

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

IN THE MATTER OF THE ROUTE
PERMIT APPLICATION FOR A HIGH
VOLTAGE TRANSMISSION LINE ROUTE
PERMIT FOR THE HIAWATHA
TRANSMISSION PROJECT

PUC DOCKET No. ET-2/TL-09-38
OAH DOCKET No. 15-2500-20599-2

XCEL ENERGY'S POST-HEARING
BRIEF

TABLE OF CONTENTS

	<u>PAGE</u>
I. INTRODUCTION	1
II. PROCEDURAL BACKGROUND	4
III. PROJECT AREA	4
A. Project Area presents unique routing circumstances and challenges.....	4
1. Project Area is densely populated with plans for increased development	5
2. Project Area is culturally, racially, and economically diverse.....	6
3. Project has potential to impact CM&St.P Historic District	7
IV. PROJECT IS NEEDED TO MEET INCREASING DEMAND	9
A. Engineering studies confirm need for the Project	9
B. Project will serve current and future electrical needs in the Project Area	15
V. DESCRIPTION OF ROUTES AND SUBSTATIONS SITES	16
A. Routes and Substations Initially Proposed by Xcel Energy	16
B. Additional Routes and Substations Proposed by Other Parties.....	17
C. Xcel Energy’s Preferred Route—Route A	17
D. Other Routes Under Consideration.....	18
E. Xcel Energy’s Preferred Midtown Substation site—Midtown North.....	21
F. Other Midtown Substation sites.....	22
G. Xcel Energy’s Preferred Hiawatha Substation site—Hiawatha West.....	22
H. Other Hiawatha Substation sites	23
VI. APPLICATION OF RELEVANT CRITERIA	25
A. The Statutes and Rules.....	25
1. Power Plant Siting Act	25
2. Minn. R. 7850.4100 Factors.....	27
VII. ROUTE A, EITHER OVERHEAD OR UNDERGROUND, SATISFIES ALL ROUTING CRITERIA	28
A. Effects on Human Settlement	29
1. Displacement.....	29

TABLE OF CONTENTS
(continued)

	<u>PAGE</u>
2. Noise.....	30
3. Aesthetics	30
4. Recreation	32
5. Public Services.....	33
a. Compatibility with future transit	33
b. Compatibility with future bridge repair or replacement	36
B. Effects on Public Health and Safety	37
1. Construction and Operation of Facilities	37
2. EMF.....	38
C. Effects on Land-Based Economies and Direct and Indirect Economic Impacts	40
1. Impact on Development in Project Area.....	40
2. Impact on ability to obtain financing	42
D. Effects on Archaeological and Historic Resources.....	45
1. Effects on Historic Resources.....	47
2. Effects on Archeological Resources.....	50
E. Effects on Natural Environment	52
1. Impacts of Overhead and Underground Construction	52
2. Air Quality	53
3. Water Resources.....	54
4. Flora.....	54
5. Fauna	55
F. Effects on Rare and Unique Resources.....	55
G. Application of Various Design Considerations	56
H. Use or Paralleling of Existing Rights-of-Way, Survey Lines, Natural Division Lines, and Agricultural Field Boundaries	56
I. Use of Existing Transportation Pipeline, and Electrical Transmission Systems or Rights-of-Way.....	56
J. Electrical System Reliability	57
K. Costs of Constructing, Operating and Maintaining	60
1. Cost Comparison of Route A Alignments	60
2. Cost Allocation.....	60

TABLE OF CONTENTS
(continued)

	<u>PAGE</u>
L. Unavoidable Adverse Human and Natural Environmental Effects.....	62
M. Irreversible and Irretrievable Commitments of Resources.....	62
VIII. ROUTE D IS ALSO FEASIBLE AND PRUDENT IF UNDERGROUND DESIGN IS DETERMINED TO BE THE ONLY FEASIBLE DESIGN OPTION.....	63
A. Human Settlement.....	64
B. Effects on Archaeological and Historic Resources.....	65
C. Cost.....	65
IX. ROUTE B AND C HAVE COMPARATIVE IMPACTS	66
A. Human Settlement.....	67
B. Archaeological and Historic Resources	68
C. Effects on Natural Environment	69
D. Costs.....	69
X. ROUTE E2.....	70
XI. HIAWATHA AND MIDTOWN SUBSTATIONS	70
A. Hiawatha Substation	70
1. Hiawatha West is the most appropriate substation site	71
a. Human Settlement.....	71
(1) Displacement	71
(2) Aesthetics	72
(3) Recreation.....	72
b. Costs.....	73
2. Hiawatha G4 is not feasible.....	73
3. Hiawatha G5 is not feasible.....	75
4. Underground design for Hiawatha West.....	77
B. Midtown Substation.....	78
1. Midtown North is the most appropriate site.....	78
a. Human Settlement.....	78
(1) Displacement	78
(2) Noise.....	79
(3) Aesthetics	80

TABLE OF CONTENTS
(continued)

	<u>PAGE</u>
b. Effects on Archaeological and Historic Resources.....	80
c. Land Use Conflicts.....	81
XII. ENVIRONMENTAL JUSTICE.....	81
A. Environmental Justice Defined	81
B. Environmental justice concerns have been addressed.....	83
XIII. CONCLUSION.....	85

I. INTRODUCTION

Northern States Power Company, a Minnesota corporation (“Xcel Energy,” or “Company”) respectfully submits this Post-Hearing Brief (“Brief”) and accompanying Proposed Findings of Fact, Conclusions of Law, and Recommendation (“Proposed Findings”) to the Administrative Law Judge (“ALJ”) for the proposed Hiawatha Transmission Project (“Hiawatha Project” or “Project”).

The Hiawatha Project includes the construction of two new 115 kV transmission lines between two new 115/13.8 kV distribution substations, Hiawatha Substation and Midtown Substation, in an area of South Minneapolis known as the Midtown District. The Hiawatha Project is Xcel Energy’s first high voltage transmission project to be proposed in a high density urban area in Minnesota and consequently presents numerous unique challenges and considerations. Among these challenges is the significant built-up infrastructure in the immediate area, including multi-family housing and businesses, which limits the open space to add infrastructure, such as the proposed transmission lines. The Midtown District has additionally experienced a revitalization over the past decade with the construction of new residential and commercial development which in turn has increased load density that has outstripped the capability and capacity of the existing distribution system. The area is also one of the most culturally diverse areas of the State and includes several historical resources, including the St. Paul Railroad Grade Separation historic district (“CM&St.P Historic District”) which is known as the “Midtown Greenway.”

The Company undertook significant analyses of these unique considerations prior to proposing the Hiawatha Project, and recognizes the complexity of siting electrical facilities of the size proposed in this area. However, it is indisputable that the growth in demand for power has resulted in an increasing number of feeder circuit overloads on the existing distribution system and service interruptions in the Midtown District over the past decade. The Hiawatha Project will address these

distribution system problems and provide reliable electrical service to the customers in this area for years to come.

The unprecedented active engagement in this proceeding by seven community groups, two local government units and three landowners has created a robust record that provides the ALJ and the Minnesota Public Utilities Commission (“Commission”) the information needed to determine the appropriate route for the Project based on the applicable statutory and rule routing criteria and factors. Xcel Energy greatly appreciates the time and dedication of the parties to this proceeding and of the Department of Commerce, Office of Energy Security (“OES”) to ensure a thorough vetting of the issues.

Over the course of two public hearing days and 13 evidentiary hearing days, the parties evaluated five route options (Routes A, B, C, D, and E2) and seven different design options for the proposed transmission lines. Of the design options, four are overhead (Route A—Alignment A1, Route B, Route C, and Route E2) and three are underground (Route A—Alignment A2, Route A—Alignment A3, and Route D). In addition, eight different substation sites for the Hiawatha Substation and four substation sites for Midtown Substation were reviewed during the contested case proceeding.

The overarching issue in this proceeding is whether the transmission facilities should be constructed overhead or underground. Xcel Energy is prepared to build either design with appropriate cost recovery. Xcel Energy evaluated both options and, from an engineering perspective, believes that either the overhead or underground design would provide the performance required to meet the identified distribution needs. Ultimately the decision regarding the appropriate design of the new transmission lines and associated facilities in an urban area such as South Minneapolis with the myriad circumstances previously discussed presents the difficult

policy determination of whether the increased cost of undergrounding is warranted to reduce aesthetic and other such impacts.

Based on the record, Xcel Energy believes that Route A, along either three of the proposed alignments, best satisfies the relevant statutory and rule criteria, taking into account the specific characteristics of the Midtown District. Route A is a 1.4-mile route that can be constructed either overhead or underground and runs parallel to 29th Street and the Midtown Greenway corridor (Route A—Alignment A1 and A2) or within the Midtown Greenway corridor (Route A—Alignment A3). Route A complies with the State policy of non-proliferation by following an existing transportation corridor on public rights-of-way, could accommodate double circuit overhead construction or two adjacent duct banks in a single excavation, minimizes impacts on human settlement and is the most direct route between the two preferred substation sites (Hiawatha West and Midtown North).

Xcel Energy does recognize, however, that the relevant statutory and rule criteria related to route selection are not subject to mechanical application and that consideration of these factors could lead to different outcomes depending on the weight given to certain factors. As a result, if the ALJ concludes that under the distinct and unique circumstances presented in this case an underground design option best satisfies the relevant criteria, Xcel Energy agrees that Route D is also a feasible and prudent alternative for consideration.

With respect to substations, Xcel Energy believes the Midtown North and Hiawatha West locations are the most appropriate substation sites for the Project. The Midtown North substation site, which includes the old Oakland Substation site, is located in the core need area and would require no displacement of habitable residences or businesses. The Hiawatha West site is one of only three sites among the eight evaluated that meets engineering requirements and is the only feasible site that

would not require displacement of residences or businesses.¹ In addition, selecting these two substation sites minimizes overall transmission line length, thereby minimizing overall impacts.

Accordingly, Xcel Energy respectfully requests that the ALJ conclude that Route A between the Hiawatha West substation site and the Midtown North substation site² best meets the criteria in Minn. Stat. § 216E.03, subd. 7 and Minn. R. 7850.4100 and recommend that the Commission issue a Route Permit for Route A between the Hiawatha West and Midtown North substation sites.

II. PROCEDURAL BACKGROUND

See Xcel Energy's Proposed Findings of Fact, Conclusions of Law, and Recommendation for a recitation of the procedural history in this Docket.

III. PROJECT AREA

A. Project Area presents unique routing circumstances and challenges

The Hiawatha Project presents a rare set of factors compared to other recent routing proceedings. The transmission lines and associated facilities will be located in a densely populated metropolitan area where there has been significant residential and commercial development and where further population growth is anticipated. Furthermore, the Midtown District is a culturally, racially, and economically diverse area. Finally, depending on the route and design option selected, the Project also has the potential to impact the CM&St.P Historic District. The combination of these uncommon circumstances presents a challenge for determining a suitable transmission line route through this area.

¹ The other two sites are the Hiawatha East site and the Zimmer Davis site.

² In this Brief, all references to Route A or Route D include the Hiawatha West and Midtown North substation sites.

1. Project Area is densely populated with plans for increased development

The Project will be located in an area known as the Midtown District in the City of Minneapolis, Hennepin County. The Project Area is bordered by 26th Avenue South on the east, Interstate 35W (“I-35W”) on the west, East 31st Street to the south and East 26th Street on the north (“Project Area”).³

The Project Area has a high population density.⁴ For instance, for Route A, there are approximately 8,000 people located within 500 feet of this route.⁵ The only areas of similar densities in which Xcel Energy has overhead transmission facilities were constructed in the 1950s.⁶ The residential lots in Minneapolis are also smaller than other metropolitan lots—often less than 5,000 square feet as opposed to 10,000-plus square feet in many suburban communities.⁷ Many Minneapolis houses were constructed at a time when there were no or little setback requirements, so the homes lie closer to the streets, leaving less room for utility and other infrastructure.⁸

Not only is the Project Area densely populated with residences located close to the street but there are numerous development plans that call for further residential and commercial development. In fact, several recent community revitalization projects have helped transform the area making it more attractive to business

³ A map of the Project Area is found in Appendix B.1 of the Application. Ex. 1B at Appendix B.1 (Application Appendices).

⁴ Asah 2 Vol. at 64 (the Project Area is the most densely populated area in Minnesota in which Xcel Energy has routed a high voltage transmission line).

⁵ Ex. 154 (Xcel Energy’s Response to MGC IR No. 4); Asah 12 Vol. 156.

⁶ Ex. 52 at 3 (Xcel Energy’s Response to MGC IR No. 6); Asah 1 Vol. 159.

⁷ Ex. 11 at 5 (Asah Rebuttal).

⁸ Ex. 11 at 5 (Asah Rebuttal); Asah 1 Vol. 226.

investors and homeowners alike.⁹ City of Minneapolis witness Karin Berkholtz testified that since 2000, there have been five major development projects in the Project Area.¹⁰ These include: (1) the Midtown Exchange; (2) Abbott Northwestern Hospital; (3) Wells Fargo Home Mortgage campus; (4) Christo Rey High School; and (5) the Midtown Medical Clinic.¹¹ In addition, a number of housing projects, such as the Corridor Flats, as well as commercial developments, including the Hi-Lake Shopping Center, have been constructed since 2000.¹² Also, from 2000 to 2009, 66 residential building permits were issued in the Project Area.¹³ This intense redevelopment is expected to continue as numerous development plans call for intensified residential and commercial development within the Project Area.¹⁴

2. Project Area is culturally, racially, and economically diverse

The Midtown District is also rare in its cultural, racial, and economic diversity. Lake Street, the main street that runs through the heart of the Midtown District, hosts East and West African, East Asian, Latino, and Scandinavian businesses, as well as large American chain stores. While many cultures call the Midtown area home, the area is diverse not only in ethnicity but in age, class, and race.¹⁵ According to the 2000 Census race demographics, Hennepin County is 80.5 percent Caucasian.¹⁶ Of

⁹ Ex. 1A at 84 (Application).

¹⁰ Ex. 91 at 9-10 (Berkholtz Direct).

¹¹ Ex. 91 at 9-10 (Berkholtz Direct).

¹² Ex. 91 at 10 (Berkholtz Direct).

¹³ Ex. 91 at 10 (Berkholtz Direct).

¹⁴ Mogush 8 Vol. 108-16.

¹⁵ Ex. 10 at 4 (Asah Direct).

¹⁶ Ex. 1A at 82 (Application).

the neighborhoods within the Project Area, the population ranges from 25.7 to 65.1 percent Caucasian.¹⁷ Per capita incomes within the neighborhoods in the Project Area are, in general, lower than those found throughout Hennepin County and the percentage of population below the poverty level is generally higher than those found throughout Hennepin County.¹⁸

3. Project has potential to impact CM&St.P Historic District

The Project is also distinct in its potential to impact a historic district, the CM&St.P Historic District. The CM&St.P Historic District is parallel to 29th Street between Humboldt Avenue and 20th Street.¹⁹ The trench was constructed between 1912 and 1916 for rail use by the Chicago, Milwaukee, and St. Paul Railroad. It is approximately 22 feet deep and has a steeply sloped earthen wall on the north and south sides in most areas. Each north-south block over the trench features a bridge, which was built between 1912 and 1916.²⁰ The trench, bridges, retaining walls and two adjacent properties were listed on the National Register of Historic Places (“NRHP”) in 2005.²¹ Several minor features also contribute to the character of the historic district.²² These include wooden utility poles along the southern side of the trench and a system of small patches of granite block, limestone and concrete

¹⁷ Ex. 1A at 82 (Application).

¹⁸ Ex. 1A at 82 (Application).

¹⁹ Route A is not coextensive with the CM&St.P Historic District. Route A follows 29th Street between Oakland Avenue and 20th Street.

²⁰ Ex. 10 at 11 (Asah Direct); Ex. 15 at Schedule 10 at 57 (Stark Surrebuttal).

²¹ Ex. 10 at 11 (Asah Direct).

²² Ex. 10 at Schedule 4 at 15 (Asah Direct).

retaining walls with mortar placed near the bridge abutments near the upper portion of the slope.²³

Hennepin County Regional Railroad Authority (“HCRRA”) purchased the railroad property in 1993 and currently owns the property.²⁴ Today the property is used as a 5.7-mile bicycle and pedestrian trail – the Midtown Greenway – that travels through the City of Minneapolis from the Saint Louis Park city limits in the west to West River Parkway near the Mississippi River in the east.²⁵

Route A follows a portion of this linear transportation corridor of the Midtown Greenway either on the top slope of the Midtown Greenway along 29th Street (Route A—Alignment A1 and A2) or within the Greenway itself (Route A—Alignment A3).²⁶ If the Project is constructed overhead along Route A—Alignment A1, there will be indirect visual effects to the CM&St.P Historic District given the size and scale of the proposed transmission structures.²⁷ If the Project is constructed underground (Route A—Alignments A2 or A3), the visual impacts of the structures and conductors are eliminated but there is potential for impacts to historic retaining walls located within the district.²⁸ In addition, preliminary plans for the substation at the Midtown

²³ Ex. 15 at Schedule 10 at 59 (Stark Surrebuttal).

²⁴ HCRRA’s interest in this proceeding was represented by Hennepin County. *In the Matter of the Route Permit Application for a High Voltage Transmission Line Route Permit for the Hiawatha Transmission Project*, Docket No.: ET2/TL-09-38, Hennepin County’s and Hennepin County Regional Railroad Authority’s Prehearing Statement, eDocket Document No. 20097-40321-01 (July 30, 2009).

