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RE: Hollydale Certificate of Need Scoping MPUC Docket CN-12-113

Dear Ms. Steinhauer:

The following comments on the scoping for the Hollydale certificate of need decision are made on behalf of the Western Plymouth Neighborhood Alliance (“Alliance” or “WPNA”). We appreciate the public meetings held in the community by the Department of Commerce Environmental Facilities Permitting staff (“DOC-EFP”) and the willingness of staff to analyze in its Environmental Report the issues of concern to the community.

Our comments can be summarized as follows:

1. Applicants’ assertions of distribution need for the Hollydale 115 kV project should be rigorously scrutinized. No other alleged “needs” for the project should be considered.
2. In addition to generally considering various alternatives to the project, more detailed consideration should be given to distribution level facilities at the 13.8 kV or 34.5 kV level, potentially with a 115 kV substation.
3. Alternative A2 described in Appendix B of the Certificate of Need (“CON”) Application should be evaluated as a feasible and prudent alternative to the Hollydale Project.
4. Each of the impacts of the Hollydale 115 kV proposal on the natural and socioeconomic environment, including human health, should be compared with Alternative A2.
5. A balanced and precautionary analysis should be conducted of the risks of electric and magnetic fields and the current usage/nonusage of the existing 69 kV line should be explored.
6. Costs of various alternatives and financial incentives that may lead applicants to prefer 115 kV transmission solutions to address distribution needs should be analyzed.

### 1. Analysis of Distribution Need in the Plymouth and Medina Area

The Alliance believes that the nature of the distribution need for the Hollydale Project should be scrutinized in the Environmental Report. Specifically, the Alliance requests that DOC-EFP staff evaluate where are the Major Growth Areas that contribute to the distribution need in the Focused Study Area, whether these are located along particular development corridors and whether various alternatives are scaled in size and location to the areas contributing to the projected distribution system deficit. The Environmental Report should also evaluate whether the projections in Appendix B studies, which are based on the 2006 peak demand, overstate the distribution demand in the Focused Study Area.

In this analysis, Applicants should be required to explain what level of amperage the proposed Hollydale 115 kV transmission line is expected to carry at peak and on the average for the next 30 years of projected use. If the Applicants are predicting a drop in utilization of the proposed high voltage transmission line during this time frame, as suggested by their preliminary discovery responses to the Alliance (Exhibit 1, App. Resp. to WPNA IR 9)<sup>1</sup> Applicants should explain what future growth is anticipated in this prediction, which additional facilities they are projecting to provide service to the area and how those other facilities affect the projected distribution “need” for the Hollydale 115 kV high voltage line.

The Alliance requests that the Environmental Report reject as outside its scope any alleged “benefits to the long term transmission system” claimed by Applicants in their PowerPoint materials for the public meetings of October 25 and 26, 2012. The Certificate of Need Application states that the need for the Hollydale Project is “a distribution system deficiency in the Plymouth and Medina areas,” that “[t]he identified need is one of distribution load-serving capacity only,” and that the Hollydale Project addresses “a purely distribution driven need,” not a transmission deficit. (CON App., pp. 72, 85, 86).

### 2. Distribution Alternatives

The Alliance requests that, in addition to generally examining alternatives identified in the DOC-EFP Draft Scoping Document provided at the public scoping meetings, the Environmental Report should focus attention on identifying a range of lower voltage alternatives to address the distribution system deficiency in Plymouth and Medina that ostensibly initiated the request for a 115 kV high voltage power line. In particular, DOC-EFP should request information from Applicants to identify all 13.8 kV, 34.5 kV and 69 kV alternatives considered by Applicants, either individually or together, to resolve distribution system deficits in the Focused Study Area.

DOC-EFP should also ask Applicants to identify the 13.8 kV, 34.5 kV and 69 kV alternatives that would best address the distribution system deficits in the Focused Study Area, whether or not such alternatives were previously considered by Applicants.

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<sup>1</sup> Information requests and responses attached as exhibits to this comment were provided in the Hollydale routing proceeding, MPUC Docket E-002/TL-11-152 OAH 8-2500-22806-2.

