proposed 230 kV circuit and the existing 115 kV 28 Line.

Route 2A – The proposed transmission line for Route 2A, would also require a "tap" off of the 94 Line as described above.

Route 3 – The Applicants intend to remove a major segment of one 115 kV circuit (Blackberry to Nashwauk 62 Line) to provide a location to construct the proposed 230 kV line. Subject to final alignment determination and design, there would be additional transmission line modifications in the Pengilly area where there presently are double-circuit 115/115 kV structures through a restricted right-of-way area. The 115/115 kV double-circuit structures may need to be removed and 230/115 kV double circuit structures installed within the existing right-of-way.

Route 3A – The existing transmission line right-of-way north of U.S. Highway 169 contains two parallel de-energized 115 kV circuits. Both circuits could be removed to provide a cleared right-of-way for the proposed 230 kV line. The route east of this location to the ESM facility follows the existing 115 kV 28 Line. As described above for Route 2, there may be restricted right-of-way locations where the existing 115 kV line would need to be modified to 230/115 kV double-circuit structures.

Route 4 and Route 4A – A section of the existing 115 kV 28 Line may be re-routed into one of these two route options to accommodate ESM's mining plans. The 28 Line re-route would be subject to a separate transmission line permitting effort. Accordingly, subsequent construction of a 230 kV circuit in either Route 4 or 4A may require modification of the 115 kV 28 Line as a 230/115 kV double–circuit structure(s).

The MP 230 kV Boswell to Shannon 94 Line is one of the generator outlet lines serving the 1,000 MW MP Boswell Energy Center. The 94 Line is proposed to be tapped at two locations and reconfigured to provide transmission service the proposed ESM Project. This would result in a 230 kV Boswell-Essar line section and an Essar-Shannon line section, as well as, an approximately 17 mile section of the existing 94 Line between the two tap locations (see Map 2-2).

The Applicants plan to keep this 17 mile section of existing 94 Line in place and operate it as a normally open circuit (de-energized) for two primary reasons. First, as a generator outlet line, 94 Line is vitally important to the reliability and security of operations at the Boswell Energy Center, with the 17 mile section of 94 Line planned to remain useful and available for delivery of Boswell's electric energy during certain system disturbances. If post disturbance conditions warrant, this 17 mile normally open section of 94 Line would be placed back in service (energized) to reduce transmission network impacts associated with the system disturbance. This re-energization of 94 Line would improve the reliability and security of operations at the Boswell Energy Center. Second, it is costly to dismantle and remove transmission lines. Since 94 Line is expected to serve a useful function, it is unreasonable to burden ratepayers with the cost of removing this 17 mile section of existing 230 kV transmission line.

3.6 Estimated Costs

The following sections provide a summary of proposed activities and costs for constructing and operating the transmission lines and substations.

3.6.1 Construction Costs

The Project construction costs for the base case 230 kV wood H-frame single circuit design are estimated at $584,000 (954 ACSR conductor) to $710,000 (1590 ACSR conductor) per mile (2009 dollars). The cost estimate excludes right-of-way acquisition and permitting. The cost estimate for 230 kV single pole steel single circuit construction ranges from $886,000 (954 ACSR conductor) to $1,102,000 (1590 ACSR conductor) per mile. The cost estimate for 230/115 kV single pole steel double circuit construction ranges from $1,198,000 (954 ACSR conductor) to $1,508,200 (1590 ACSR conductor) per mile. There would be a cost adder for construction through wooded areas (right-of-way clearing costs) ranging from $100,000 to $122,000 per mile dependent upon the right-of-way width; and a cost adder for construction across wetland areas ranging from $86,000 per mile for the base case wood H-frame design to $180,000 per mile for the single pole steel design. The single pole steel design would include concrete foundations with the heavy concrete delivery trucks and cranes requiring additional construction mat installation. An estimated two miles of construction mats would be purchased for construction of the four proposed transmission lines at a cost of $1.5 million. This construction mat purchase cost would be spread across the four transmission lines on a per mile basis. The "wetland adder cost" includes the cost of placing and removing the construction mats from the right-of-way. The Project's total transmission line cost estimate for Wood H-frame Single Circuit construction would range from $28.3 million for the four preferred routes to $32.0 million for the alternate routes. Any single pole steel construction would add significantly to the base case cost estimate.

The cost for construction of the proposed Essar Mine Substation is estimated to be $13.8 million and the cost for construction of the Essar Steel Plant Substation is estimated to be $31.4 million. The expansion at the Blackberry Substation is estimated to be $1.1 million. The Project's total cost estimate (single circuit H-frame transmission lines and substations) ranges from $74.6 million to $78.3 million depending on route selection. Table 3-1 provides a breakdown of the estimated construction costs.

Table 3-1: Transmission Line Construction Costs

Transmission Line Construction Costs (954 ACSR & 1590 ACSR Conductor costs included)	Route 1	Route 1A	Route 2	Route 2A	Route 3	Route 3A	Route 4	Route 4A
230 kV H-Frame (Base)	$5,500,000	$6,820,000	$7,920,000	$7,140,000	$8,740,000	$11,200,000	$2,100,000	$2,290,000
230 kV Single Pole Adder	$0	$0	$0	$0	$0	$0	$0	$0
115/230 kV Double Circuit Adder	$0	$0	$0	$0	$0	$0	$0	$0
Wooded Terrain Adder	$390,000	$400,000	$690,000	$480,000	$690,000	$1,130,000	$190,000	$230,000
Wetland terrain adder	$70,000	$160,000	$190,000	$190,000	$310,000	$260,000	$0	$60,000
Subtotal Transmission Line Costs	**$5,960,000**	**$7,380,000**	**$8,880,000**	**$7,810,000**	**$9,740,000**	**$12,590,000**	**$2,290,000**	**$2,580,000**
Associated Line Construction Material								
2 Miles Matting procurement adder[1]	**$320,000**	**$320,000**	**$460,000**	**$460,000**	**$630,000**	**$630,000**	**$120,000**	**$120,000**
Total Transmission Line Costs	**$6,210,000**	**$7,700,000**	**$9,260,000**	**$8,270,000**	**$10,370,000**	**$13,320,000**	**$2,410,000**	**$2,700,000**