²⁵ Ex. 1A at 84 (Application).

²⁶ Ex. 2A-D (Detailed Maps of Route A).

²⁷ Ex. 15 at Schedule 10 at 68-69 (Stark Surrebuttal).

²⁸ Anticipated bridge work by the City will affect slopes within the district. Michalko 9 Vol. 130-31.

North site call for the possible construction of a retaining wall into the slope located on Xcel Energy property which would result in direct impacts to the Midtown Greenway.²⁹ Given the distinct set of circumstances presented within the Project Area, the Company acknowledges that determining which route best satisfies the statutory and routing factors presents a difficult routing decision.

IV. PROJECT IS NEEDED TO MEET INCREASING DEMAND

While the need for a project is not at issue in a route permit proceeding such as this, many parties and individuals have requested need information for the Project. In response to these queries, Xcel Energy included detailed need data, such as distribution and transmission engineering study work, in the appendices to the Application and offered two witnesses in the contested case proceeding to address need questions.³⁰ In the end, the information on the record in this proceeding demonstrates that this Project is needed to maintain reliable electric service in the South Minneapolis area and particularly within the Project Area.

A. Engineering studies confirm need for the Project

Customer electricity usage has grown significantly over the past decade in south Minneapolis and is expected to continue to grow. This growth has been particularly dramatic along and around Lake Street, Chicago Avenue, and Hiawatha Avenue due to revitalization and redevelopment efforts.

In response to an increasing number of feeder circuit overloads and service interruptions in the South Minneapolis area over the past decade, the Distribution Planning department of Xcel Energy conducted a long-term study of the south Minneapolis distribution delivery system. This study, the “South Minneapolis Electric

²⁹ McNelly 5 Vol. 41-42.

³⁰ See Ex. 1B at Appendix D; Ex. 23 (Zima Direct); Ex. 24 (Zima Rebuttal); Ex. 25 (Zima Surrebuttal); Ex. 26 (Standing Direct).

Distribution Delivery System Long-Term Study” or “Distribution Study”³¹ was completed in 2009 and confirmed the need for a new power source in South Minneapolis.

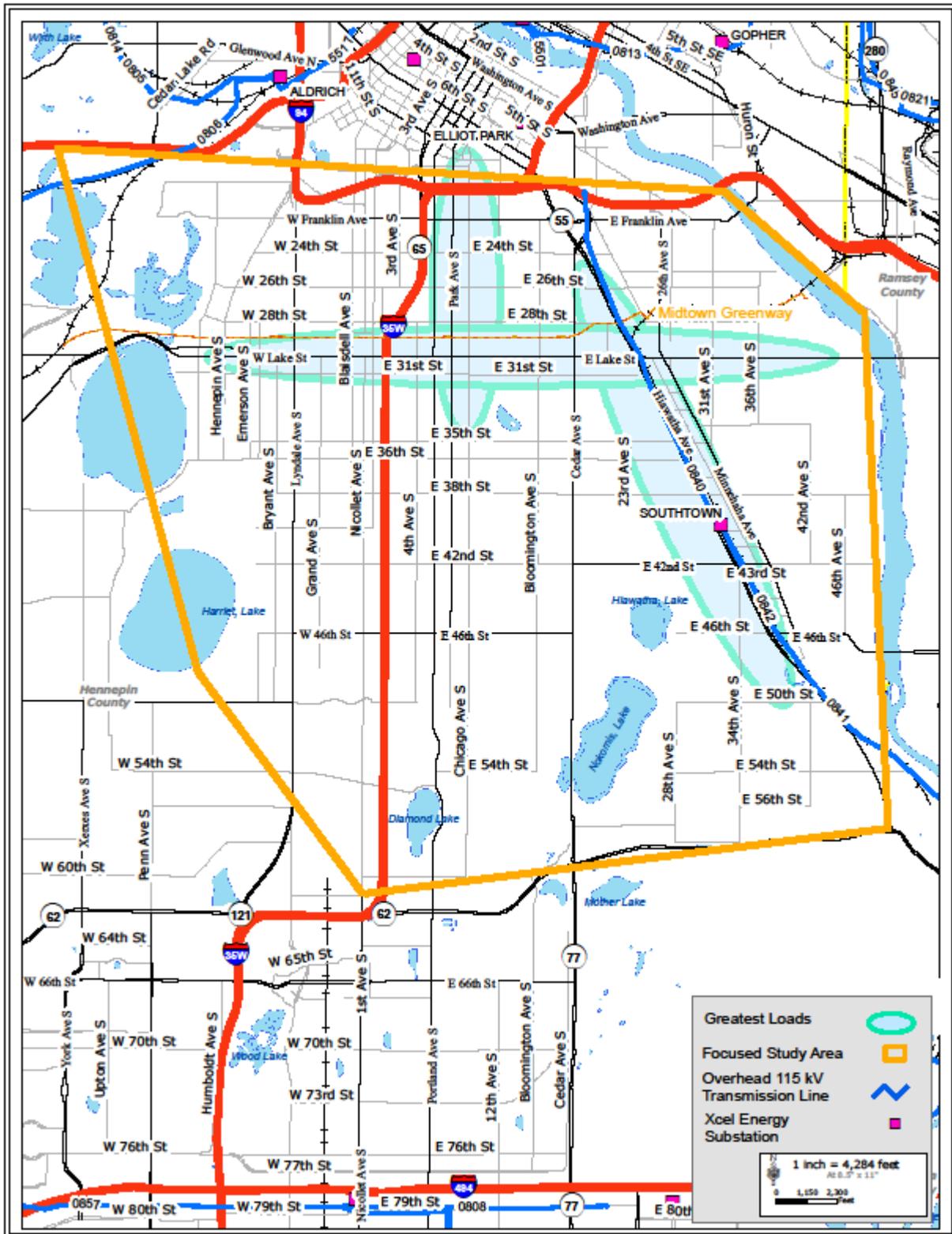
The Distribution Study analyzed the existing distribution system capacity in south Minneapolis by evaluating historical load data and load forecasts for 39 feeder circuits that serve distribution load in an area of south Minneapolis that has been experiencing the most severe overload conditions in the past years (“Focused Study Area”) and for the 15 distribution substation transformers that serve distribution load in the greater south Minneapolis area (“Greater Study Area”).³² Distribution Planning found that the highest load density for the Focused Study Area was located along Lake Street, Hiawatha Avenue, and Chicago and Park Avenue corridors.³³ These targeted need areas are illustrated on the map of the Focused Study Area below.³⁴

³¹ See Ex. 1B at Appendix D.3.

³² Ex. 1A at 15-16 (Application).

³³ Ex. 1B at Appendix D.3 at 24 (Application Appendices).

³⁴ Ex. 1B at D.2 at 4 (Application Appendices); Ex. 1B at Appendix D.3 at Figure 4.3 (Application Appendices); Ex. 23 at 4 (Zima Direct).



The Project Area is currently served by distribution feeders, which are served by one substation located within and several substations located outside the Project Area.³⁵ Approximately 60 percent of the needed power comes from the Southtown Substation located at Hiawatha Avenue and 38th Street.³⁶ The next largest portion of power for the area comes from the Aldridge Substation located north of Interstate 394 near Interstate 94 followed by the Elliot Park Substation, located east of the Metrodome.³⁷ Each of these substations provides the power to the Project Area through a long series of distribution feeder circuits which traverse many neighborhoods to reach the Midtown area.³⁸ The Distribution Study assessed the electrical distribution delivery system's ability to serve existing and future loads in the Focused Study Area by evaluating the historical and forecasted load levels and utilization rates of the 39 feeder circuits that serve the Focused Study Area over a period of 20 years.³⁹ The Distribution Study then identified existing and anticipated capacity deficiencies resulting in overloads on these feeder circuits during system intact (N-0 or all circuits full operational) and single contingency (N-1 or one feeder circuit out of service) operating conditions.⁴⁰ The Distribution Study also examined the Southtown Substation transformer capacity.⁴¹

³⁵ Zima 5 Vol. 165-66.

³⁶ Zima 6 Vol. 60.

³⁷ Zima 6 Vol. 60.

³⁸ Zima 6 Vol. 60.

³⁹ Ex. 23 at 4 (Zima Direct).

⁴⁰ Ex. 23 at 4 (Zima Direct).

⁴¹ Ex. 23 at 4 (Zima Direct).

The Distribution Study found that the feeder circuits in the Focused Study Area are loaded above maximum equipment limits under system intact (N-0) and first contingency (N-1) conditions during peak loading.⁴² Under 2006 peak loading conditions with the system intact (N-0) (i.e., all 39 circuits are fully operational), 12 of the 39 circuits exceeded equipment maximum limits by a total of 12.2 MW, four of the 12 overloaded feeder circuits exceeded 115 percent of maximum limits.⁴³ Under 2006 peak loading and first contingency (N-1) conditions (i.e., any one of the 39 circuits is out of operation and switched to adjacent feeder circuits), 24 of the 39 feeder circuits exceeded equipment maximum limits by a total of 55 MW.⁴⁴

The study further found that substation transformers are loaded above maximum equipment limits during all first contingency configurations (N-1 or one substation transformer out of service). Under 2006 peak loading and substation first contingency (N-1) conditions at the Southtown Substation (i.e., any one of the three substation transformers is out of operation), a total of at least 42.4 MW of customer load would be outaged until repairs were completed.⁴⁵

To address this need, Distribution Planning reviewed potential distribution system improvements, including adding new feeder circuits, extending existing feeder circuits and reconfiguring feeder circuits, and concluded that these options have been exhausted and would not provide the necessary system support.⁴⁶ Distribution Planning also determined that existing distribution substations in south Minneapolis

⁴² Ex. 23 at 5 (Zima Direct).

⁴³ Ex. 23 at 5 (Zima Direct).

⁴⁴ Ex. 23 at 5 (Zima Direct).

⁴⁵ Ex. 23 at 5 (Zima Direct).

⁴⁶ Ex. 23 at 6-8 (Zima Direct).

do not have the available capacity necessary to alleviate overload conditions.⁴⁷ Distribution Planning concluded that two new distribution sources (i.e., substation transformers) were needed to ensure adequate system support in the Hiawatha and Midtown areas in the near term.⁴⁸ Distribution Planning sought to locate these two new distribution sources as close as possible to the “center-of-mass” for the electric load that they will serve.⁴⁹ Installing substation transformers close to the load “center-of-mass”, or targeted load centers, minimizes line losses, reduces system intact voltage problems, and reduces the length of feeder circuits and outages associated with more feeder circuit exposure.⁵⁰

Distribution Planning, in coordination with the Xcel Energy Transmission Planning Department (“Transmission Planning”), developed four electrical system options that would provide additional distribution substation transformers for the Project Area.⁵¹ Planning engineers also considered several other alternatives that could meet the need, including a no-build option, conservation and demand side management programs, generation, including distributed renewable generation, smart grid substation technologies and cogeneration.⁵² All of these alternatives were determined insufficient to address the capacity deficiency for the Project Area.⁵³

⁴⁷ Ex. 23 at 7 (Zima Direct).

⁴⁸ Ex. 23 at 7-8 (Zima Direct).

⁴⁹ Ex. 1B at Appendix D.3 at 51 (Application Appendices).

⁵⁰ Ex. 1B at Appendix D.3 at 51 (Application Appendices).

⁵¹ Ex. 26 at 2-3 (Standing Direct).

⁵² Ex. 1B at Appendix D.2 at 19-25 (Application Appendices).

⁵³ Ex. 1B at Appendix D2 at 19 (Application Appendices).

B. Project will serve current and future electrical needs in the Project Area

Ultimately, both Distribution Planning and Transmission Planning determined that the option that best addressed both immediate and long-term needs for electricity in the South Minneapolis area, and specifically the Project Area, included: a Hiawatha Substation between 26th Street and Lake Street near Hiawatha Avenue; a Midtown Substation between 26th Street and Lake Street and between Chicago Avenue and Interstate 35W; with both substations tapping the existing Elliot Park – Southtown 115 kV transmission line; and two new looped 115 kV transmission lines connecting the two new substations.⁵⁴

This initial configuration will provide an additional 120 MW of load serving support in the South Minneapolis area.⁵⁵ This additional capacity will meet the immediate distribution system needs in the Focused Study Area, including the Project Area.⁵⁶ In addition, the Project will provide support for further demand growth in the Project Area.⁵⁷

Indeed, 90 percent of the power that will come out of the two new substations will directly serve feeders that are overloaded along the “ellipses” shown above along

⁵⁴ Ex. 1B at Appendix D.2 at 18 (Application Appendices); Ex. 23 at 8 (Zima Direct); Ex. 26 at 3 (Standing Direct); Schedin 9 Vol. 172 (“my understanding there were alternates to running all feeders from the Hiawatha substation into the subject area, and there were alternates examined from running feeders into -- some more of the distant substations . . . it seemed to me that putting a source right in the middle of the area was the best solution.”).

⁵⁵ Ex. 23 at 8 (Zima Direct).

⁵⁶ Ex. 23 at 8 (Zima Direct).

⁵⁷ Zima 5 Vol. 180-81 (noting that load growth is expected to continue along Lake Street, Chicago Avenue, and the Midtown Greenway based on City of Minneapolis planning projections).

Lake Street and Midtown Greenway; Chicago and Park; and Hiawatha Avenue and the light rail.⁵⁸ As demand for power grows, the capacity of the distribution system can be further expanded by adding transformers and feeder circuits at the two substations.⁵⁹

V. DESCRIPTION OF ROUTES AND SUBSTATIONS SITES

A. Routes and Substations Initially Proposed by Xcel Energy

On April 24, 2009, Xcel Energy submitted a Route Permit Application for the Hiawatha Project (“Application”). In the Application, the Company proposed four routes (Routes A-D) and five construction design options for consideration.⁶⁰ Of the design options, three are overhead (Route A—Alignment A1, Route B, and Route C) and two are underground (Route A—Alignment A2 and Route D).⁶¹ Xcel Energy also proposed two locations for the Hiawatha Substation (Hiawatha West and Hiawatha East) and two locations for the Midtown Substation (Midtown North and Midtown South).⁶²

The routes and substation locations proposed in the Application were developed over a period of more than a year and included substantial input from multiple meetings with landowners, lawmakers, and other stakeholders.⁶³ During this process, the Company gathered environmental data, held open houses, met with local government representatives, community leaders and organizers, representatives from

⁵⁸ Zima 12 Vol. 197, 202.

⁵⁹ Ex. 23 at 8 (Zima Direct).

⁶⁰ Ex. 1A at 5 (Application); Ex. 10 at 5 (Asah Direct).

⁶¹ Ex. 10 at 5 (Asah Direct).

⁶² Ex. 1A at 4 (Application); Ex. 10 at 5 (Asah Direct).

⁶³ Ex. 10 at 7 (Asah Direct).

the business community, collected public comments, and analyzed the statutory and rule factors set forth in the Power Plant Siting Act, Minnesota Chapter 216E, and Minnesota Rules Chapter 7850 to develop the routes and substation sites for the Project.⁶⁴

B. Additional Routes and Substations Proposed by Other Parties

During the scoping process for the Environmental Impact Statement (“EIS”) additional routes and substation sites were proposed for the Project. The EIS Scoping Decision determined that the Company’s four route alternatives plus one route alternative proposed by the Advisory Task Force (“ATF”), Route E2, would be examined in the EIS.⁶⁵ The Scoping Decision also determined that five alternative sites for the Hiawatha Substation proposed by the ATF, G-1, G-2, G-3, G-4, and G-5, would be evaluated in addition to the two sites proposed by the Xcel Energy.⁶⁶ Two additional sites for the Midtown Substation, Mt-28N and Mt-28S, proposed by the ATF were also part of the Scoping Decision.⁶⁷ In addition, at the request of Hennepin County, Xcel Energy also analyzed an underground alignment within the Midtown Greenway (Route A—Alignment A3).⁶⁸

C. Xcel Energy’s Preferred Route—Route A

In the Application and during this proceeding, Xcel Energy has stated that its preferred route is Route A, along any of the three proposed alignments, between the

⁶⁴ Ex. 10 at 7 (Asah Direct).

⁶⁵ Ex. 138 at 2, 5 (EIS Scoping Decision).

⁶⁶ Ex. 138 at 2, 5 (EIS Scoping Decision).

⁶⁷ Ex. 138 at 2, 5 (EIS Scoping Decision).

⁶⁸ Ex. 10 at 5 (Asah Direct); Michalko 9 Vol. 81.

Hiawatha West and Midtown North substation sites.⁶⁹ Route A begins on the east side of the Hiawatha West Substation site and then crosses Hiawatha Avenue and continues parallel to East 28th Street, near Minneapolis Pioneers and Soldiers Memorial Cemetery and heads west along 29th Street for approximately 1.4 miles. The lines would connect to a new Midtown Substation at the Midtown North site at the corner of Oakland Avenue and 29th Street. The three proposed alignments for Route A include an overhead alignment (Route A—Alignment A1) and an underground alignment (Route A—Alignment A2) that would be located primarily along 29th Street, outside the Midtown Greenway. The third alignment is an underground alignment (Route A—Alignment A3) within the Midtown Greenway, primarily along the edge of the northern earthen slope.⁷⁰

Route A—Alignment A1 uses overhead construction with single-pole, double-circuit 115 kV structures. If the underground design is selected along Route A—Alignment A2, the two transmission lines would be placed in a concrete duct system below 29th Street between the proposed Hiawatha and Midtown substations. If the underground design is selected along Alignment A3, the two transmission lines would be placed in a concrete duct system along the northern edge of the Midtown Greenway parallel to, and in some sections under, the existing bike path. For Route A, Xcel Energy is requesting a route width of 200 feet.⁷¹

D. Other Routes Under Consideration

Four other routes were also evaluated during this proceeding. Route B is a street route requiring construction of two single circuit above ground lines because

⁶⁹ Ex. 10 at 10 (Asah Direct).