In this examination of lower voltage alternatives to the Hollydale Project, the Environmental Report should explicitly consider alternatives that include the construction of a new perimeter 115 kV substation at the location(s) proposed in the Certificate of Need Application for the Hollydale Project as well as the new lower voltage power lines. Distribution level and lower voltage solutions that may not be sufficient if considered without a new substation may be feasible and prudent alternatives to the 115 kV line when considered in conjunction with a new substation such as the Pomerleau Substation proposed for the Hollydale Project.

### 3. Study Alternative A2 as a Feasible and Prudent Alternative to the Hollydale Project

Minnesota Rules provide that a certificate of need shall be granted if no reasonable and prudent alternative to the proposed facility has been demonstrated by a preponderance of the evidence on the record considering:

- (1) the appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives;
- (2) the cost of the proposed facility and the cost of energy to be supplied by the proposed facility compared to the costs of reasonable alternatives and the cost of energy that would be supplied by reasonable alternatives;
- (3) the effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives; and
- (4) the expected reliability of the proposed facility compared to the expected reliability of reasonable alternatives. (Minn. R. 7849.0120(B))

This Rule requires a record be developed in certificate of need proceedings from which it can be determined if the final decision of the Public Utilities Commission complies with the Minnesota Environmental Rights Act (“MERA”) and the Minnesota Environmental Policy Act (“MEPA”). Both MERA and MEPA require that a high voltage transmission line be rejected if there is a feasible and prudent alternative to that project:

In any such administrative, licensing, or other similar proceedings, the agency shall consider the alleged impairment, pollution, or destruction of the air, water, land, or other natural resources located within the state and no conduct shall be authorized or approved which does, or is likely to have such effect so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land, and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct. (Minn. Stat. §116B.09, Subd. 2).

No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management and development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern

for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct. (Minn. Stat. § 116D.04, Subd. 6)

The Alliance requests that Alternative A2, as described in Appendices to the Certificate of Need Application, be evaluated in the Environmental Report as a specific feasible and prudent alternative to the proposed Hollydale 115 kV high voltage transmission line project.

Alternative A2 provides new 13.8 kV distribution feeder circuits on Vicksburg and Highway 55 along with a new perimeter substation and serves as an appropriate size and type of facility to meet the asserted distribution need. Studies conducted by Xcel Energy demonstrate that A2 satisfies the asserted reliability criteria for the Hollydale Project:

A2 meets the various criteria by which Planning Engineers compared each alternative. With respect to System Performance, A2 installs additional substation transformer capacity at one new location which is a greater distance than the substation under A1 from the identified load center in the Focused Study Area. As a result, A2 requires longer feeder circuits than A1 to serve load, and therefore, is subject to greater exposure to conditions that could lead to line failures. With respect to Operability, similar to A1, A2 is an extension of the existing distribution system and provides for a large number of standard options that could be quickly implemented under contingency conditions. With respect to Future Growth, A2 does not provide as many possibilities as A1. (CON App., Appx. B.1, p. 60 of 84)

The Alliance requests that the Environmental Report make a detailed assessment of the elements and costs of Alternative A2 as compared to the Hollydale Project proposal. The CON Application in its Appendix B1 Plymouth Area Load Serving Study includes in its list of costs for Alternative A2 distribution “duct” for feeder circuits (CON App., Appx. B.1, p. 60 of 84), suggesting that costs for A2 were calculated based on undergrounding of the distribution circuits. The Alliance requests that Alternative A2 costs be analyzed both with the 13.8 kV circuits placed underground and with such distribution level circuits installed overhead.

The Alliance further requests that the potential for distribution line “failures” over various distances and various time periods should be analyzed for both overhead and underground installation of Alternative A2. Rates of failure per mile of overhead and underground 115 kV power lines should also be set forth in the Environmental Report.

The Alliance further requests that the Environmental Report include an analysis of costs and functions of the perimeter substations proposed for Alternative A2 and that proposed for the Hollydale Project. Both substations appear similar based on the narrative descriptions of the CON Application and its Appendix B1. Yet the costs for the Alternative A2 perimeter substation – estimated at \$9,245,000 plus \$2,100,000 for land (CON App., Appx. B.1, p. 60 of 84) diverge significantly from the costs for the Pomerleau Substation – estimated at \$8,000,000 (CON App., p. 15). DOC-EFP should require Applicants to identify the following for both Alternative A2 and the Hollydale project: 1) land area and land costs of the proposed substations; 2) each

element/piece of equipment of the proposed substations and its costs; 3) any differences in the methods of cost estimation used in CON Application Appendix B1 as compared to the Application narrative. This information would facilitate an accurate comparison of the costs of the Hollydale Project and Alternative A2 perimeter substations.