[1]*Matting procurement assigned by percentage of route 1, 2, 3, 4 to total miles of these routes*

Table 3-2: Substation Construction Costs

Associated Facility Costs	230 kV High Side Equipment	Transformers/Low Side Equipment	Total Substation
Blackberry Substation Expansion	$1,100,000	0	$1,100,000
Essar Steel Plant Substation	$6,400,000	$25,000,000	$31,400,000
Essar Mine Substation	$3,500,000	$10,300,000	$13,800,000
Subtotal Facility Costs	**$11,000,000**	**$35,300,000**	**46,300,000**

3.6.2 Operation and Maintenance Costs

Transmission Line

Access to the transmission line's right-of-way is required to perform periodic inspections, conduct maintenance, and repair damage. Regular maintenance and inspections would be performed during the life of the transmission line to ensure its continued integrity. Inspections would be limited to the right-of-way and to areas where obstructions or terrain may require off-right-of-way access. If problems are found during inspection, repairs would be performed and the landowner would be compensated for any loss.

The right-of-way would be managed to control vegetation that interferes with the operation and maintenance of the transmission line. Portions of the Project route would be in forested areas, requiring tree maintenance to maintain the integrity of the transmission line. Native shrubs that would not interfere with the safe operation of the transmission line would be allowed to reestablish in the right-of-way. The Applicants' practice provides for the inspection of major transmission lines every year to determine if clearing is required. Other transmission lines are typically reviewed on a two-year cycle. Right-of-way clearing practices include a combination of mechanical and hand clearing, along with herbicide application where allowed, to remove or control vegetation growth. Noxious weed control with herbicides would be conducted on a two-year cycle around structures and anchors, where approved for use.

The estimated annual operation and maintenance cost for the transmission lines would be approximately $600 per mile and is dependent on setting, the amount of vegetation management necessary, storm damage occurrences, structure types, age of line, and so on. It is anticipated that very little maintenance would be required for the first several years since the transmission lines would be new.

3.6.3 Substations

Inspections would be performed regularly over the life of the substations to maintain equipment and make necessary repairs. Routine maintenance would be conducted as required to remove undesirable vegetation that may interfere with the safe and reliable operation of the substations.

3.7 Environmental Protection Measures

Limited ground disturbance may occur at the structure sites during construction. For example, the construction contractor generally establishes a main staging area for temporary storage of materials and equipment. A previously disturbed or developed area is typically used. Such an area includes sufficient space for a construction trailer, equipment staging, and to lay down material and pre-assemble some structural components or hardware. Other staging areas located along the right-of-way are limited to a structure site for lay down and framing prior to structure installation. Stringing setup areas are also used to store conductors and the equipment necessary for stringing operations. Disturbed areas are restored to their original condition to the maximum extent practicable, or as negotiated with the landowner.

Unless otherwise agreed upon by the landowner, all storage and construction buildings, including concrete footings and slabs and all construction materials and debris, would be removed from the site once construction is complete. Post-construction reclamation activities involve restoring the areas to their original condition to the extent practicable, including removing and disposing of debris; removing all temporary facilities, including staging and laydown areas; employing appropriate erosion control measures; and reseeding areas disturbed by construction activities with vegetation similar to that which was removed. Seed mixture would be certified as free of noxious or invasive weeds. In cases where soil compaction has occurred, the construction crew or a restoration contractor uses various methods to alleviate the compaction, or as negotiated with landowners.

Once post-construction reclamation is completed, landowners are contacted by the right-of-way agent to determine if the clean-up measures have been finished to their satisfaction and if any other damage may have occurred. If damage has occurred to crops, fences or the property, the Applicants would compensate the landowner. In some cases, an outside contractor may be hired to restore the damaged property as near as possible to its original condition.

In accordance with Minn. Statute 216 E. 10 Subp. 3(b), the Applicants notified the Commissioner of the Department of Agriculture in a letter dated December 22, 2008, of the transmission line project. The Applicants have not heard back from the Department of Agriculture at the time of filing this Application. If a request to implement an Agricultural Impacts Mitigation Plan is received the Applicants would work with the Department of Agriculture to develop the plan.

3.8 Project Schedule

The proposed ESM facility schedule includes three committed phases, with each phase requiring additional levels of electric power. Phase I of the project, the taconite pellet plant, is scheduled to be operational in first quarter 2011, and would have a total demand of 95 megawatts (MW) of electric power. Phase II of the project, the Direct Reduced Iron (DRI) facility, scheduled to be operational in the first quarter of 2013, would increase the electric power demand to approximately 145MW (a 50 MW increase). And Phase III of the project, the first Steel Slab plant melt line, scheduled to be in the first quarter of 2014, would increase the total facility electric service demand to approximately 300 MW.

To enable the construction of the proposed transmission lines and substations to meet the scheduled ESM electric service requirements, the Applicants expect to complete the Route Permit approval process by June 2010. Right-of-way acquisition and transmission line design would be completed by fall 2010 and construction scheduled to commence winter of 2010/2011.

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