⁷⁰ Hennepin County suggested Route A—Alignment A3. (Ex. 10 at 7 (Asah Direct)).

⁷¹ Ex. 10 at 10 (Asah Direct).

there is insufficient clearance for double circuit structures.⁷² One of the transmission lines would follow 26th Street between Hiawatha West and the Midtown North substation sites.⁷³ The second line would follow East 28th Street between the substations.⁷⁴

Route C is also a street route that would require construction of two single circuits due to insufficient clearances.⁷⁵ One of the transmission lines would follow East 28th Street between Hiawatha West and Midtown North substation sites.⁷⁶ The second line would parallel 31st Street. For Routes B and C, Xcel Energy is requesting a route width of 80 feet.⁷⁷ Both Route B and Route C would use a cantilevered design which would require the installation of a single pole transmission structure with all davit arms and conductors installed on the side of the pole overhanging the public road.⁷⁸ The National Electric Safety Code (“NESC”) clearance requirements dictate a 25-foot right-of-way clearance on the conductor (or street side) of these structures.⁷⁹ There is not an NESC safety clearance minimum required for the side of the pole without the cantilevered arms and conductors.⁸⁰ Therefore, the Company

⁷² Ex. 10 at 8 (Asah Direct).

⁷³ Ex. 10 at 8 (Asah Direct).

⁷⁴ Ex. 10 at 8 (Asah Direct).

⁷⁵ Ex. 10 at 8-9 (Asah Direct).

⁷⁶ Ex. 10 at 8-9 (Asah Direct).

⁷⁷ Ex. 10 at 9 (Asah Direct).

⁷⁸ Ex. 1A at 35, 37 (Application); Ex. 172 (Four Diagrams of Pole-Structure Design); Asah 7 Vol. 81-82.

⁷⁹ Asah 7 Vol. 83; Galloway 13 Vol. 12-13.

⁸⁰ Asah 4 Vol. 83-84; Galloway 13 Vol. 12-13.

will seek to acquire up to 50 feet of right-of-way, 25-feet on either side of the transmission structure, for access and maintenance of structures.⁸¹

Route D is an underground design along the northern half of East 28th Street between Hiawatha West and Midtown North.⁸² Xcel Energy is requesting a route width of 80 feet.⁸³

Route E2 begins at an undetermined Hiawatha Substation site and crosses both Hiawatha Avenue and the Hiawatha Light Rail Line near the intersection of East 28th Street.⁸⁴ The transmission line route then travels north along the west side of Hiawatha Avenue South toward Interstate 94 (“I-94”).⁸⁵ At I-94, the route turns west and follows along the south side of I-94 toward Interstate 35W (“I-35W”).⁸⁶ At I-35W, the route turns south and follows the east side of I-35W until approximately West 26th Street. The route then turns west, crosses I-35W, turns south, and continues along the west side of I-35W until 28th Street. The route then crosses I-35W once more to connect to the Midtown area but no substation location has been identified for this western endpoint. For Route E2, Xcel Energy is requesting a route width of 970 feet.⁸⁷

⁸¹ Asah 2 Vol. at 197.

⁸² Ex. 10 at 9 (Asah Direct).

⁸³ Ex. 10 at 9 (Asah Direct).

⁸⁴ Ex. 10 at 9 (Asah Direct).

⁸⁵ Ex. 10 at 9 (Asah Direct).

⁸⁶ Ex. 10 at 9 (Asah Direct).

⁸⁷ Ex. 10 at 9 (Asah Direct).

E. Xcel Energy’s Preferred Midtown Substation site—Midtown North

For the Midtown Substation, Xcel Energy prefers the Midtown North site which is located on an area that includes the following property addresses: 2840 Oakland Avenue (former Xcel Energy Oakland Substation site); 2833 Portland Avenue (condemned triplex); and 2841 Portland Avenue (vacant Brown Campbell land, formerly owned by Xcel Energy).⁸⁸

The proposed substation at the Midtown North location would be high profile design covering a fenced area of approximately 145 feet x 238 feet, or 0.8 acres.⁸⁹ Given the site location, the substation will be landscaped on the south, east, and west sides as practical and walled on four sides with 20 foot wall with an architecturally pleasing design.⁹⁰ A retaining wall may also be required along the Midtown Greenway.⁹¹ Solid wood gates would be placed on both Oakland Avenue and Portland Avenue to allow access for construction and maintenance.⁹² In response to requests from community groups and community plans for a promenade on the north side of the Midtown Greenway Xcel Energy proposes to design the substation wall and layout to accommodate a walkway installation along the south side of the substation.⁹³

⁸⁸ Ex. 10 at 19 (Asah Direct).

⁸⁹ Ex. 20 at 9 (McNelly Direct).

⁹⁰ Ex. 20 at 9 (McNelly Direct).

⁹¹ Final Environmental Impact Statement (“FEIS”) at 48, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁹² Ex. 20 at 9 (McNelly Direct).

⁹³ Ex. 20 at 9 (McNelly Direct). It should be noted that the final elevation and location of the space for the walkway will be determined during the detailed design

F. Other Midtown Substation sites

In the Application, Xcel Energy identified the Midtown South site, located across the Midtown Greenway from the Midtown North site, as an alternate site for the Midtown Substation.⁹⁴ The Midtown South site is located on an area that includes 2907 Portland Avenue and 2915 Portland Avenue.⁹⁵ Both of these properties are currently owned and occupied by Brown Campbell Enterprises.

Two other sites for the Midtown Substation were proposed by the ATF and included in the EIS Scoping Process.⁹⁶ Mt-28S is located on a parking lot owned by Wells Fargo on the east side of I-35W, bordered to the north by East 28th Street and to the south by East 29th Street.⁹⁷ This site is currently used as a parking lot by Wells Fargo employees.⁹⁸ Mt-28N, another site proposed by the ATF, is located on private green space owned by Wells Fargo at 2701 Wells Fargo Way on the east side of I-35W.⁹⁹

G. Xcel Energy's Preferred Hiawatha Substation site—Hiawatha West

Xcel Energy's preferred site for the Hiawatha substation is the Hiawatha West site.¹⁰⁰ This site is on the east side of Hiawatha Avenue north of the intersection of

phase. Xcel Energy is not constructing this walkway as part of this Project rather it is only providing space for construction of the walkway.

⁹⁴ Ex. 1A at 31 (Application).

⁹⁵ Ex. 1A at 31 (Application).

⁹⁶ Ex. 138 at 2, 5 (EIS Scoping Decision).

⁹⁷ FEIS at 8, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁹⁸ Ex. 127 at 6 (Olson Direct).

⁹⁹ Ex. 127 at 7 (Olson Direct).

¹⁰⁰ Ex. 20 at 6 (McNelly Direct).

Hiawatha Avenue and East 28th Street.¹⁰¹ This site is currently vacant land owned by Mn/DOT.¹⁰² Mn/DOT has no plans for this site and has indicated a willingness to sell this land for use as a substation site.¹⁰³

Community groups have planted trees and shrubs on portions of the Hiawatha West and have expressed interest in developing this site into greenspace.¹⁰⁴ Initially, Xcel Energy proposed to build a low-profile substation at the Hiawatha West site but in response to requests from community groups during the evidentiary hearing for increased green space around the substation, the Company analyzed a high-profile design.¹⁰⁵ The substation with a high-profile design would be surrounded on all sides by 20-foot architecturally designed walls.¹⁰⁶

H. Other Hiawatha Substation sites

In the Application, Xcel Energy identified the Hiawatha East site, located on land adjacent to the Hiawatha West site to the northeast at 2650 Minnehaha Avenue,

¹⁰¹ Ex. 20 at 3 (McNelly Direct).

¹⁰² Ex. 1A at 24 (Application). The Soo Line Railroad and Zimmer Davis also own small portions of this site. (Asah 13 Vol. 93-94).

¹⁰³ Ex. 11 at 2 (Asah Rebuttal).

¹⁰⁴ Ex. 36 at 13 (Springer Direct). The Mn/DOT Community Roadside Landscape Partnership Program provides resources for the plantings. The Mn/DOT program did not provide an interest of the property to the community and can be cancelled with 90-days notice. FEIS at 113-114, eDocket Document No. 20106-51326-01 (June 7, 2010).

¹⁰⁵ McNelly 6 Vol. 100; Asah 13 Vol. 70-72.

¹⁰⁶ McNelly 6 Vol. 101. The Hiawatha Substation with a low-profile design would be constructed with 12-foot high architecturally-designed walls. FEIS at 79, eDocket Document No. 20106-52326-01 (June 7, 2010).

as an alternate site for the Hiawatha Substation.¹⁰⁷ The Hiawatha East site is currently occupied by a light industrial business, Crew2, Inc.¹⁰⁸ In the Application, Xcel Energy also identified the Hiawatha Zimmer Davis site, located east of the Hiawatha West Site at 2700 Minnehaha Avenue, as a potential expansion area for the Hiawatha Substation.¹⁰⁹ In pre-filed testimony, Xcel Energy confirmed that there are no current plans to expand the Hiawatha Substation and stated that the Hiawatha Zimmer Davis site should be considered as another possible alternate site for the Hiawatha Substation.¹¹⁰

In the Application, the Zimmer Davis site was identified as a potential location for a future substation expansion to accommodate a 345 kV transmission line into the Hiawatha Substation.¹¹¹ The potential for a 345 kV line was then removed from the Company's 10-year planning horizon and the Company considered the Zimmer Davis site as a primary site.¹¹²

Five other substation sites proposed in the EIS process were also evaluated in this proceeding, referred to as Hiawatha G1-G5. Hiawatha G1 is currently vacant land located on the southwest corner of East 26th Street and Minnehaha Avenue at 2600 Minnehaha Avenue.¹¹³ Hiawatha G2 is a paved lot west of 21st Avenue South,

¹⁰⁷ Ex. 20 at 3 (McNelly Direct).

¹⁰⁸ Ex. 1A at 27 (Application).

¹⁰⁹ Ex. 1A at 12 (Application).

¹¹⁰ Ex. 20 at 4 (McNelly Direct); Ex. at 11 at 1-2 (Asah Rebuttal).

¹¹¹ Ex. 10 at 6 (Asah Direct).

¹¹² Ex. 26 at 5 (Standing Direct); Ex. 10 at 6 (Asah Direct).

¹¹³ Ex. 20 at 5 (McNelly Direct).

south of a building on East 28th Street.¹¹⁴ Hiawatha G3 is a long narrow strip of land adjacent to and east of Hiawatha Avenue at 2803 Hiawatha Avenue.¹¹⁵ Hiawatha G4 is the site of the former Hiawatha Substation owned by Xcel Energy and is located north of 32nd Street.¹¹⁶ This proposed site also includes adjacent vacant land owned by Mn/DOT and the Soo Line Railroad.¹¹⁷ Hiawatha G5 is a long narrow strip of land adjacent to and east of Hiawatha Avenue and the light rail tracks, and north of 26th Street East.¹¹⁸

VI. APPLICATION OF RELEVANT CRITERIA

A. The Statutes and Rules

1. Power Plant Siting Act

The Power Plant Siting Act statute requires that route permit determinations “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.” Minn. Stat. § 216E.03, subd. 7. The statute then identifies twelve factors to guide the Commission’s route designations:

- (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

¹¹⁴ Ex. 20 at 5 (McNelly Direct).

¹¹⁵ Ex. 20 at 5 (McNelly Direct).

¹¹⁶ Ex. 20 at 5 (McNelly Direct).

¹¹⁷ Ex. 20 at 5 (McNelly Direct).

¹¹⁸ Ex. 20 at 5 (McNelly Direct).

values, including 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;¹¹⁹

(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 subdivision 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 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;

¹¹⁹ Subfactor 4 is not applicable since Xcel Energy is not proposing to site a large electric generating plant.

- (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.

2. Minn. R. 7850.4100 Factors

The Commission shall not issue a route permit that violates the standards and criteria established by Minn. Stat. § 216E.03 and the Commission's rules. Minn. R. 7850.4000. The relevant Commission rule is Minn. R. 7850.4100, which establishes criteria and factors mirroring the criteria established by Minn. Stat. § 216E.03, subd. 7. The rule factors are as follows:

- 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;¹²⁰

¹²⁰ This criterion is not applicable here since it only applies to power plant siting.

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

VII. ROUTE A, EITHER OVERHEAD OR UNDERGROUND, SATISFIES ALL ROUTING CRITERIA

To be granted a Route Permit, an applicant must demonstrate that the criteria of both the statutes and rules have been satisfied. In many respects the statutory criteria and the Commission's rules are essentially the same. Three of the statutory factors listed in Minn. Stat. § 216E.03, subd. 7(b), however, are not directly reflected in the factors listed in Minn. R. 7850.4100. *Compare* Minn. Stat. §§ 216E.03, subd. 7(b)(7) (evaluation of route alternatives), (5) (analysis of direct and indirect economic impacts), and (12) (consideration of issues raised by other agencies and local entities) with Minn. R. 7850.4100.

Rather than analyzing each of these factors for each of the routes under consideration here, a complete factor analysis is presented in Company's Findings of Fact. Instead, this brief focuses on demonstrating that Xcel Energy's preferred route, Route A, including the Hiawatha West and Midtown North substation sites, best meets all of the statutory and rule routing criteria and provides a comparison of Route A to other routes under consideration based on certain factors in dispute in this proceeding. Xcel Energy also addresses certain contested factors related specifically to Xcel Energy's preferred substation locations, Hiawatha West and Midtown North.

A. Effects on Human Settlement

Minnesota Rule 7850.4100(A) requires consideration of the effects Route A may have on human settlement, including displacement of residences and businesses; noise created during construction and by operation of the Project; and impacts to aesthetics, cultural values, recreation, and public services.

Compared to the other routes under consideration, Route A impacts the fewest number of landowners. There are approximately 54 landowners located on or adjacent to the proposed right-of-way for Route A—Alignment A1, 52 landowners located adjacent to the proposed right-of-way for Route A—Alignment A2, and three landowners (HCRRA, the State, and Xcel Energy) located on the proposed right-of-way for Route A—Alignment A3.¹²¹ This is compared to the 483 landowners located on or adjacent to the proposed right-of-way for Route B, 312 landowners located on or adjacent to the proposed right-of-way for Route C, 180 landowners located on or adjacent to the proposed right-of-way for Route D, and 140 landowners located on or adjacent to the proposed right-of-way for Route E2.¹²²

1. Displacement

Adequate right-of-way must be acquired for safe operation of a transmission line. Displacement can be required when a residence or business is located within the required right-of-way. As explained by Xcel Energy’s transmission construction and design engineer, Benjamin Gally, the amount of right-of-way required is dependent on the National Electric Safety Code (“NESC”) clearance requirements plus the area needed by the Company for access and maintenance of the line.¹²³ NESC clearance

¹²¹ Ex. 10 at Schedule 3 at 2 (Asah Direct). As discussed below Route E2 would require a greater displacement than the other routes.

¹²² Ex. 10 at Schedule 3 at 2 (Asah Direct).

¹²³ Gally 13 Vol. 10.

requirements are dependent on the type of structure, structure arm lengths, conductor blowout, and a specified NESC clearance requirement amount.¹²⁴ The right-of-way required for the double-circuit overhead design for Route A—Alignment A1 is 50 feet or 25 feet on each side of the structure.¹²⁵

The right-of-way for an underground design is determined by the width of the underground duct banks plus the amount needed for access and maintenance of the underground lines. The amount of right-of-way required for the underground design for Route A—Alignment A2 and A3 is 30 feet or 15 feet on each side of the transmission line centerline.¹²⁶

No displacement is anticipated if the Project is constructed along Route A—Alignment A1, A2, or A3.

2. Noise

Overhead transmission conductors produce noise under certain conditions. The level of noise depends on conductor conditions, voltage level and weather conditions. The overhead transmission line along Route A—Alignment A1 will be designed to be within noise limits established by the Minnesota Pollution Control Agency (“MPCA”) and the City of Minneapolis.¹²⁷ Underground transmission lines along Route A—Alignment A2 and A3 do not present noise concerns.

3. Aesthetics

The aesthetic impacts of Route A differ depending on the construction method used. For the overhead design, the proposed double circuit transmission structures

¹²⁴ Gally 13 Vol. 12.

¹²⁵ Gally 13 Vol. 12; Ex. 172 (Structure diagrams).

¹²⁶ Ex. 18 at 10 (Gally Direct).