The Alliance requests that the Environmental Report also compare other elements and economic costs of the Hollydale Project and the Alternative A2 as a feasible and prudent alternative. In addition, the Environmental Report should review whether all or any portion of the existing 69 kV line could be removed should Alternative A2 be implemented.

#### 4. Comparing Effects of the Hollydale Project and Alternative A2 on the Natural and Socioeconomic Environments

In addition to providing a general discussion of the effects of the Hollydale Project as outlined in the DOC-EFP Draft Scoping Document provided at the public scoping meetings, the Alliance requests that a specific and detailed comparison of the effects on the natural and socioeconomic environment of the Hollydale Project and Alternative A2 be included in the Environmental Report. Specific areas of adverse impacts for which a detailed analysis is requested are described below:

*Proximity to homes.* An important indicator of the effects of a transmission line on the human and socioeconomic environment is the proximity to residential dwellings. Preliminary discovery (Exhibit 2, App. Resp. to WPNA IR 4) discloses that there would be 289 dwelling units within 200 feet of the Hollydale 115 kV transmission line route centerline, 168 homes within 100 feet of the transmission line and 62 homes 50 feet or fewer from the high voltage line. The impacts of the Hollydale Project as a result of the proximity of homes to a 115 kV high voltage line should be compared to Alternative A2. These impacts include elevated magnetic fields as well as impacts on aesthetics and constraints on FHA financing in proximity to high voltage power lines. Analysis of elevated magnetic fields from the Hollydale 115 kV power line should recognize that the existing 69 kV line is completely inoperable in some locations and that, even in areas where the line is “energized” at a low level to provide potential back-up, it is rarely used to provide electric power, and provides little or no chronic magnetic field impacts.

*Visual Impacts and Aesthetics, Including Noise.* The differential impacts of the Hollydale Project on both visual aesthetics and the cumulative aesthetic impacts of noise should be assessed in the Environmental Report. Photographs should compare not only the scale of the existing 69 kV lines to the proposed metal 115 kV metal towers, but close-up photographs should illustrate the difference in appearance between wood and rusting metal facilities. It is unlikely that the noise from the proposed Hollydale Project will exceed state standards, but the unpleasant nature of buzzing noises in yards and homes as well as the level of the noise should be considered as an aesthetic impact on residents. The impact of the proposed project on the aesthetics of tree and shrub removal is discussed below as an impact on biological resources.

*Impacts on property values.* Studies and comments in the record from local area realtors suggest that building a 115 kV high voltage transmission line in Plymouth or Medina, where the existing

69 kV line is inoperable or rarely used, is likely to affect property values due to perceptions of safety as well as aesthetic concerns. Even if the impact on property values is on the lower range of estimates (e.g. 10 rather than 40 percent), with 289 homes within 200 feet of the transmission line, that impact is likely to be significant in terms of aggregate economic value resulting from losses to homes along the route and diminished value in the neighborhood due to affects of “comparables” on list prices. In addition to the general impacts of transmission lines in proximity to residences, we would request that the Environmental Report discuss the impacts of the proposed Hollydale Project on FHA appraisals should homes be within the fall distance of a transmission tower or within 10 feet of the outer boundary of a high voltage line transmission easement. (HUD Handbook, Location Analysis 4150.1 REV-1, 4-24)<sup>2</sup>. The impacts on individual homeowners and the aggregate socioeconomic effects on Plymouth and Medina neighborhoods of the Hollydale Project should be compared to those, if any, of Alternative A2.

*Impacts on development.* Along with impacts of the Hollydale Project on residential property values, the Alliance would also propose comparing the impact on potential future residential and commercial development of constructing eight to more than ten miles of overhead 115 kV transmission for the Hollydale Project with the impact, if any, that would result from implementing Alternative A2.