¹²⁷ Ex. 10 at Schedule 3 at 2 (Asah Direct).

will be between 75 and 115 feet high and have spans of approximately 500 feet, although spans can be made as short as 300 feet and as long as 1,000 feet to minimize direct aesthetic impacts (i.e., avoid placement of poles directly in front of buildings).¹²⁸

The Midtown District is characterized by industrial and transportation associations, so overhead transmission structures would not be entirely out of character.¹²⁹ Still, the transmission structures would introduce modern features to the Midtown Greenway given the size and scale of the proposed structures compared to the existing buildings and distribution lines in the area.¹³⁰ The majority of the building structures in the Project Area range from one to three stories; however, taller commercial and residential buildings are present.¹³¹ The tallest building in the Project Area is the central tower of the Midtown Exchange building, which is 16 stories (approximately 210 feet) in height.¹³²

To mitigate the aesthetic impacts to historic resources, the Company can construct the proposed transmission lines on rust colored steel structures as opposed to galvanized steel pole structures.¹³³ In addition, if Route A—Alignment A1 is

¹²⁸ Ex. 18 at 5 (Gallay Direct).

¹²⁹ *See e.g.*, FEIS at 326, eDocket Document No. 20106-51326-01 (June 7, 2010) (“While the use of the Greenway is transitioning to transportation and residential uses, the Greenway still conveys a historical industrial character. This, along with the Greenway’s approximate width of 100 feet, may not be incongruent with the scale and material of the transmission structures.”).

¹³⁰ Ex. 10 at 13 (Asah Direct).

¹³¹ Ex. 1A at 80 (Application).

¹³² Ex. 1A at 80 (Application).

¹³³ Ex. 10 at 13 (Asah Direct); Gallay 4 Vol. 117-118.

selected, the Company would re-locate the existing distribution lines along 29th Street and place them underground.¹³⁴

The underground design for Route A would have the least visual impacts .¹³⁵

4. Recreation

The Midtown Greenway is currently used as a 5.7-mile shared bicycle and pedestrian path.¹³⁶ Depending on the alignment, Route A either runs along the top of the slope of the Midtown Greenway at street level (Route A—Alignments A1 and A2) or within the Midtown Greenway itself (Route A—Alignment A3).

If the overhead design is selected for Route A, Route A—Alignment A1, parties have expressed concern that the facilities will decrease the popularity of this trail.¹³⁷ This concern is not supported by the record evidence. Bicycle paths adjacent to transmission facilities are not uncommon and there is no study or expert opinion to support the claim that bike path use will be reduced if overhead lines are installed.¹³⁸

If the Project is placed underground within the Greenway on Route A—Alignment A3, parties have expressed concern that this alignment will result in closures or disruptions of the bike/pedestrian path during construction and maintenance of the lines.¹³⁹ Such disruptions or closures will be minimized by

¹³⁴ Ex. 1A at 81 (Application).

¹³⁵ Ex. 10 at 13 (Asah Direct).

¹³⁶ Ex. 1A at 84 (Application).

¹³⁷ Ex, 36 at 16 (Springer Direct).

¹³⁸ Ex. 1A at 85 (Application); Ex. 1B at Appendix B.15 (Application Appendices).

¹³⁹ Ex. 36 at 4 (Springer Direct).

creating an alternate path for bicyclists or pedestrians during these times.¹⁴⁰ This alternate path would most likely be on the southern portion of the Greenway.¹⁴¹

5. Public Services

a. Compatibility with future transit

A distinct aspect of Route A is that it is located adjacent to or within a historic transportation corridor. The CM&St.P Historic District was constructed as a depressed railroad corridor between 1912 and 1916.¹⁴² In 1993, HCRRA acquired this railroad corridor for future transit use.¹⁴³ Currently, this corridor (known as the Midtown Greenway) is being utilized by the City of Minneapolis for a commuter bicycle and pedestrian trail.¹⁴⁴

Hennepin County indicated that its near term plan (0-5 years) for the Midtown Greenway is to continue allowing the City of Minneapolis to operate a commuter bicycle and pedestrian trail and to preserve this area for future transit use (more than 5 years).¹⁴⁵ At this time, Hennepin County has neither determined the form of this future transit (rapid bus, light rail, or street car transit) nor the specific time frame for

¹⁴⁰ Ex. 19 at 6 (Gallay Rebuttal).

¹⁴¹ Gallay 4 Vol. 127.

¹⁴² Ex. 15 at Schedule 10 at 57 (Stark Surrebuttal).

¹⁴³ Ex. 102 at 3 (McLaughlin Direct); Ex. 105 at 6 (Michalko Direct); Michalko 9 Vol. 104.

¹⁴⁴ Michalko 9 Vol. 103.

¹⁴⁵ Ex. 10 at 13 (Asah Direct); Ex. 18 at Schedule 9 (Gallay Direct).

transit implementation.¹⁴⁶ However, light rail is unlikely while streetcar transit is still being considered.¹⁴⁷

Several studies have been conducted regarding the feasibility of installing different forms of transit in the Midtown Greenway. These studies include: (1) the 29th Street and Southwest Corridors Bus Feasibility Study-February 2000;¹⁴⁸ (2) the Minneapolis Streetcar Feasibility Study, Final Report-2007; and (3) the 29th Street Vintage Rail Trolley Study.¹⁴⁹ All of these transit plans call for transit to be constructed and operated within the trench of the Midtown Greenway with transit stations located at several locations along the route to provide access to the street above.¹⁵⁰

Xcel Energy's transmission engineer, Benjamin Gally, reviewed each of these studies and determined that Xcel Energy will be able to construct the proposed transmission lines, overhead or underground, in such a manner that they do not interfere with future transit use within the Greenway.¹⁵¹ Route A—Alignment A1 and

¹⁴⁶ Ex. 102 at 7 (McLaughlin Direct) (stating that HCCRA's plans for Greenway are "to use the right-of-way for light rail or other rail transit such as a street car line."); Ex. 105 at 12 (Michalko Direct) ("[I]t is unclear at this time how and what will be constructed for the transit project"); Michalko 9 Vol. 78 ("I do not believe that we [Hennepin County] have a specific timeline [regarding future transit].")

¹⁴⁷ Ex. 102 at 10 (McLaughlin Direct) ("The possibility of light rail is remote. The idea, however, of street car use is being actively considered.").

¹⁴⁸ While the title of this study relates only to bus transit, the actual study also examines the feasibility of light rail transit within the Greenway. *See* Ex. 18 at Schedule 10.

¹⁴⁹ Ex. 18 at Schedules 10-12.

¹⁵⁰ Ex. 18 at Schedules 10-12.

¹⁵¹ Ex. 18 at 14 (Gally Direct); Gally 4 Vol. at 65-67.

Route A—Alignment A2 are primarily located outside of the trench area, where Hennepin County is expected to construct any transit facilities.¹⁵² Route A—Alignment A3 is located along the bottom of the Greenway, generally north of the paved bike/pedestrian path. Given that all of the studies to date place future transit to the south of and to maintain the usability of the bike/pedestrian path, it is highly unlikely that construction along Route A – Alignment A3 would interfere with future transit.¹⁵³

All of the conceptual transit studies also call for construction of transit stations along the Greenway, one at Cedar Avenue and another at Chicago Avenue.¹⁵⁴ While no construction details are given in the studies as to the exact location and design of these stations, it can be reasonably assumed the station will be at the bottom of the trench, be similar in design to the existing downtown stations on the Hiawatha light rail line, and include some type of pedestrian access at the street level.¹⁵⁵ For the overhead design option, pole locations and span lengths can be adjusted to accommodate these transit station locations.¹⁵⁶ For either underground options,

¹⁵² Ex. 18 at 14 (Gallay Direct).

¹⁵³ Ex. 105 at 7 (Michalko Direct); Ex. 18 at 15 (Gallay Direct); Michalko 9 Vol. 96 (stating that one of Hennepin County’s objectives in developing future transit is to avoid moving the bike/pedestrian path).

¹⁵⁴ Ex. 18 at Schedule 10 at Figure 12 (Gallay Direct). It should be noted that the Midtown Greenway Land Use & Development Plan calls for transit stations located at Bloomington Avenue and Chicago Avenue. (Ex. 40 at 48 (Springer Direct Schedule 4)).

¹⁵⁵ Ex. 18 at 15 (Gallay Direct).

¹⁵⁶ Ex. 18 at 15 (Gallay Direct).

Route A—Alignment A2 and A3, the lines could be constructed under the stations provided sufficient details of the station designs are available.¹⁵⁷

The Company has committed to work with Hennepin County to reduce the risk that overhead or underground transmission facilities will need to be relocated to accommodate new transit facilities.¹⁵⁸ The more detailed information that can be provided by the County during the design phase of this Project about the expected method and location of future transit, the less likelihood there is for future conflict.¹⁵⁹ Even if transit plans change in the future after the transmission facilities are constructed, the new transit facilities could be constructed around the existing transmission facilities; relocation of the transmission facilities is also an option.¹⁶⁰

b. Compatibility with future bridge repair or replacement

Much of the infrastructure, such as bridges and retaining walls, along the Greenway was built during construction of the grade separation and are in need of significant repair or replacement.¹⁶¹ Hennepin County expressed concern that its ability to use overhead cranes for the repair or replacement of these structures will be compromised if overhead transmission structures are placed along Route A—Alignment A1.¹⁶²

While safe working clearances between the overhead cranes and the lines would need to be maintained during construction, overhead cranes could still be used along

¹⁵⁷ Ex. 18 at 16 (Gallay Direct).

¹⁵⁸ Gallay 3 Vol. 155-56.

¹⁵⁹ Ex. 19 at 4 (Gallay Rebuttal); Michalko 9 Vol. 98.

¹⁶⁰ Ex. 19 at 4 (Gallay Rebuttal); Michalko 9 Vol. 97-98.

¹⁶¹ Ex. 105 at 9 (Michalko Direct).

¹⁶² Ex. 105 at 9 (Michalko Direct).

the Greenway even if Route A—Alignment A1 is selected.¹⁶³ In addition, if there is a concern that safe clearances may not be maintained during construction, Xcel Energy could de-energize segments of the transmission line for the short duration when the crane is needed.¹⁶⁴

B. Effects on Public Health and Safety

Minnesota Rule 7850.4100(B) requires consideration of the Project's effect, specifically along Route A, on public health and safety.

1. Construction and Operation of Facilities

The evidence on the record demonstrates that Xcel Energy has identified and will implement the appropriate safeguards during construction and operation to avoid any impacts to human health. The Project will be designed in compliance with local, state, NESC and Company standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and right-of-way widths.¹⁶⁵ The Company construction crews and/or contract crews will comply with local, state, NESC, and Company standards regarding installation of facilities and standard construction practices. Company-established and industry safety procedures will be followed during and after installation of the transmission lines.¹⁶⁶ This will include clear signage during all construction activities.¹⁶⁷

Several parties have raised concerns about the ability of the proposed transmission structures to withstand extreme weather conditions such as the tornado

¹⁶³ Ex. 19 at 5 (Gallay Rebuttal).

¹⁶⁴ Ex. 19 at 5 (Gallay Rebuttal).

¹⁶⁵ Ex. 1A at 71 (Application).

¹⁶⁶ Ex. 1A at 71 (Application).

¹⁶⁷ Ex. 1A at 71 (Application).

that struck south Minneapolis in August 2009.¹⁶⁸ Xcel Energy's transmission structures are designed to meet or exceed the requirements of the NESC and to withstand extreme wind and weather conditions normally experienced in their areas of installation.¹⁶⁹ In the past five years, there have been no steel pole failures on the Xcel Energy system in Minnesota due to tornados or other storm conditions.¹⁷⁰ In the unlikely event that structure or conductor does fall to the ground, the proposed transmission lines will be equipped with protective devices that will de-energize the line.¹⁷¹

2. EMF

There were several comments made regarding the potential impacts of electric and magnetic fields ("EMF") on public health.¹⁷² The possible impact of EMF exposure on human health has been investigated by public health professionals for the past several decades.¹⁷³ The general consensus is that electric fields pose no human risk.¹⁷⁴ The main research on magnetic fields began in 1979.¹⁷⁵ Since that time, epidemiological and toxicological studies have shown only weak associations between

¹⁶⁸ Ex. 109 at 8 (Schedin Direct).

¹⁶⁹ Ex. 18 at 5 (Gallay Direct).

¹⁷⁰ Ex. 18 at Schedule 2 (Gallay Direct).

¹⁷¹ Ex. 1A at 71 (Application).

¹⁷² Ex. 143 at 90 (Public Comment from Kevin Loeke).

¹⁷³ Ex. 18 at 17 (Gallay Direct); Ex. 1A at 63 (Application).

¹⁷⁴ Ex. 1A at 63 (Application).

¹⁷⁵ Ex. 18 at 17 (Gallay Direct).

magnetic field exposure and health risks and none has established a causal relationship.¹⁷⁶

The potential impacts of EMF on human health were also recently at issue in the route permit proceeding for the Brookings – Hampton 345 kV transmission line. In that proceeding, Administrative Law Judge Richard Luis found that:

The absence of any demonstrated impact by EMF-ELF exposure supports the conclusion that there is no demonstrated impact on human health and safety that is not adequately addressed by the existing State standards for such exposure. The record shows that the current exposure standard for EMF-ELF is adequately protective of human health and safety.¹⁷⁷

There is no federal standard for transmission line electric or magnetic fields.¹⁷⁸ Additionally, there are no Minnesota regulations pertaining to EMF exposure.¹⁷⁹ However, the Commission has imposed a maximum electric field limit of 8 kV/m measured at one meter above the ground at the edge of the right-of-way.¹⁸⁰ The calculated electric fields for both the overhead and underground design for Route A are significantly less than the maximum limit of 8 kV/m that has been imposed by the Commission.¹⁸¹

¹⁷⁶ Ex. 18 at 17 (Gallay Direct).

¹⁷⁷ ALJ Findings of Fact, Conclusions and Recommendation, *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474 (April 22, 2010).

¹⁷⁸ Ex. 1A at 63 (Application).

¹⁷⁹ Ex. 1A at p. 66 (Application).

¹⁸⁰ Ex. 1A at 63 (Application).

¹⁸¹ Ex. 1A at 67 (Application).

C. Effects on Land-Based Economies and Direct and Indirect Economic Impacts

The next routing factor, Minn. R. 7850.4100(C), requires consideration of Route A's effects on land-based economies, specifically agriculture, forestry, tourism, and mining. As the Project is located in a highly developed urban area, there are no existing commercial agriculture, forestry, or mining activities that occur within the Project Area.¹⁸² There are several tourist attractions located in the Project Area, including the Midtown Global Market along Route A.¹⁸³ While the overhead transmission lines will be visible from the Midtown Global Market, Route A will not directly affect this tourist attraction.¹⁸⁴

A related statutory routing factor, Minn. Stat. 216E.03, subd. 7(b)(5), requires an analysis of direct and indirect economic impacts of the proposed routes. The record demonstrates that the proposed Project will provide positive economic benefits to the Project Area as it will provide the necessary electrical support for future development. In addition, there are no studies or other direct evidence to support claims that overhead lines will hamper future development.

1. Impact on Development in Project Area

There are several small area plans, which are subsets of the City of Minneapolis's comprehensive plan, that articulate future land use plans for the Project Area.¹⁸⁵ These plans include (1) the Midtown Greenway Land Use and Development Plan; (2) the Midtown Minneapolis Land Use and Development Plan; (3) the Phillips

¹⁸² Ex. 1A at 87 (Application).

¹⁸³ Ex. 10 at Schedule 3 at 4 (Asah Direct).

¹⁸⁴ Ex. 10 at Schedule 3 at 4 (Asah Direct).

¹⁸⁵ Ex. 97 at 3-4 (Mogush Direct).

West Master Land Use Plan; (4) the Seward Longfellow Greenway Area Land Use and Predevelopment Study; and (5) the Hiawatha/Lake Station Area Master Plan.¹⁸⁶ Minneapolis's Principal City Planner, Paul Mogush, testified that each of these five land plans calls for increased development along the Midtown Greenway.¹⁸⁷

Given the plans for increased commercial, industrial, and residential development in this area, additional electrical capacity will be needed to serve this development.¹⁸⁸ Once in operation, the Project will provide this additional electrical capacity in the Midtown area.¹⁸⁹ This additional capacity will provide the electricity necessary to serve new residential developments as well as new and expanded commercial businesses and industry within the area and will provide a more robust electric distribution system that will minimize the risk of brownouts and temporary losses of power.¹⁹⁰

While the Project is needed to meet the increased electrical needs associated with anticipated development, the City of Minneapolis and several community groups, including Midtown Greenway Coalition, have suggested that overhead transmission lines will make the area less desirable for developers.¹⁹¹ Actual past experience in Minnesota indicates that the construction of high voltage transmission lines does not

¹⁸⁶ Ex. 40 (Midtown Greenway Land Use and Development Plan); Ex. 85 (Midtown Minneapolis Land Use and Development Plan); Ex. 86 (Phillips West Master Land Use Plan); Ex. 87 (Seward Longfellow Greenway Area Land Use and Predevelopment Study); Ex. 88 (Hiawatha/Lake Station Area Master Plan).

¹⁸⁷ Mogush Vol. 8 at 108-116.

¹⁸⁸ Ex. 40 (Midtown Greenway Land Use Plan).

¹⁸⁹ Ex. 23 at 8 (Zima Direct).

¹⁹⁰ Ex. 23 at 8 (Zima Direct).

¹⁹¹ *See e.g.*, Ex. 91 at 13 (Berkholtz Direct); Ex. 36 at 17 (Springer Direct).

hamper future development. Specifically, evidence on the record demonstrates that certain residential developments in Brooklyn Park, Eden Prairie, Edina, and Cedar Lake occurred either after or at the same time as the construction of high voltage transmission lines.¹⁹² While the population density of those areas is less than the Project Area, the existence of development in those areas after the installation of transmission lines evidences that development can co-exist with existing transmission lines.¹⁹³ The recent Coloplast headquarters development in Minneapolis is another example of commercial development which recently located near an existing high voltage transmission line.¹⁹⁴ Similarly, the Longfellow Station project is proposed just 14-feet away from the existing Elliott Park – Southtown 115 kV transmission line, demonstrating that developers are not deterred by proximity to transmission lines.¹⁹⁵

2. Impact on ability to obtain financing

The City of Minneapolis has alleged that not only will the proposed overhead lines hamper development but that the lines will hinder development because proximity to a transmission line may impact the ability of potential homeowners and developers to obtain financing through the Federal Housing Administration (“FHA”).¹⁹⁶ This assertion ignores the fact that there are guidelines regarding single family homes and transmission structures, that the close proximity to transmission

¹⁹² Exhs. 198 A-H; Asah 13 Vol. 56-66.

¹⁹³ Asah 13 Vol. 107-108.

¹⁹⁴ Ex. 188A-B (Photos of Coloplast headquarters); Berkholtz Vol. 8 at 194-195 (“Q: Are you aware of any issues relating to the development [of the Coloplast headquarters] due to its proximity to a transmission line? A: I am not.”).

¹⁹⁵ Asah 13 Vol. 90; Ex. 192 (Aerial photo of area of proposed Longfellow Station Apartments); Berkholtz 9 Vol. 43.

¹⁹⁶ Ex. 92 at 5 (Berkholtz Rebuttal).

lines is not an insurmountable barrier to obtaining this type of financing, and that FHA financing is only one of many financing options available.¹⁹⁷

The FHA provides mortgage insurance on loans made by FHA-approved lenders throughout the United States. FHA insures mortgages on single family and multi-family homes including manufactured homes and hospitals. Loans must meet certain requirements established by the U.S. Department of Housing and Urban Development (“HUD”) to qualify for FHA insurance.¹⁹⁸ The HUD has issued several guidelines and handbooks regarding the minimum requirements and eligibility standards for an FHA-insured mortgage.¹⁹⁹

For single family and multi-family homes, the guidelines generally provide that to qualify for an FHA-insured mortgage, the dwelling or related property improvement may not be located within the “engineering (designed) fall distance” of a transmission line pole.²⁰⁰ The term “fall distance” is not a term defined or utilized by the utility industry, by Xcel Energy or by federal statute or federal regulation.²⁰¹ The only definition for these terms is provided in HUD Handbook 4150.2 which states that “[f]or field analysis, the appraiser may use tower height as the fall distance.”²⁰²

For single family homes, the handbook for appraisers and the guidebook for mortgage professionals contain conflicting rules regarding the location of

¹⁹⁷ Sautter Vol. 13 at 73; *see also* Berkholtz 9 Vol. 51 (describing a financing option developed by the City of Minneapolis for the Muslim community); *see also* Pass 11 Vol. 144-145.

¹⁹⁸ FEIS at 224, eDocket Document No. 20106-51326-01 (June 7, 2010).

¹⁹⁹ Ex. 91 at 14 (Berkholtz Direct); Ex. 10 at 25 (Asah Direct).

²⁰⁰ Ex. 10 at 25 (Asah Direct).

²⁰¹ Ex. 10 at 25 (Asah Direct).

²⁰² Ex. 74 (Berkholtz Direct, Schedule 8).

transmission poles on FHA-insured property. The mortgage professionals' guidebook states that a home or related property improvements may not be within the "engineered fall distance" if the home is within a high voltage transmission line easement area.²⁰³ In contrast, the appraiser handbook for single family homes requires that the home or related property improvement be located outside the "engineered fall distance" of a transmission structure regardless of whether the home is located within the easement area.²⁰⁴

There is no evidence in the record that any homeowner was denied FHA financing because of a property's proximity to a transmission line. Xcel Energy is unaware of any instance where an FHA loan was denied for a single family home due to its proximity to a transmission line pole.²⁰⁵ In the past, Xcel Energy has addressed FHA's concerns regarding poles near multi-family and single-family homes by providing an assurance letter to FHA stating that the transmission line facilities were constructed according to all applicable codes and requirements.²⁰⁶ In addition, the homeowner or developer can request a waiver of the FHA guidelines related to the proximity of transmission line structures.²⁰⁷

The City of Minneapolis has pointed to the proposed Longfellow Station Apartment project, near 38th Street and Hiawatha Avenue, as an example of a multi-family development that is having difficulty obtaining FHA financing due to its

²⁰³ FEIS at 225, eDocket Document No. 20106-51326-01 (June 7, 2010) (citing HUD-FHA Single Family Housing, Homeownership Center Reference Guide at 1-18f).

²⁰⁴ Ex. 74 at 2-2(J) (Berkholtz Direct, Schedule 8).

²⁰⁵ Ex. 10 at 26 (Asah Direct).

²⁰⁶ Ex. 10 at 26 (Asah Direct).

²⁰⁷ Berkholtz 8 Vol. 162.

proximity to a high-voltage transmission line.²⁰⁸ The proposed Longfellow Station Apartments would be located approximately 14-feet from the Hiawatha–Southtown 115 kV line.²⁰⁹ A review of HUD’s correspondence with the developer indicates, however, that the proximity to the transmission line was only one of several reasons HUD has so far declined to finance the project.²¹⁰ For instance, the proposed development is located close to two heavily traveled roads and HUD determined that there were significant safety concerns given the inadequate separation between pedestrian and vehicular traffic.²¹¹ Even if the proximity of the transmission line was the only impediment to financing, the Longfellow Station developers could request relocation of the pole or could request a waiver from HUD.²¹²

D. Effects on Archaeological and Historic Resources

Minnesota Rule 7850.4100(D) requires consideration of the effects Route A will have on historic and archaeological resources. To assess the potential effects that construction of the Project along Route A may have on historic architectural resources and archaeological resources, Xcel Energy commissioned a “Cultural

²⁰⁸ Berkholtz Vol. 8 at 161-162.

²⁰⁹ Asah Vol. 13 at 90; Ex. 192 (Aerial photo of area of proposed Longfellow Station Apartments).

²¹⁰ Ex. 10 at Schedule 8 (Asah Direct); Ex. 187 (HUD Letters regarding Longfellow Station Apartments); Berkholtz Vol. 8 at 169-171 (“Q: Is it your understanding that all five noncompliance issues must either be waived or mitigated before the [Longfellow] project can proceed? A: Yes, that’s my understanding.”)

²¹¹ Ex. 10 at Schedule 8 at 1 (Asah Direct).

²¹² Asah Vol. 13 at 92.

Resources Analysis of Effects for the Xcel Energy Hiawatha Project” (“Effects Study”).²¹³

This Effects Study was prepared by William Stark who is uniquely well-qualified to perform this type of study given his prior experience assessing historic resources in the Project Area. In 2001, Stark, then an employee of The 106 Group, conducted a Phase I Architectural History Survey Summary Report for the Proposed Midtown Greenway for Hennepin County.²¹⁴ This report aimed at identifying properties within the area of potential effect (“APE”) that may be potentially eligible for listing on the National Register of Historic Places (“NRHP”).²¹⁵ Stark was also the principal investigator and report author of a Phase I and II Architectural History Survey Summary Report for the Proposed Midtown Greenway prepared by The 106 Group in 2002.²¹⁶ These reports were used to support the NRHP listing for the CM&St.P Historic District.²¹⁷ Along with Andrea Vermeer, Stark also completed the NRHP Registration Form for the CM&St.P Historic District in 2004 that resulted in the district being listed on the NRHP on June 1, 2005.²¹⁸

²¹³ Ex. 15 at 1 (Stark Surrebuttal). The Effects Study also evaluated the impact of five of the substation alternatives, Hiawatha West, Hiawatha East, Zimmer Davis, Midtown North, and Midtown South, on historic architectural resources and archaeological resources.

²¹⁴ Ex. 13 at 4 (Stark Direct).

²¹⁵ Ex. 13 at 4 (Stark Direct).

²¹⁶ Ex. 13 at 4 (Stark Direct).

²¹⁷ Ex. 13 at 4 (Stark Direct).

²¹⁸ Ex. 13 at 4 (Stark Direct).

1. Effects on Historic Resources

As part of the Effects Study, Stark (1) established an APE; (2) identified known historic properties; (3) conducted background research; (4) conducted a field assessment of each historic property; (5) assessed the effects to historic properties; and (6) applied any additional standards and guidelines specific to a property.²¹⁹

The APE for the Effects Study was defined as at least one block or 800 feet radius around Route A and the five substation alternative sites. After the APE was determined, historic resources within the APE were identified. For purposes of the Effects Study, historic properties were determined to be known properties listed on the NRHP, properties eligible for listing on the NRHP, properties locally designated by the Minneapolis Heritage Preservation Council or those identified on the City's 800 List.²²⁰ A total of seven properties in the APE met these criteria including: the South Side Destructor, the Sears, Roebuck Company building ("Sears Building"), the Avalon Theater, the Minneapolis Pioneers and Soldiers Cemetery ("Layman's Cemetery"), Zinsmaster Baking Company ("Zinsmaster"), a house at 2812-2814 11th Avenue South, and the CM&St.P Historic District.²²¹ After background research and a field assessment were complete, an assessment of potential effects to each historic property was made for each of the three Route A alignments.²²²

For Route A—Alignment A1, Stark concluded that no direct impacts to historic resources would result from construction of the Project along this overhead route but that this overhead design has the potential to cause indirect visual effects to

²¹⁹ Ex. 15 at 2 (Stark Surrebuttal).

²²⁰ Ex. 15 at 2 (Stark Surrebuttal).

²²¹ Ex. 15 at 2-3 (Stark Surrebuttal).

²²² Ex. 15 at 3 (Stark Surrebuttal).

two historic properties.²²³ Stark determined that Route A—Alignment A1 would have adverse visual and aesthetic impacts on the CM&St.P Historic District. These adverse visual and aesthetic impacts are the result of size and scale of the transmission structures compared to existing and historical utility lines.²²⁴ The two other historic experts that testified in this proceeding, City of Minneapolis witness Dr. Jack Byers and Hennepin County witness Greg Mathis, agreed that the proposed structures would create visual impacts.²²⁵ While these visual impacts would constitute adverse effects to the setting of the historic district and diminish some of its character-defining features, there is no evidence that these visual effects would make the property ineligible for listing on the NRHP.²²⁶ Stark also noted that these potential adverse visual effects of the transmission structures on the CM&StP Historic District could be mitigated by using different materials or finishes for the transmission structures such as wood or weathering steel materials.²²⁷ If Route A—Alignment A1 is selected, Xcel Energy has stated that self-weathering steel structures could be utilized to reduce the visual intrusion of these structures on the historic district.²²⁸

Stark also noted that adverse visual effects to the Zinsmaster building could result along Route A—Alignment A1 if a pole is placed at the southwest corner of Park Avenue and the railroad corridor thus obstructing important views of the

²²³ Stark found that the Hiawatha West, Hiawatha East, and Hiawatha Zimmer Davis will have no effect on the known historic resources. (Ex. 15 at Schedule 10 at 97 (Stark Surrebuttal)).

²²⁴ Ex. 15 at Schedule 10 at 69 (Stark Surrebuttal).

²²⁵ Ex. 96 at 14-15 (Byers Direct); Ex. 113 at 18-19 (Mathis Direct).

²²⁶ Ex. 15 at Schedule 10 at 98 (Stark Surrebuttal).

²²⁷ Ex. 15 at Schedule 10 at 98 (Stark Surrebuttal).

²²⁸ Ex. 12 at 2 (Asah Surrebuttal).

Zinsmaster building along Park Avenue. Stark stated that this impact could be eliminated by moving the transmission structure to the east away from Park Avenue.²²⁹ Xcel Energy committed to implementing this alternative placement in the final design if Route—Alignment A1 is selected by the Commission.²³⁰

Because Route A—Alignment A2 is an underground design, Stark concluded that substantial earth moving construction may be required and that this might result in excessive vibrations to adjacent historic properties, including the historic bridges of the CM&St.P Separation Historic District, the Sears building, and the Zinsmaster building.²³¹ Stark recommended that the bridges and buildings should be monitored during construction to ensure that historic properties are not damaged by these vibrations. While such damage is unlikely, Xcel Energy has committed to work with City and County engineers or other structural experts to determine appropriate evaluation and monitoring for the historic properties of concern.²³² Stark also concludes that Route A—Alignment A2 may also have a direct effect to historic retaining walls east of the 10th Avenue bridge, where the line transitions from 29th Street to the base of the trench, and to the retaining walls west of the 18th Avenue bridge, where the line transitions from the trench to the 29th Street grade.²³³ Xcel Energy will avoid destruction or removal of these historic retaining walls if Route A—Alignment A2 is selected.²³⁴

²²⁹ Ex. 15 at Schedule 10 at 98 (Stark Surrebuttal).

²³⁰ Ex. 12 at 1 (Asah Surrebuttal).

²³¹ Ex. 15 at Schedule 10 at 98 (Stark Surrebuttal).

²³² Ex. 12 at 3 (Asah Surrebuttal).

²³³ Ex. 15 at Schedule 10 at 99 (Stark Surrebuttal).

²³⁴ Ex. 12 at 2 (Asah Surrebuttal).

Similarly, for Route A—Alignment A3, the Effects Study determined that this underground alignment has the potential to cause adverse effects from vibrations created during construction on the historic bridges of the CM&St.P Separation Historic District, the Sears building, and the Zinsmaster building.²³⁵ Appropriate measures will be taken to monitor these vibrations so that impacts to historic resources are prevented.²³⁶

2. Effects on Archeological Resources

The potential impacts on archeological resources within the Project Area were first evaluated in the cultural resources assessment that was submitted along with the Application.²³⁷ This initial assessment, which examined Route A—Alignment A1 and A2, determined that discovery of intact pre-contact archaeological resources along these routes was unlikely for two reasons. First, the Project Area is a considerable distance from water sources or wetlands and does not exhibit any topographically prominent features.²³⁸ Second, because the proposed transmission lines will be constructed within existing right-of-ways, which had been disturbed through road construction and utility installation, any potential archeological resources would likely not be intact.²³⁹ Potential effects of Route A on archaeological resources, specifically streetcar lines and sewer lines, were further evaluated in the Effects Study.²⁴⁰

²³⁵ Ex. 15 at Schedule 10 at 99 (Stark Surrebuttal).

²³⁶ Ex. 12 at 3 (Asah Surrebuttal).

²³⁷ Ex. 1B at Appendix E (Application Appendices).

²³⁸ Ex. 16 at 3 (Bielakowski Direct).

²³⁹ Ex. 16 at 3 (Bielakowski Direct).

²⁴⁰ Ex. 15 at Schedule 10 at 19 (Stark Surrebuttal).

With regard to sewer lines, Andrew Bielakowski, the only archeologist who testified in this proceeding, clarified that not all old infrastructure facilities are considered archeologically significant.²⁴¹ In the case of sewers in Minneapolis, only the first sewer “boxes” made out of wood beginning in 1871 would be considered archeologically significant.²⁴² Given the Project Area was primarily developed in the 1890s, Bielakowski concluded that it is unlikely that these early sewer systems would have existed in the Project Area.²⁴³

With regard to streetcar rails, Bielakowski determined that potential impacts to streetcar rails will depend on the route and design of the proposed transmission line. Overhead transmission lines along Route A—Alignment A1 are unlikely to disturb abandoned streetcar rails because the transmission poles will be placed within the boulevard section of the streets while streetcar rail tracks were historically located within the center of streets.²⁴⁴ Underground lines, however, could potentially disturb abandoned rail tracks. Bielakowski testified that there are three locations where the proposed transmission lines if constructed along Route A—Alignment A2 could potentially cross abandoned rail tracks associated with streetcars.²⁴⁵ These locations are at below ground alternative crossings with Chicago, Bloomington, and Cedar Avenues.²⁴⁶ Route A—Alignment A3 would not impact abandoned streetcar rails

²⁴¹ Ex. 17 at 1 (Bielakowski Rebuttal).

²⁴² Ex. 17 at 1 (Bielakowski Rebuttal).

²⁴³ Ex. 17 at 4 (Bielakowski Rebuttal).

²⁴⁴ Ex. 17 at 2 (Bielakowski Rebuttal).

²⁴⁵ Ex. 17 at 2 (Bielakowski Rebuttal).

²⁴⁶ Ex. 17 at 2 (Bielakowski Rebuttal); Bielakowski Vol. 3 at 78.

because this alignment does not directly cross any of these City streets.²⁴⁷ Bielakowski noted, however, that the possibility of encountering intact streetcar tracks at these locations is remote because all of these streets have been resurfaced, upgraded and improved over the last century so it is unlikely that these lines would be intact.²⁴⁸ Even if intact streetcar tracks were discovered, Bielakowski testified that the archeological value of streetcar tracks in this area is very low because these particular streetcar lines have been well documented and are largely understood.²⁴⁹

E. Effects on Natural Environment

The next routing factor, Minn. R. 7850.4100(E), requires consideration of the Route A effects on the natural environment, including air quality resources, water quality resources, flora, and fauna.