*Impacts on agricultural land use.* Preliminary discovery (Exhibit 2, App. Resp. to WPNA IR 4) suggests that the Hollydale Project will cross 3769 linear feet of agricultural croplands and that at least 5 transmission line towers will be located on agricultural croplands. (Exhibit 3, App. Resp. to WPNA IR 5). The impact of the Hollydale 115 kV transmission line project on croplands should be compared to Alternative A2, which has no foreseeable impact on agricultural land use.

*Impacts on Water Resources.* Preliminary discovery (Exhibit 2, Xcel Resp. to WPNA IR 4) suggests that the Hollydale Project will cross 11,894 lineal feet of wetlands, 5596 of which are wetlands with no adjacent road access. The Hollydale Project will also cross 4564 lineal feet of FEMA floodplains. Applicants estimate that the Hollydale Project will place 5 transmission line towers on wetlands and 4 in FEMA floodplains. (Exhibit 3, App. Resp. to WPNA IR 5). Although the CON Application makes no reference to the Minnehaha Creek Watershed District, our preliminary research indicates that portions of the Hollydale Project would be within the Minnehaha Creek Watershed District and would impact High Quality Natural Areas and Exceptional or High Value wetlands as classified by the District. (Exhibit 4, Minnehaha Creek Watershed District Maps). Since A2 is a feasible and prudent alternative that eliminates impacts to the Minnehaha Creek Watershed and dramatically reduces, if not eliminates, impacts on other water resources, a detailed and specific comparison of the water resource impacts of the Hollydale Project as compared to Alternative A2 must be included in the Environmental Report.

*Impacts on Biological Resources.* As discussed in connection with the impacts on water resources, the Environmental Report should include a specific and detailed comparison of the Hollydale Project and Alternative A2 on biological resources. The CON Application states that

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<sup>2</sup> <http://www.hud.gov/offices/adm/hudclips/handbooks/hsg/4150.1/41501c4HSGH.pdf>

the Minnesota Department of Natural Resources (MDNR) was contacted to identify rare species and sensitive natural communities within the project area. (CON App., pp. 152-153). However, in the Plymouth and Medina areas, the Minnehaha Creek Watershed District and Hennepin County Natural Resources Inventories and must also be consulted. Minnehaha Creek Watershed District maps suggest that the Hollydale Project is likely to directly impact Regionally Significant Ecological Areas, MCBS Native Plant Communities and High Quality Natural Areas. (Exhibit 4, Minnehaha Creek Watershed District Maps). Medina and Plymouth Natural Resource Inventories<sup>3</sup> should also be analyzed to compare the impacts on biological resources of the Hollydale Project as compared to Alternative A2.

*Impacts on Trees and Shrubs.* In addition to considering the impacts on flora and fauna related to high value and natural areas, the Environmental Report must analyze impacts on trees and shrubs in residential areas impacted by the Hollydale Project. As explained on page 97 of the CON Application, construction of the Hollydale 115 kV transmission line route will require removing trees and vegetation located within existing and new right-of-ways in order to comply with federal NERC requirements for the bulk electric system (greater than 100 kV). No such federal requirements apply to the existing 69 kV power line or to lower voltage distribution lines. Although Applicants have, thus far, declined to estimate how many trees and shrubs would be removed as a result of the Hollydale Project, even Applicants' own photo simulations of the Project Area before and after the construction of the proposed 115 kV high voltage transmission line show significant changes in greenery and aesthetics that would result from construction of the Hollydale Project. (Exhibit 5, Xcel Resp. to WPNA IR 12).

*Impacts of electric and magnetic fields on health and safety.* Minnesota Statutes Section 216E.03, Subd. 7(1) requires the consideration of the effects of electric and magnetic fields on public health and welfare in consideration of route alternatives. The Alliance believes that these considerations must also be reflected in the comparison between the Hollydale Project and Alternative A2. As explained in more detail in Section 5 below, epidemiologic research demonstrates a consistent pattern of increased risk for childhood leukemia with chronic low-intensity magnetic field exposure above 3 to 4 milligauss.<sup>4</sup> Preliminary discovery obtained from Applicants indicates that families living in the 62 homes within 50 feet of the Hollydale 115 kV center line would experience chronic exposures to magnetic fields exceeding this risk level. Depending on the particular configuration of the 115 kV high voltage transmission line used, average magnetic fields on the first floor of these homes would range from 4.16 to 10.25 milligauss. Chronic magnetic field exposures in second floor rooms of these homes would range from 4.64 to 17.74 milligauss. (Exhibit 1, App. Resp. to WPNA IR 9). Impacts of electric fields from the proposed Hollydale 115 kV power line on pacemakers and other electronic devices and