1. Impacts of Overhead and Underground Construction

While environmental impacts associated with construction of an overhead transmission line are generally limited to the area around a particular pole placement, environmental impacts associated with underground construction are more significant and depend on the underground construction method that is employed.

Trenching is Xcel Energy's preferred method of underground construction because it is most easily controlled and cost effective.²⁵⁰ Trenching requires extensive soil disturbance for the entire length of the line.²⁵¹ If contaminated soils are uncovered during construction, appropriate measures will need to be taken to manage

²⁴⁷ Ex. 17 at 2 (Bielakowski Rebuttal).

²⁴⁸ Ex. 17 at 3 (Bielakowski Rebuttal).

²⁴⁹ Ex. 17 at 3 (Bielakowski Rebuttal).

²⁵⁰ Ex. 10 at 10 (Asah Direct).

²⁵¹ Ex. 10 at 10 (Asah Direct).

these contaminated soils.²⁵² Depending on the natural features in the Project Area, it may be necessary to shore up the trench for worker safety, dewater the trench due to the presence of shallow groundwater, backfill the trench with selective fill material to improve heat transfer, and to landscape/re-vegetate disturbed areas.²⁵³

With horizontal boring and the horizontal directional drilling (“HDD”) construction methods, potential impacts include the requirement for excavations and working areas at each end of the bore.²⁵⁴ These areas include temporary localized disturbance to soils and vegetation that can be mitigated through proper restoration. Another potential impact associated with horizontal boring and HDD is the escape of drilling mud into the environment as a result of a spill, tunnel collapse or the rupture of mud to the surface, commonly known as “frac-out.”²⁵⁵ The major risk of frac-outs is related to the potential release of drilling fluid.²⁵⁶

2. Air Quality

The only potential air emissions from an overhead transmission line along Route A—Alignment A1 are from corona and are limited.²⁵⁷ During construction of the proposed line, there will be limited emissions from vehicles and other construction equipment and fugitive dust from right-of-way clearing.²⁵⁸ As a result,

²⁵² Ex. 10 at 10 (Asah Direct).

²⁵³ Ex. 10 at 10 (Asah Direct).

²⁵⁴ Ex. 10 at 11 (Asah Direct).

²⁵⁵ Ex. 10 at 11 (Asah Direct).

²⁵⁶ Ex. 10 at 11 (Asah Direct).

²⁵⁷ Ex. 1A at 94 (Application).

²⁵⁸ Ex. 1A at 95 (Application).

temporary air quality impacts caused by construction-related emissions may occur.²⁵⁹ Given that underground construction along Route A—Alignment A2 and A3 will require more construction equipment and greater ground disturbance, construction related air emissions will be greater for these two proposed underground alignments.²⁶⁰

3. Water Resources

As there are no water bodies located within the Project Area, direct impacts to surface water resources are not anticipated for Route A.²⁶¹

4. Flora

Since Route A is located within public right-of-way, impacts on existing vegetation will be minor.²⁶² Impacts to trees will depend on the design option and alignment selected for Route A. For the overhead option, Route A—Alignment A1, trees may need to be removed depending on the placement of transmission structures.²⁶³ Trimming of existing trees will be limited though because most trees located underneath the proposed transmission line have already been trimmed down to accommodate existing distribution lines located along 29th Street.²⁶⁴ A small number of trees along Route A may be removed where it seems likely that the tree, due to age or health may fall on to the transmission structure.²⁶⁵ It is estimated that

²⁵⁹ Ex. 1A at 95 (Application).

²⁶⁰ Ex. 10 at Schedule 3 at 5 (Asah Direct).

²⁶¹ Ex. 1A at 95 (Application); Ex. 10 at Schedule 3 at 5 (Asah Direct).

²⁶² Ex. 1A at 96 (Application).

²⁶³ Ex. 1A at 96 (Application).

²⁶⁴ Ex. 1A at 96 (Application).

²⁶⁵ Ex. 1A at 96 (Application).

Route A—Alignment A1 would significantly impact or require removal of approximately five trees.²⁶⁶

For the underground alignments, Route A—Alignment A2 and A3, trees within the construction trench would be removed or significantly impacted prior to construction.²⁶⁷ It is estimated that Route A—Alignment A2 would significantly impact or require removal of approximately two trees if the transmission lines are placed under the boulevard along 29th Street.²⁶⁸ It is estimated that Route A—Alignment A3 would significantly impact or require removal of approximately four trees.²⁶⁹

5. Fauna

As the Project is located within a highly developed urban area, the fauna generally present within the Project Area are adapted to high levels of anthropogenic disturbance.²⁷⁰ Therefore, it is unlikely that the construction, operation and maintenance of the Project along Route A would have an effect on fauna present in the Project Area.²⁷¹

F. Effects on Rare and Unique Resources

Minnesota Rule 7850.4100(F) requires consideration of Route A effects on rare and unique resources. The Minnesota Department of Natural Resources (“MnDNR”) Natural Heritage Database was consulted to identify any rare or unique resources

²⁶⁶ Ex. 10 at Schedule 3 at 5 (Asah Direct).

²⁶⁷ Ex. 1A at 96 (Application).

²⁶⁸ Ex. 10 at Schedule 3 at 5 (Asah Direct).

²⁶⁹ Ex. 10 at Schedule 3 at 5 (Asah Direct).

²⁷⁰ Ex. 1A at 97 (Application).

²⁷¹ Ex. 1A at 97 (Application).

within the Project Area.²⁷² No known occurrences of rare or unique resources were identified along Route A or within the entire Project Area.²⁷³

G. Application of Various Design Considerations

Minnesota Rule 7850.4100(G) requires consideration of whether Route A applied design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity. Xcel Energy analyzed several design options for the proposed transmission lines and proposed the two 115 kV lines that are designed with sufficient capacity to meet both existing and anticipated distribution load in the Midtown area.²⁷⁴

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

This factor, which is set forth in Minn. R. 7850.4100(H), requires a showing regarding how Route A has used or paralleled existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries. The evidence on the record demonstrates that all three of the alignments for Route A follow existing right-of-way.²⁷⁵

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

Much like the presentation required by Minn. R. 7850.4100(H), Minn. R. 7850.4100(J) requires a showing regarding how Route A has used existing

²⁷² Ex. 1A at 98 (Application).

²⁷³ Ex. 1A at 100 (Application).

²⁷⁴ Ex. 26 at 3 (Standing Direct); Ex. 1A at 41 (Application).

²⁷⁵ Ex. 10 at Schedule 3 at 6 (Asah Direct).

transportation pipelines, electrical transmission systems or rights-of-way. Route A satisfies this criteria as it is located either adjacent to or within the Midtown Greenway, an existing transportation and utility corridor.²⁷⁶

J. Electrical System Reliability

Minnesota Rule 7850.4100(K) requires consideration of Route A on electrical system reliability. The Project is designed to provide increased electrical system reliability because it addresses feeder circuit overloads and service interruptions that have been experienced in south Minneapolis over the past decade. The specific Project configuration was determined based on several engineering studies. These studies concluded that two new distribution sources,²⁷⁷ i.e., transformers were needed in the Focused Study Area to ensure adequate system support.²⁷⁸ The two new substations will provide the required new distribution sources.²⁷⁹ One of these sources will be a new transformer that will be located at the Hiawatha Substation which will tap the existing Elliot Park–Southtown 115 kV transmission line, essentially creating two transmission sources into the Hiawatha Substation, one from Elliot Park Substation and one from Southtown Substation.²⁸⁰ The second distribution source will be a new transformer located at the Midtown Substation.²⁸¹ Accordingly, both the overhead and underground designs for Route A will meet the identified need for

²⁷⁶ Ex. 1A at 41 (Application); Ex. 10 at 10 (Asah Direct).

²⁷⁷ A “distribution source” is a term used to describe substation transformers with associated feeder circuits. (Ex. 24 at 2 (Zima Rebuttal)).

²⁷⁸ Ex. 1A at 16 (Application); Ex. 24 at 2 (Zima Rebuttal).

²⁷⁹ Ex. 24 at 2 (Zima Rebuttal).

²⁸⁰ Ex. 24 at 2 (Zima Rebuttal).

²⁸¹ Ex. 24 at 2 (Zima Rebuttal).

two new distribution sources and both will provide reliable power sources to the Midtown Substation and Hiawatha Substation.

Several parties have questioned the relative reliability of overhead transmission lines compared to underground lines by pointing out that underground lines have a lower incidence of outages.²⁸² While underground transmission lines are generally subject to fewer outages than overhead transmission lines, the repair times are much longer than overhead lines.²⁸³ Typical overhead line outages are repaired and back in service 10-24 hours after the outage event.²⁸⁴ In contrast, typical underground line outages are repaired and the line placed back in service two or three weeks after the outage event.²⁸⁵

Distribution Planning analyzed whether the decreased outage rate associated with underground transmission lines was needed to provide reliable electric service to the Project Area. Distribution Planning concluded the enhanced reliability of overhead transmission facilities compared to distribution feeders (one outage per 18 years vs. one to two outages each year) would meet area needs, would be more reliable than distribution solutions, and the additional reduction in outage frequency afforded by underground transmission facilities was determined not to be warranted.²⁸⁶

The reliability of the overhead design for Route A was also called into question by Hennepin County witness, Larry Schedin, who testified that the double circuit overhead design along Route A—Alignment A1 does not meet the North American

²⁸² Ex. 110 at 5 (Schedin Rebuttal); Ex. 111 at 1 (Schedin Surrebuttal).

²⁸³ Ex. 18 at 9 (Gallay Direct).

²⁸⁴ Ex. 18 at 9 (Gallay Direct).

²⁸⁵ Ex. 18 at 9 (Gallay Direct).

²⁸⁶ Ex. 25 at 2 (Zima Surrebuttal).

Electrical Reliability Corporation (“NERC”) criteria requiring two independent sources to the Midtown Substation.²⁸⁷ However, there is not a NERC requirement that the substation sources be on separate right-of-way. Moreover, NERC planning criteria, that would require transmission planners to consider the loss of both lines as a single contingency, do not apply because the two proposed transmission lines, whether overhead or underground, would be radial lines serving load from a single source.²⁸⁸ Consequently, these are not considered part of the Bulk Electric System and NERC planning criteria related to double circuit designs do not apply.²⁸⁹ Moreover, Xcel Energy engineers analyzed the use of double circuit structures and concluded that the proposed transmission facilities do not need to be located on separate right-of-way or underground to meet the Project needs.²⁹⁰ The two new lines will provide reliable power sources to the Midtown Substation and the Project will provide the necessary capacity for the Midtown area.²⁹¹ In the unlikely event of a simultaneous outage of both lines, the load at the Midtown Substation could, for a short period of time, be served by the distribution system components.²⁹²

²⁸⁷ Ex. 109 at 8 (Schedin Direct); Schedin 9 Vol. 198-200; Schedin 9 Vol. 186 (Schedin testified that Routes B and C would meet this criteria as both of these routes would be constructed on single-circuit structures).

²⁸⁸ Ex. 26 at 4 (Standing Direct).

²⁸⁹ Ex. 26 at 4 (Standing Direct).

²⁹⁰ Ex. 1A at D.4 at 5 (Application Appendices); Ex. 24 at 2 (Zima Rebuttal).

²⁹¹ Ex. 24 at 2-3 (Zima Rebuttal).

²⁹² Ex. 24 at 3 (Zima Rebuttal).

K. Costs of Constructing, Operating and Maintaining

1. Cost Comparison of Route A Alignments

Minnesota Rule 7850.4100(L) requires the provision of costs of constructing, operating, and maintaining the Project along Route A. The construction cost for Route A varies significantly depending on whether the line is constructed overhead or underground. For Route A—Alignment A1 (overhead) the estimated construction transmission line cost is \$2.8 million; for Route A—Alignment A2 the estimated transmission line construction cost is \$13.6 million; for Route A—Alignment A3 the estimated transmission line construction cost is \$12.7 million.²⁹³

2. Cost Allocation

The incremental increased cost between the overhead alignment and the two underground alignments is significant.²⁹⁴ While the issue of cost allocation is not part of a route permit proceeding such as this, Xcel Energy provided evidence and witness testimony regarding this issue in response to requests from several parties regarding how the incremental costs of undergrounding the proposed transmission lines will be allocated.

The means of cost recovery is dependent on the facilities classification as “Standard Facilities” or “Special Facilities” under the Company’s approved tariff,

²⁹³ Ex. 18 at 11 (Gallay Direct). These costs include materials, construction, right-of-way acquisition, site preparation, and Project management. Ex. 18 at 10 (Gallay Direct). Xcel Energy notes the FEIS provides transmission line costs for Route A which are inconsistent with those provide above. FEIS at Table 1-2, eDocket Document No. 20106-51326-01 (June 7, 2010). Xcel Energy is unclear how the FEIS Table 1-2 project costs were calculated.

²⁹⁴ The incremental cost assuming lowest aboveground (Route A—Alignment A1) to highest underground (Route D) is \$13,612,250. The incremental cost for Route A—Alignment A1 to A3 is \$9,974,00. FEIS at 54, eDocket Document No. 20106-51326-01 (June 7, 2010).

Minnesota Electric Rate Book-MPUC No. 2 (“Tariff”).²⁹⁵ The costs associated with Standard Facilities are recovered from all customers collectively through rates specified in the Company’s standard service tariffs.²⁹⁶ However, in those cases where a customer or group of customers wants the Company to provide Special Facilities at higher costs than that of Standard Facilities, the terms and conditions of the Company’s General Rules and Regulations apply.²⁹⁷ Generally, if a facility is a Special Facility, the difference in costs between the Standard Facility and the Special Facility (“Excess Expenditure”) is borne by the customer or group of customers who requested or required the Company to incur the Excess Expenditure. In all cases, the recovery is subject to the oversight of the Commission.²⁹⁸

While the City of Minneapolis, Hennepin County, and several other parties have stated that the incremental undergrounding costs should be spread across all Northern States Power Company’s ratepayers²⁹⁹ the determination of the appropriate cost allocation methodology is a Commission decision which will be made after full development of the record in this proceeding regarding all of the routing criteria, relevant impacts and the many unique challenges involved.³⁰⁰ If underground is the selected design option, the Commission will then decide whether undergrounding the proposed transmission facilities is a Special Facility or Standard Facility. Xcel Energy is prepared to build an overhead or underground design option consistent with the

²⁹⁵ Ex. 27 at 2 (Lehman Direct).

²⁹⁶ Ex. 27 at 2 (Lehman Direct).

²⁹⁷ Ex. 27 at 2-3 (Lehman Direct).

²⁹⁸ Ex. 27 at 3 (Lehman Direct).

²⁹⁹ Ex. 109 at 11 (Schedin Direct).

³⁰⁰ Lehman 7 Vol. at 173-174.

Commission's decision in this case. Xcel Energy will seek appropriate cost recovery for whichever design option is selected.

L. Unavoidable Adverse Human and Natural Environmental Effects

This factor, which is set forth in Minn. R. 7850.4100(M), requires Xcel Energy to identify the unavoidable adverse human and natural environmental effects which cannot be avoided if a Route Permit is issued for Route A. Xcel Energy recognizes that constructing the 115 kV line on the three alignments for Route A will lead to unavoidable adverse impacts, including physical impacts to land. The impacts for the two underground options, Route A—Alignments A2 and A3, will be greater than for the overhead option, Route A—Alignment A1, due to the greater ground disturbance required to install underground facilities.³⁰¹ For instance, if trenching is used to construct the underground facilities, this construction method requires extensive soil disturbance for the entire length of line.³⁰²

M. Irreversible and Irretrievable Commitments of Resources

Minnesota Rule 7850.4100(N), requires an identification of the irreversible and irretrievable commitments of resources that will result from Route A. The evidence on the record demonstrates that this Project will require few irreversible and irretrievable commitments of resources. Only construction resources, such as concrete, steel and hydrocarbon fuels, will be irreversibly and irretrievably committed to this Project.³⁰³ In sum, Route A, along either of the three proposed alignments, best satisfies the State routing criteria and should be selected for this Project. Route

³⁰¹ Ex. 10 at Schedule 3 at 7 (Asah Direct).

³⁰² Ex. 10 at 10 (Asah Direct).

³⁰³ Ex. 10 at Schedule 3 at 7 (Asah Direct).

A follows an existing railroad and utility corridor.³⁰⁴ Route A minimizes the length of the proposed transmission lines and this shorter length reduces overall impacts and maintains lower costs relative to other longer alternatives.³⁰⁵ Route A also minimizes environmental impacts, including impacts to trees.³⁰⁶ Finally, Route A impacts the fewest number of homes compared to other overhead construction options.³⁰⁷

VIII. ROUTE D IS ALSO FEASIBLE AND PRUDENT IF UNDERGROUND DESIGN IS DETERMINED TO BE THE ONLY FEASIBLE DESIGN OPTION

If it is determined that an underground design is warranted based on the unique set of circumstances presented in this proceeding, Xcel Energy believes that Route D is also a prudent and feasible alternative. Route D is a 1.5 mile route along East 28th Street between the Hiawatha West and Midtown North substation sites.³⁰⁸ Route D utilizes an underground double circuit 115 kV transmission line design.³⁰⁹

Xcel Energy notes that Route D presents its own routing challenges. Along Route D, there are a number of existing utilities and other obstacles under 28th Street. These include: a 36” water main crossing at East 18th Avenue, an existing pedestrian tunnel, numerous utility crossings (water, storm, and sanitary sewer) at several of the existing cross streets, gas mains, service connections (water, sewer, and gas) and traffic

³⁰⁴ Ex. 10 at 10 (Asah Direct).