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<sup>3</sup> Available through the Hennepin County Natural Resource Inventory portal at <http://www.co.hennepin.mn.us/portal/site/HennepinUS/menuitem.b1ab75471750e40fa01dfb47ccf06498/?vgnnextoid=61b2b556b8933210VgnVCM10000049114689RCRD>

<sup>4</sup> The World Health Organization (WHO) Report reflecting this evidence, *Environmental Health Criteria 238, Extremely Low Frequency Fields*, 2007 ("WHO Report") was attached with a letter from Rep. Karen Clark in the Hiawatha power line proceeding, MPUC Docket ET2/TL-09-38, Document 20105-50442-01 which is provided as Exhibit 6, Clark Letter & Attachments, pp. 19-20.

risks of stray voltage beneath the proposed Hollydale 115 kV line must also be compared with Alternative A2, which would not pose similar risks to health and safety.

##### 5. Balanced and Precautionary Assessment of Magnetic Field Impacts

As many citizens requested in the public scoping meetings, the Alliance also requests that the Environmental Report provide a balanced and precautionary analysis of the risks of chronic magnetic fields to which residents and children would be exposed should the Hollydale Project be approved. This analysis is particularly important in this proceeding, since there is a feasible and prudent alternative to the Hollydale Project that would meet the criteria for electrical system performance set by Applicant Xcel Energy's engineers without exposing residents to similar magnetic field risks. The Alliance presents in the section below and attached exhibits from the Hiawatha 115 kV routing proceeding key information on health concerns related to chronic magnetic field exposure.

The World Health Organization (WHO) believes that chronic low-intensity exposures to magnetic fields from power lines raises concerns about adverse health effects. As summarized by Administrative Law Judge Beverly Jones Heydinger in the Hiawatha routing case:

The World Health Organization (WHO) has evaluated scientific evidence of the relationship between chronic low-intensity exposures, such as those from power lines, and adverse health effects. The WHO reported in 2007 that scientific evidence suggesting that everyday, chronic low-intensity magnetic field exposure poses a health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia. Although the evidence failed to demonstrate causation, the WHO concluded that the evidence is sufficiently strong to remain a concern. (Exhibit 7, Hiawatha ALJ Report Excerpts, p. 5 of 8, ¶314).

The WHO has stated, "Scientific evidence suggesting that everyday, chronic low-intensity (above 0.3 - 0.4  $\mu$ T [above 3 to 4 milligauss]) power-frequency magnetic field exposure poses a health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia." (Exhibit 6, Clark Letter & Attachments, pp. 19-20 of 77) Epidemiological studies have consistently shown an association between magnetic fields above 3 to 4 milligauss and childhood leukemia.<sup>5</sup> The WHO analyzed the potential that chance or a confounding problem in the analysis resulted in the association, but did not find this criticism valid. (Exhibit 6, Clark Letter & Attachments, p. 35 of 77)

Although expert panels and agencies have not yet identified the mechanism for a cause and effect relationship between exposure to low-intensity magnetic fields and adverse health effects, plausible mechanisms have been researched and identified. The final environmental impact statement (FEIS) prepared in the Hiawatha proceeding summarized testimony by Dr. David Carpenter entered as an exhibit in both the CapX 2020 and Hiawatha routing proceedings.

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<sup>5</sup> Ahlbom, A, *et al.*, *A Pooled Analysis of Magnetic Fields and Childhood Leukaemia*, *British Journal of Cancer* (2000), 83(5), 692-698, pp. 58- 65 and Greenland, S. *et al.*, *A Pooled Analysis of Magnetic Fields, Wire Codes and Childhood Leukemia*, *Epidemiology* (November 2000), Vol. 11, No. 6, 624-634 in Exhibit 6, Clark Letter and Attachments, pp. 66-76 of 77.

(Exhibit 8, David Carpenter Testimony) The Hiawatha FEIS stated:

Dr. David O. Carpenter, during the recent public hearing proceedings for the proposed 345 kV transmission line from Brookings County, South Dakota to Hampton, Minnesota, provided pre-filed direct testimony regarding his findings on health effects associated with EMF. Dr. Carpenter is a public health physician and Director of the Institute for Health and the Environment at the University of Albany, SUNY. He researched and wrote a document titled, *Setting Prudent Public Health Policy for Electromagnetic Field Exposures*. Carpenter concludes “there is strong scientific evidence that exposure to magnetic fields from power lines greater than 4 mG [milligauss] is associated with an elevated risk of childhood leukemia” and that some studies have indicated that there is scientific evidence to suggest that exposures above 2 mG could increase leukemia risks. Carpenter goes on to suggest that “lifetime exposure to magnetic fields in excess of 2 mG is associated with an increased risk of neurodegenerative diseases in adults, including Alzheimer’s disease and amyotrophic lateral sclerosis (ALS).” (Carpenter, 2008)

Additionally, during his recent testimony on the proposed 345 kV HVTL in response to whether EMF similar to power line exposure can affect biological tissue, he states the following (Carpenter, 2010):

*Any one of these actions [actions that alter cell tissue] might be responsible for the carcinogenic and/or neurodegenerative actions of EMFs. As with many environmental agents, however, assuming that only one mechanism of action exists would be a mistake, particularly where more than one disease is involved. It is more likely that multiple mechanisms of action would contribute to disease.* (Exhibit 9, Hiawatha FEIS Excerpts, pp. 5-6 of 8).

The Alliance would emphasize the difference between standards for acute exposure to magnetic fields and standards limiting chronic exposure. The WHO noted that many countries have adopted regulatory standards, such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP) standard of 833 milligauss based on *acute* biological effects of magnetic fields that can have adverse health consequences. (Exhibit 6, Clark Letter & Attachments, p. 19 of 77). These are not chronic exposure standards.

Although there is no universally accepted limit on chronic exposure, several countries have more stringent regulations regarding electric and magnetic field strengths in proximity to schools, hospitals, and other sensitive receptors. The WHO has reported that Israel limits chronic magnetic field exposures to 10 milligauss, the Netherlands limits magnetic fields to 4 milligauss near places where children spend significant amount of time and some California ordinances limit magnetic fields to 2 to 4 milligauss. (Exhibit 6, Clark Letter & Attachments, pp. 44-45 of 77).

The concerns reflected in the attached Exhibits from the Hiawatha 115 kV transmission line routing proceeding and the testimony of Dr. David Carpenter must be taken into account in evaluating the impacts of the Hollydale Project on the natural and socioeconomic environment, including health, and in comparing the Hollydale Project to Alternative A2. There is a feasible

and prudent alternative to locating a 115 kV where families in 62 or more homes will experience chronic magnetic fields exceeding the 4 milligauss level associated with increased childhood leukemia and neurodegenerative diseases in adults. A precautionary approach would support selection of Alternative A2 as a feasible and prudent alternative to minimize risks to public health. As stated in Dr. Carpenter's testimony:

There is no reliable evidence that power-line magnetic fields do not cause cancer, and a large body of evidence that power-line magnetic fields do cause adverse human health impacts, including cancer. . . Prudent public health policy requires minimizing the effects of power line magnetic fields on human health. (Exhibit 8, David Carpenter Testimony, p. 6 of 76).

## **6. Costs and Incentives**

Both the Minnesota Environmental Policy Act and the Minnesota Environmental Rights Act state that economic considerations alone do not justify state selection of a project more injurious to the environment than a feasible and prudent alternative. (Minn. Stat. §§ 116D.04, Subd. 6 and 116B.09, Subd. 2). The Alliance requests that the Environmental Report state clearly that the cost differential between the Hollydale project and Alternative A2, should one remain after a more rigorous review, would not justify selection of the Hollydale 115 kV power line.

In addition, the Alliance requests that the Environmental Report carefully review questions of costs and incentives pertinent to the Hollydale Project. At the time when Alternative A2 was rejected by Xcel Energy as more costly than the Hollydale Project, Alternative A2 was estimated to cost \$26.3 million and the Hollydale Project to cost \$12.8 million. (CON App., Appx. B1, pp. 59-60 of 84). However, the current cost estimate for the Hollydale Project is \$23 million, with projected costs as high as \$30 million, depending on route selection. (CON App., pp. 3, 15). Based on the current cost estimates, the Hollydale 115 kV transmission line project will not only cause greater environmental and socioeconomic costs in Plymouth, Medina and the Minnehaha Creek Watershed District, but may also be more expensive for ratepayers.