³⁰⁵ Ex. 10 at 10 (Asah Direct).

³⁰⁶ Ex. 10 at 10 (Asah Direct).

³⁰⁷ Ex. 10 at 10 (Asah Direct).

³⁰⁸ Ex. 10 at 9 (Asah Direct).

³⁰⁹ Ex. 10 at 9 (Asah Direct).

conduits.³¹⁰ The center of 28th Street contains a sanitary sewer. This type of sewer is difficult to construct around and is difficult to relocate.³¹¹ Given the existing utilities and other obstructions contained within East 28th Street, especially the center of the street, Xcel Energy proposes to construct the lines either under the sidewalk or under the north side of 28th Street.³¹² If Route D is selected, the final alignment will be determined based on further investigation and consultation with the City of Minneapolis to avoid conflicts with existing utilities where possible.

A complete analysis of Route D under all of the statutory and rule routing criteria is presented in greater detail in Company's Findings of Fact. Here, Xcel Energy will compare Route D to Xcel Energy's preferred Route A based on certain key factors including impacts on human settlement, effects on archeological and historic resources, and costs.

A. Human Settlement

Compared to Route A, Route D impacts a greater number of landowners. There are 180 landowners located on or adjacent to the proposed right-of-way for Route D.³¹³ In comparison, there are approximately 54 landowners located on or adjacent to overhead Route A—Alignment A1, 52 landowners located on or adjacent

³¹⁰ Ex. 97 at 7-9 (Ogren Direct).

³¹¹ Ex. 19 at 8 (Gallay Rebuttal); Ex. 97 at 7 (Ogren Direct).

³¹² Ex. 19 at 8 (Gallay Rebuttal). Xcel Energy notes that the FEIS incorrectly states the Company's preferred alignment for Route D to be under the sidewalk. FEIS at 41, eDocket Document No. 20106-51326-01 (June 7, 2010).

³¹³ Ex. 10 at Schedule 3 at 2 (Asah Direct). All residential impacts are calculated by measuring 100 feet from the center of the proposed alignment of the routes and include buildings adjacent to the substations.

to underground Route A—Alignment A2, and three landowners located on or adjacent to underground Route A—Alignment A3.³¹⁴

While Route D is located adjacent to a greater number of landowners than Route A, an underground construction along either Route A or Route D would reduce aesthetic impacts compared to an overhead construction along Route A—Alignment A1.³¹⁵ Short-term visual impacts, however, would be greater for underground construction.³¹⁶ Underground construction typically requires substantial environmental disruption along the entire route in which it is constructed.³¹⁷

B. Effects on Archaeological and Historic Resources

Compared to Route A, Route D avoids potential impacts to archaeological and historic resources. As there are no known historic or architectural resources along East 28th Street, Route D would not affect any known historic or architectural resources.³¹⁸ An underground route along Route D would also avoid any impacts to the CM&St.P Historic District.

C. Cost

Given the increased costs associated with underground construction, the cost associated with construction along Route D is significantly higher than the costs associated with an overhead route along Route A—Alignment A1. Specifically, the transmission facilities construction cost along Route D are estimated to be \$15.5

³¹⁴ Ex. 10 at Schedule 3 at 2 (Asah Direct).

³¹⁵ Ex. 11 at 4 (Asah Rebuttal).

³¹⁶ Ex. 11 at 4 (Asah Rebuttal).

³¹⁷ Ex. 11 at 4 (Asah Rebuttal).

³¹⁸ Ex. 10 at Schedule 3 at 4 (Asah Direct); Ex. 15 at Schedule 11 at 4 (Stark Surrebuttal).

million³¹⁹ compared to \$2.8 million transmission facilities cost for Route A—Alignment A1.³²⁰ Although slightly higher, the estimated costs for Route D are, however, comparable to the two underground alignments for Route A. The cost for construction of the transmission facilities along Route A—Alignment A2 is estimated at \$13.6 million and the price tag for Route A—Alignment A3 is \$12.7 million.³²¹

If it is determined that an underground design is warranted based on the distinct set of circumstances presented in this proceeding, the evidence demonstrates that Route D is also a prudent and feasible alternative. Route D is a direct route between the Hiawatha West and Midtown North Substation and located along an existing public right-of-way. Route D also avoids any impacts to known historic or architectural resources. The underground design for Route D also minimizes aesthetic impacts compared to overhead design options.

IX. ROUTE B AND C HAVE COMPARATIVE IMPACTS

Route B is a street route that would require construction of two single circuit above ground lines between the Hiawatha West and Midtown North substation sites.³²² One of the transmission lines would follow 26th Street and the second would follow East 28th Street.³²³ Route C is a street route that would also require construction of two single circuit above ground lines between Hiawatha West and

³¹⁹ Xcel Energy notes the FEIS provides transmission line costs for Route D which are inconsistent with those provided above. FEIS at Table 1-2, eDocket Document No. 20106-51326-01 (June 7, 2010). Xcel Energy is unclear how the FEIS Table 1-2 project costs were calculated.

³²⁰ Ex. 18 at 11 (Gallay Direct).

³²¹ Ex. 18 at 11 (Gallay Direct).

³²² Ex. 10 at 8 (Asah Direct).

³²³ Ex. 10 at 8 (Asah Direct).

Midtown North substation sites.³²⁴ One of the transmission lines would follow East 28th Street and the second line would parallel 31st Street.³²⁵

While both Route B and C are constructible and feasible routes, these routes have greater human settlement and environmental impacts compared to Routes A and D due to the greater length of these routes.³²⁶ A complete analysis of Routes B and C under all of the statutory and rule routing criteria is presented in greater detail in Xcel Energy's Findings of Fact. Here, the Company will compare these two routes to the Company's preferred Route A and alternate Route D based on certain key factors including impacts on human settlement, effects on archeological and historic resources, effects on the natural environment, and costs.

A. Human Settlement

Routes B and C will be constructed on single circuit structures with a cantilevered design that will place the conductors over the street side of these routes. NESC requirements call for a minimum of 25 feet of right-of-way on the conductor or street side of these structures.³²⁷ Xcel Energy will seek to acquire up to 50 feet of right-of-way, 25 feet on either side of the transmission structure, for access and maintenance of the structures.³²⁸ It is highly unlikely that either Route B or Route C will require displacement of any residences.³²⁹

³²⁴ Ex. 10 at 8 (Asah Direct).

³²⁵ Ex. 10 at 8-9 (Asah Direct).

³²⁶ Asah 1 Vol. 173.

³²⁷ Gallay 13 Vol. 13.

³²⁸ Asah 2 Vol. 197.

³²⁹ Gallay 4 Vol. 76-77.

While it is unlikely that these routes will require displacement, these routes have greater impacts on human settlement compared to Routes A and D because both Route B and C require construction of two single circuit transmission lines along separate right-of-ways.³³⁰ For instance, there are approximately 483 landowners located on or adjacent to the proposed right-of-way for Route B and 312 landowners located on or adjacent to the proposed right-of-way for Route C.³³¹ In comparison, Route A—Alignment A1 has approximately 54 landowners located on or adjacent to the proposed right-of-way and Route D has 180 landowners.³³² Route B is also located within 200 feet of two places of worship and one school and Route C is located within 200 feet of eight places of worship and one school.³³³

B. Archaeological and Historic Resources

While Routes B and C avoid any impacts to the CM&St.P Historic District, these routes have potential to impact a greater number of historic or architectural significant sites compared to Routes A and D. Within 0.1 miles of Route B there are 25 sites of historic or architectural significance which includes nine properties on the NRHP and five properties eligible for listing on the NRHP.³³⁴ Route B is also

³³⁰ Asah 1 Vol. 173 (“I believe routes B, C, and E2 do have greater impacts on human settlement than Route D or Route A.”)

³³¹ Ex. 10 at Schedule 3 at 2 (Asah Direct).

³³² Ex. 10 at Schedule 3 at 2 (Asah Direct).

³³³ Ex. 11 at 8 (Asah Rebuttal).

³³⁴ During post-hearing review of the record, it was noted that the Application and Ex. 10 Schedule 4 (Asah Direct) contained data different from that provided in Ex. 15 Schedule 11 (Stark Surrebuttal). Mr. Stark performed a full accounting of historic and architectural properties before completing his surrebuttal and Schedule 11. Therefore, Ex. 15 Schedule 11 (Stark Surrebuttal) is the most correct data made available during the contested case hearing.

adjacent to the American Swedish Institute and will likely result in the placement of a transmission structure on the northwest corner of the property and transmission lines along two sides of the property.³³⁵ Stark speculated that this pole placement would likely result in an adverse effect on the American Swedish Institute.³³⁶

Route C includes 21 sites of historic or architectural significance within 0.1 miles of Route C, which includes seven properties on the NRHP and five properties eligible for listing on the NRHP.³³⁷

C. Effects on Natural Environment

Route B and C will also result in greater impacts to existing vegetation compared to Route A. Route B would require removal of or significantly impact approximately eight trees.³³⁸ Route C would require removal of or significantly impact approximately 19 trees, including three mature American elm trees.³³⁹ In comparison, Route A—Alignment A1 would require removal or significantly impact approximately five trees, Route A—Alignment A2 would require removal or significantly impact approximately two trees, and Route A—Alignment A3 would require removal or significantly impact approximately four trees.³⁴⁰

D. Costs

Both Routes B and C require construction of two single circuit overhead lines on separate right-of-ways. Consequently, the route lengths for these two routes are

³³⁵ Ex. 11 at 9 (Asah Rebuttal); Stark 3 Vol. 31-32.

³³⁶ Stark 3 Vol. 31-32.

³³⁷ Ex. 15 at Schedule 11 at 3-4 (Stark Surrebuttal).

³³⁸ Ex. 10 at Schedule 3 at 5 (Asah Direct).

³³⁹ Ex. 10 at Schedule 3 at 5 (Asah Direct).

³⁴⁰ Ex. 10 at Schedule 3 at 5 (Asah Direct).

longer than either Route A or Route D and result in higher costs compared to other overhead routes. The estimated route length for Route B is 1.8 miles along 26th Street and 1.4 miles along East 28th Street.³⁴¹ The cost for construction of the transmission facilities along Route B is estimated to be \$4.6 million.³⁴² The estimated route length for Route C is 1.5 miles along East 28th Street and 2.3 miles along 31st Street.³⁴³ The cost for construction of transmission facilities along Route C is estimated to be \$5.7 million.³⁴⁴

X. ROUTE E2

Route E2 was a route proposed during the EIS scoping process. Route E2 would require removal or displacement of 63 structures (i.e., apartment buildings, houses, mixed use, or garages).³⁴⁵ Given the considerable number of displacements that would be required if this route is selected, Xcel Energy did not further analyze this route and does not support its selection.

XI. HIAWATHA AND MIDTOWN SUBSTATIONS

A. Hiawatha Substation

Eight different substation sites for the Hiawatha Substation were evaluated in this proceeding. In addition, a cost study was performed to analyze the potential for an underground design at the Hiawatha West site. Of the eight substation sites evaluated, three of these substation sites were determined to be feasible, Hiawatha West (above ground), Hiawatha East, and Hiawatha Zimmer Davis. Of these three

³⁴¹ Ex. 11 at 8 (Asah Rebuttal).

³⁴² Ex. 11 at 8 (Asah Rebuttal).

³⁴³ Ex. 11 at 8 (Asah Rebuttal).

³⁴⁴ Ex. 11 at 8 (Asah Rebuttal).

³⁴⁵ Ex. 10 at Schedule 3 at 1 (Asah Direct).

feasible sites, the Hiawatha West site is Xcel Energy's preferred site as it meets all of the engineering requirements and does not require displacement. Rather than debating each of the eight substation sites, the analysis here focuses on demonstrating why the three substation alternatives advocated for by other parties during the proceeding (Hiawatha G-4, G-5, and underground Hiawatha West) are not feasible and why Hiawatha West is the most appropriate site.

1. Hiawatha West is the most appropriate substation site

The record demonstrates that the Hiawatha West site with an above-ground construction best satisfies the statutory and rule routing criteria. A complete analysis of Hiawatha West under all of the statutory and rule routing criteria is presented in Xcel Energy's Findings of Fact. Here, the analysis will focus on the appropriateness of the Hiawatha West site based on certain key factors including impacts on human settlement and cost of construction, operation, and maintenance.

a. Human Settlement

(1) Displacement

Unlike the two other feasible substation sites, Hiawatha East and Hiawatha Zimmer Davis, Hiawatha West will not require the removal and relocation of an existing business. The Hiawatha West site is currently open land that is primarily owned by Mn/DOT. Mn/DOT has indicated that it considers this land to be surplus property and would be willing to sell this land for use as a substation site.³⁴⁶ In contrast, both Hiawatha East and Hiawatha Zimmer Davis sites are home to existing businesses. Hiawatha East is the corporate headquarters and main business hub for Crew2, Inc., a home installation company.³⁴⁷ The Hiawatha Zimmer Davis is the

³⁴⁶ Ex. 228 (Mn/DOT DEIS Comment Letter); Seykora 11 Vol. 172-174.

³⁴⁷ Ex. 98 at 1-2 (Firkus Direct).

central distribution hub for Primary Surgical, Inc. d/b/a Zimmer Davis, an orthopedic implant sales and distribution business.³⁴⁸ There is also a railroad spur on the property that is used for light rail deliveries. Xcel Energy proposes to relocate the line to accommodate the proposed substation.³⁴⁹

(2) Aesthetics

If a substation at the Hiawatha West site is constructed as a high-profile design, Xcel Energy proposes to build the substation with a 20 foot wall on all sides. Xcel Energy also studied a low-profile design which would be constructed with a 12 foot wall on all sides. The Company is committed to working with the community to obtain its input and feedback regarding the design and layout of this substation, including wall design.³⁵⁰ This wall will minimize any aesthetic impact of the substation on the surrounding neighborhood.

(3) Recreation

While the Hiawatha West site is currently vacant land owned, for the most part, by Mn/DOT, in recent years, community groups have planted trees and shrubs on this site and have identified this site as potential greenspace along the Midtown Greenway bike/pedestrian path.³⁵¹ Xcel Energy's proposed high-profile design for

³⁴⁸ Ex. 130 at 1-2 (Davis Direct).

³⁴⁹ After the conclusion of hearings, OES submitted a letter advising that Mn/DOT witness David Seykora had received new information regarding the spur—that it was still used and needed by the Metropolitan Council. See OES June 2, 2010 Letter, eDocket Document No. 20106-51177-01 (June 2, 2010). As noted, Xcel Energy's proposal is to permit continued use of the line. Asah 13 Vol. 95-96.

³⁵⁰ 7 Vol. at 60-61 (Asah).

³⁵¹ Ex. 36 at 13 (Springer Direct).

the Hiawatha West substation seeks to minimize the substation area and maximize the amount of space that could be used for community greenspace.

b. Costs

Compared to the two other feasible Hiawatha Substation sites, the Hiawatha West site has the least land acquisition and associated relocation costs. The estimated land acquisition cost for the Hiawatha West site is \$900,000 compared to an estimated cost of \$5 million for Hiawatha East and Hiawatha Zimmer Davis.³⁵² Likewise, the relocation costs for Hiawatha West are \$625,000 compared to an estimated cost of \$1.5 million for Hiawatha East and Hiawatha Zimmer Davis.³⁵³

2. Hiawatha G4 is not feasible

During this proceeding several community groups including, Longfellow Community Council, Midtown Phillips Neighborhood Association, and the Seward Neighborhood Group, expressed a preference for the Hiawatha G-4 substation site.³⁵⁴ The Hiawatha G-4 site is located on the site of the former Hiawatha Substation north of 32nd Street. The site is owned by Xcel Energy and also includes adjacent vacant land owned by Mn/DOT and the Soo Line Railroad. The Soo Line Railroad rail lines

³⁵² Ex. 165 (Estimated Land Acquisition and Relocation Costs for Hiawatha and Midtown Substation Sites).

³⁵³ Ex. 165 (Estimated Land Acquisition and Relocation Costs for Hiawatha and Midtown Substation Sites). While Hiawatha West does not have businesses that will need to be relocated, there are relocation costs associated with relocation of a railroad spur and fiber optic cables that are currently located on the property. (McNelly 5 Vol. 75).

³⁵⁴ Ex. 118 at 8 (Hart Direct); Ex. 209 at 10 (Mains Direct); Ex. 129 at 4-5 (Heyer Direct).

adjacent to the Hiawatha G-4 site, including a main line, are currently operated by the railroad as active rail lines.³⁵⁵

For a substation site to be feasible, it must be large enough to accommodate all required facilities including not only the substation equipment, but also distribution duct bank systems and overhead or underground transmission lines.³⁵⁶ Xcel Energy evaluated the feasibility of the Hiawatha G-4 site based on these three criteria and determined that the site was not feasible because there was inadequate space for transmission and distribution line access and the requisite substation equipment.

Xcel Energy's transmission engineer, Benjamin Gallay, evaluated the G-4 site from a transmission design perspective and concluded that there was insufficient space to route either overhead or underground transmission lines into and out of this site.³⁵⁷ Gallay also examined whether the acquisition of additional property from the Soo Line Railroad would alter this conclusion and he determined that the site would still be inadequate for the proposed four transmission circuits.³⁵⁸

The G-4 site was also examined by Xcel Energy's distribution engineer Scott Zima who determined that there was inadequate space for the distribution feeders to exit the site.³⁵⁹ Zima further determined that even if additional property was acquired

³⁵⁵ Asah 13 Vol. 98; Ex. 212A-212I.

³⁵⁶ Ex. 21 at 1-2 (McNelly Rebuttal), FEIS at 432, eDocket Document No. 20106-51326-01 (June 7, 2010).

³⁵⁷ Gallay 13 Vol. 20-21.

³⁵⁸ Gallay 13 Vol. 21.

³⁵⁹ Zima 12 Vol. 174-176. For the Hiawatha Substation, four underground distribution duct lines area needed to house the 15 feeder circuits that will be used to serve customer load. Each duct line route requires a minimum of 15 feet in width. If two ducts are co-located, 20 feet is required. Ex. 24 at 4 (Zima Rebuttal).

from the Soo Line Railroad for this site, there would still be inadequate space for the distribution feeders.³⁶⁰

Susan McNelly, substation design, also evaluated this site based on whether the required substation equipment could fit within the property dimensions. After examining various configurations and designs, including high-profile and low-profile, McNelly determined that there was inadequate space at the G-4 site to accommodate the required substation equipment.³⁶¹

3. Hiawatha G5 is not feasible

The Hiawatha G5 site was another substation site that was advocated for by members of the public and at least one community group.³⁶² The Hiawatha G5 site is a long narrow strip of land adjacent to, and east of Hiawatha Avenue and the light rail tracks, and north of 26th Street East.³⁶³ It is estimated that the G5 site is approximately two and a half acres.³⁶⁴ While this overall acreage is comparable to the Hiawatha West site, it is far less suitable for the substation because of its narrow rectangular shape.³⁶⁵

Given the shape of the Hiawatha G-5 site, there is inadequate space for all four of the required distribution duct lines to exit the site and to reach the Project Area to the west.³⁶⁶ Additionally, this site would require modification to Xcel Energy's

³⁶⁰ Zima 12 Vol. 176.

³⁶¹ McNelly 5 Vol. 13.

³⁶² Ex. 129 at 4 (Heyer Direct).

³⁶³ Ex. 20 at 4 (McNelly Direct).

³⁶⁴ Ex. 21 at 1 (McNelly Rebuttal).

³⁶⁵ Ex. 21 at 1 (McNelly Rebuttal).

³⁶⁶ Ex. 24 at 4 (Zima Rebuttal).

standard switchgear design and the use of a high-profile 115 kV design.³⁶⁷ As a result, special operations and maintenance procedures would have to be developed for this atypical design.³⁶⁸ When a substation is so uniquely designed, the risks to utility crews increase.³⁶⁹ Nonstandard substation design can require special operating and maintenance procedures. Utility crews working in the substation may therefore need to exercise an increased level of awareness when working around surroundings that are unique and perhaps unfamiliar. The site also presents access difficulties for repair and maintenance of the substation as it is landlocked on all sides by other properties or the light rail and Hiawatha Avenue.³⁷⁰

In addition to the size and access constraints associated with this site, Hiawatha G-5 is currently being used by the Met Council to support light rail operations along Hiawatha Avenue. The Hiawatha G5 site was previously owned by Mn/DOT but was deeded to the Met Council for light rail use.³⁷¹ Met Council has stated that it plans to construct a building on the site.³⁷² To date, Met Council has spent 750,000 dollars to prepare the site for construction and intends to complete construction on this site within the next 12 months.³⁷³

³⁶⁷ Ex. 21 at 2 (McNelly Rebuttal).

³⁶⁸ Ex. 24 at 4 (Zima Rebuttal).

³⁶⁹ Ex. 24 at 4-5 (Zima Rebuttal).

³⁷⁰ Ex. 21 at 2 (McNelly Rebuttal).

³⁷¹ Seykora Vol. 11 184-185.

³⁷² Public Exhibit 8 (Letter from Met Council).

³⁷³ Public Exhibit 8 (Letter from Met Council).

4. Underground design for Hiawatha West

At the request of the OES and members of the public, Xcel Energy evaluated the cost of placing the Hiawatha West Substation underground.³⁷⁴ A cost study concluded that the cost for this alternative is significantly higher than the above-ground alternative. Xcel Energy engaged Sargent & Lundy LLC (“S&L”) to perform a cost study for an underground alternative for the Hiawatha West Substation, transmission and distribution facilities to be built at the Hiawatha West Substation site.³⁷⁵ The total estimated cost for an initially equivalent electrical installation underground would be approximately \$86 million.³⁷⁶ This is compared to the estimated \$14.3 million cost for an above-ground substation at the Hiawatha West site.³⁷⁷

In addition to significantly higher costs, the alternative is not prudent or feasible because no feasibility study has been done. Such analysis would require investigation of water table depths, soil contamination and other factors.³⁷⁸ Additionally, underground substations are not standard in the industry. Indeed, the Company currently operates only one underground substation and there is record evidence of only one other in operation in the United States.³⁷⁹

³⁷⁴ Ex. 20 at 12 (McNelly Direct).

³⁷⁵ Ex. 20 at 12-13 (McNelly Direct).

³⁷⁶ Ex. 20 at 13 (McNelly Direct). Per the contract for the study, there is a 40 percent margin of error for this cost estimate due to so many unknown variables, including, but not limited to, water table depth, soil contamination, depth of topsoil versus bedrock and equipment availability. *Id.*

³⁷⁷ Ex. 18 at 11 (Gallay Direct).

³⁷⁸ Ex. 20 at 12-13 (McNelly Direct).

³⁷⁹ Ex. 20 at 12-13 (McNelly Direct).

B. Midtown Substation

Four separate substation sites for the Midtown Substation have been evaluated in this proceeding. Two of these sites, Midtown North and Midtown South, were proposed by Xcel Energy in the Application and two additional sites, Mt-28N and Mt-28S, were part of the EIS process. A complete analysis of the Midtown North site under all of the statutory and rule routing criteria is presented in Xcel Energy's Findings of Fact. Here, the analysis will focus on the appropriateness of the Midtown North site based on certain key factors including impacts on human settlement, effects on archaeological and historic resources, and land use conflicts.

1. Midtown North is the most appropriate site

The evidence on the record demonstrates that the Midtown North site is the most appropriate site as it does not require displacement, meets engineering requirements, and is located on the site of a former substation.

a. Human Settlement

Minnesota Rule 7850.4100(A) requires consideration of effects on human settlement, including displacement of residences and businesses; noise created during construction and by operation of the Project; and impacts to aesthetics, cultural values, recreation, and public services.

(1) Displacement

Compared to the three other Midtown substation sites, the Midtown North site results in fewer displacements. The Midtown North site is located on an area that includes the former Xcel Energy Oakland Substation, a condemned triplex, and vacant land that is currently owned by Brown Campbell Enterprises.³⁸⁰ As a result, the Midtown North site would only require removal of this condemned triplex. The

³⁸⁰ Ex. 1A at 29 (Application).

Midtown South site includes two properties owned and occupied by Brown Campbell Enterprises and would require removal of multiple building structures.³⁸¹ The Mt-28N site is located on private green space owned by Wells Fargo.³⁸² Wells Fargo has stated that placement of a substation at Mt-28N could impact its ability to expand at its current location.³⁸³ The Mt-28S site is a paved lot owned by Wells Fargo and is currently used for employee parking.³⁸⁴ Wells Fargo has plans to use this site for expansion of its existing south parking ramp.³⁸⁵

(2) Noise

Several landowners expressed concerns about the potential noise caused by the Midtown North Substation as this site is located near residential homes and the Midtown Greenway. In response to these concerns, a noise assessment was performed to determine the existing ambient sound levels in the vicinity of the proposed Midtown North site and to assess the potential noise impacts on the surrounding residential areas and the Midtown Greenway when the substation is operational.³⁸⁶ Potential impacts were assessed with respect to the State of Minnesota nighttime noise standards and the existing ambient sound level.³⁸⁷ This study concluded that based on an assessment of existing and predicted sound levels in the vicinity of the proposed Midtown North site, the noise levels from the substation will

³⁸¹ Ex. 1A at 31 (Application).

³⁸² Ex. 127 at 7 (Olson Direct).

³⁸³ Ex. 127 at 7 (Olson Direct).

³⁸⁴ Ex. 127 at 6 (Olson Direct).

³⁸⁵ Ex. 127 at 6-7 (Olson Direct).

³⁸⁶ Ex. 12 at Schedule 14 (Asah Surrebuttall).

³⁸⁷ Ex. 12 at 3 (Asah Surrebuttall).

be in compliance with the State of Minnesota noise standards and will have a minimum impact on existing sound levels.³⁸⁸

(3) Aesthetics

The proposed substation at the Midtown North site would be high-profile design, would be landscaped on the south, east, and west sides as practical and walled on four sides by 20 foot walls.³⁸⁹ The design on these walls has not yet been determined but as detailed above the Company is committed to working with the community on the design of the substation walls.³⁹⁰ The use of landscaping and architecturally pleasing wall designs will minimize aesthetic impacts of the Midtown North site.

b. Effects on Archaeological and Historic Resources

As additional space will be needed to accommodate all of the required substation equipment at the Midtown North site, possibly a retaining wall and transmission structure (if an overhead design is approved) will likely need to be constructed within the CM&St.P Historic District.³⁹¹ The design of this retaining wall has not yet been determined nor has the placement of the pole been determined.³⁹² The construction of this retaining wall will change the slope of the CM&St.P Historic District. However, unlike other projects that attempted to alter or demolish the historic retaining walls currently located within the CM&St.P Historic District, the

³⁸⁸ Ex. 12 at 3 (Asah Surrebuttal); Ex. 12 at Schedule 14 at 28 (Asah Surrebuttal).

³⁸⁹ Ex. 20 at 9 (McNelly Direct); Ex. 21 at 3 (McNelly Rebuttal).

³⁹⁰ 7 Vol. at 61-62 (Asah).

³⁹¹ Ex. 1A at 30 (Application); McNelly 5 Vol. 83; FEIS at 48, eDocket Document No. 20106-51326-01 (June 7, 2010).

³⁹² McNelly 5 Vol. 82.

construction of a retaining wall at the Midtown North site construction will not affect these historic retaining walls. In addition, the implementation of any form of transit within the CM&St.P Historic District will inevitably require changes to the embankment and possibly require the installation of new retaining walls.³⁹³

c. Land Use Conflicts

Minnesota Statute § 216E.03, subd. 7(a) states that the route permit determinations should endeavor to minimize land use conflicts. The Midtown North site was previously zoned as “industrial” but as of the City of Minneapolis’ most recent zoning classifications, this site is now zoned multi-family residential.³⁹⁴ As a result, the City contends that a substation at the Midtown North will conflict with the land use plans for this site. However, the proposed substation at the Midtown North site is consistent with the prior use of, at least a portion of, this site as the former Oakland Substation. In addition, a substation at this site is consistent with the other industrial uses that are present along the Midtown Greenway.

XII. ENVIRONMENTAL JUSTICE

A. Environmental Justice Defined

Given the Project is located in a community with a high percentage of minority and low income residents, concerns have been raised that the Project may present an environmental justice issue. Executive Order 12898 requires federal actions to address potential environmental justice impacts by directing federal agencies to “identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority or low-

³⁹³ Ex. 10 at 14 (Asah Direct); Michalko 9 Vol. 70.

³⁹⁴ Mogush 8 Vol. 124.

income populations.”³⁹⁵ According to the Order, it did not create any private rights but was simply intended to improve the internal management of federal agencies.

Guidance regarding how to determine whether an adverse human health or environmental effect is “disproportionately high” is contained in the report issued by an Interagency Working Group (“IWG”) titled “Guidance for Agencies on Key Terms in Executive Order 12898.”³⁹⁶ In sum, the IWG report identified three factors to be considered: (1) whether the health or environmental impacts are significant (as employed by the National Environmental Protection Act), (2) whether the impacts to minority or low-income populations would appreciably exceed the impacts to the general population, and (3) whether the minority or low-income populations are affected by cumulative impacts. The term “significantly” as defined in the National Environmental Protection Act at 40 C.F.R. 1508.27 requires a consideration of both “context” and “intensity.”³⁹⁷ “Context” means consideration of both the localized and broader impacts, as well as short and long term impacts, of a project. “Intensity” refers to the severity of any impacts.³⁹⁸ In addition, the project’s beneficial impacts must be considered.³⁹⁹

³⁹⁵ Ex. 10 at 22 (Asah Direct); Exec. Order No. 12,898, 59 Fed. Reg. 7,629 (Feb. 11, 1994).

³⁹⁶ Council on Environmental Quality, *Environmental Justice Guidance Under the National Environmental Policy Act*, at Appendix (Dec. 10, 1997), available at http://www.epa.gov/compliance/ej/resources/policy/ej_guidance_nepa_ceq1297.pdf.

³⁹⁷ 40 C.F.R. 1508.27 (1999).

³⁹⁸ 40 C.F.R. 1508.27(a).

³⁹⁹ 40 C.F.R. 1508.27(b).

While there is no Minnesota law that requires an environmental justice analysis, certain Minnesota state agencies have adopted their own policies. For example, the Minnesota Pollution Control Agency issued a policy statement in 2008 stating that it intends to ensure minority and low-income populations do not bear a “disproportionate share” of environmental impacts and are afforded opportunities for meaningful participation in environmental decision making.⁴⁰⁰

B. Environmental justice concerns have been addressed

The issue of environmental justice was considered in the FEIS.⁴⁰¹ With regard to potential for significant “adverse human health effects,” the FEIS concluded that none of the routing or siting alternatives is expected to produce adverse health effects.⁴⁰² It also found that health impacts will be mitigated by compliance with local and state design standards.⁴⁰³ With regard to the potential for significant “adverse environmental effects,” the FEIS discussed two categories that may be considered environmental impacts. First, the FEIS evaluated whether the Project will result in the displacement of homes or businesses and concluded that the Project would not displace any individuals from their homes.⁴⁰⁴ The FEIS did indicate that construction of certain substation alternatives would require the relocation of a business.⁴⁰⁵

⁴⁰⁰ Minnesota Pollution Control Agency, *Environmental Justice Principles and Practices*, Apr. 30, 2008, available at <http://www.pca.state.mn.us/index.php/download-document/13474-p-gen5-01.pdf.html>.

⁴⁰¹ FEIS at § 5.5, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁴⁰² FEIS at 268, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁴⁰³ FEIS at 269, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁴⁰⁴ FEIS at 263, 268, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁴⁰⁵ FEIS at 264, 268, eDocket Document No. 20106-51326-01 (June 7, 2010).

However, the FEIS recognized that any such displacement requires compensation.⁴⁰⁶ Second, the FEIS suggested that the proposed Project would result in “aesthetic” impacts.⁴⁰⁷ The FEIS recognized that mitigation measures may be employed to minimize such impacts.⁴⁰⁸

Moreover, any impacts experienced will be borne by the benefitted community. In fact, 90 percent of the power that will come from the proposed Midtown and Hiawatha Substations will directly serve load along Lake Street, Chicago Avenue, and Hiawatha Avenue.⁴⁰⁹

Moreover, the review process for this Project provided adequate opportunities for meaningful participation by the local community. In addition to the environmental review and route permitting process, which each provide opportunity for public meetings and hearings,⁴¹⁰ Xcel Energy has met directly with community leaders and other stakeholders on numerous occasions and has conducted six open house meetings for the public.⁴¹¹ Additional input from the local community regarding the Project was received during the EIS scoping process, the DEIS comment period, and the four public hearings.⁴¹² Xcel Energy appropriately utilized

⁴⁰⁶ FEIS at 268, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁴⁰⁷ FEIS at 268-269, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁴⁰⁸ FEIS at 268-269, eDocket Document No. 20106-51326-01 (June 7, 2010).

⁴⁰⁹ Zima 13 Vol. 197.

⁴¹⁰ See e.g., Minn. R. 7850.2300; Minn. R. 7850.2400; Minn. R. 7850.2500.

⁴¹¹ Ex. 8 at 6-12 (Mirzayi Direct).

⁴¹² See e.g., Ex. 136 (Public Comments Received During Scoping Process); Ex. 142 (Oral Comments on DEIS); Ex. 142 (Written Comments on DEIS).

the input it received to make informed decisions about the route and siting alternatives, as well as in the evaluation of mitigation measures for the Project.⁴¹³

XIII. CONCLUSION

Based on the foregoing and the evidence on the record, Xcel Energy respectfully requests that the ALJ recommend that the Commission grant a Route Permit to Xcel Energy for Route A between the Hiawatha West Substation site and the Midtown North Substation site. Xcel Energy further requests that the ALJ adopt the Proposed Findings submitted along with this Brief.

Dated: June 15, 2010

Respectfully submitted,

BRIGGS AND MORGAN, P.A.

Jennifer Thulien Smith
Assistant General Counsel
Xcel Energy Services Inc.
414 Nicollet Mall
Minneapolis, MN 55401

By: *s/Lisa M. Agrimonti*
Lisa M. Agrimonti (#272474)
Valerie T. Herring (#336865)
2200 IDS Center
80 South Eighth Street
Minneapolis, MN 55402
(612) 977-8400

**Attorneys for Northern States Power
Company, a Minnesota corporation**

⁴¹³ Ex. 10 at 24 (Asah Direct).