Several costs projected for the Hollydale Project and Alternative A2 bear closer scrutiny. As suggested in Section 3, a rigorous comparison of equipment and costs for the Hollydale Project and Alternative A2 115 kV perimeter substations must be made to determine if costs of the Hollydale Project were understated and costs of Alternative A2 overstated in Xcel's initial selection of its preferred alternative.

Next, the Environmental Report should examine the projected costs of Alternative A2 in (CON App., Appx. B1, p. 60-61 of 84) to determine the degree to which projected costs are related to undergrounding. To the extent that projections for Alternative A2 include costs for undergrounding distribution lines, the Environmental Report should assess whether such costs would be recovered from the overall rate base or from local customers under the applicable Electric Rate Book.

The Environmental Report should also evaluate Xcel's concern that Alternative A2 would require Xcel to pay facility charges of \$2.3 million per year to Great River Energy (CON App.,

B.1, p. 59 of 84). To the extent that costs are shifted from one set of utility customers to the other, the Environmental Report should consider whether it is even appropriate to consider this cost shifting as an increase in overall costs of the electric system to ratepayers. The Environmental Report should also analyze the nature of payments between Applicants proposed for the Hollydale Project, which also requires sharing of facilities between utilities.

Finally, the Alliance requests that the Environmental Report evaluate the differential options for cost recovery that would be available to Applicants for the Hollydale 115 kV transmission line project as compared to Alternative A2. Specifically, would the provisions for direct recovery of costs pursuant to Minn. Stat. §216B.16, subd. 7b only be available to Applicants for the Hollydale transmission alternative and not for the Alternative A2 improvements to the distribution system? The Environmental Report should consider the differential benefits to Applicants from immediate recovery under the statutory “transmission cost adjustment” as compared to cost recovery for distribution system improvements in a rate case. The question should be raised whether the “transmission cost adjustment” creates incentives for utilities to address projected distribution deficits with transmission line solutions.

The Alliance thanks DOC-EFP staff for addressing the questions raised above and ensuring that the scope and rigor of the Environmental Report will assist members of the public as well as decision-makers in analyzing the need for the Hollydale Project and the availability of a feasible and prudent alternative to reduce adverse impacts on natural resources, the socioeconomic environment and public health.

Please feel free to contact me at 651-646-8890 if you have any questions regarding comments and exhibits submitted on behalf of the Western Plymouth Neighborhood Alliance or would like to request additional materials pertaining to the issues we have raised.

Respectfully submitted,



Paula Goodman Maccabee  
Counsel for Western Plymouth Neighborhood Alliance

Enclosures (Exhibits 1 through 9)

Western Plymouth Neighborhood Alliance  
Hollydale Certificate of Need Scoping Comments November 16, 2012

EXHIBITS

Exhibit 1, App. Resp. to WPNA IR 9, Hollydale Routing Proceeding, MPUC E-002/TL-11-152 OAH 8-2500-22806-2

Exhibit 2, App. Resp. to WPNA IR 4, Hollydale Routing Proceeding, MPUC E-002/TL-11-152 OAH 8-2500-22806-2

Exhibit 3, App. Resp. to WPNA IR 5, Hollydale Routing Proceeding, MPUC E-002/TL-11-152 OAH 8-2500-22806-2

Exhibit 4, Minnehaha Creek Watershed District Maps, figures downloaded from <http://www.minnehahacreek.org/comprehensive-water-resources-management-plan/minnehaha-creek-watershed-district-comprehensive-wa-96>

Exhibit 5, Xcel Resp. to WPNA IR 12, Hollydale Routing Proceeding, MPUC E-002/TL-11-152 OAH 8-2500-22806-2

Exhibit 6, Letter and World Health Organization Report submitted by Rep. Karen Clark in Hiawatha 115 kV route proceeding, MPUC Docket ET2/TL-09-38, Document 20105-50442-01

Exhibit 7, Administrative Law Judge Report Excerpts in Hiawatha 115 kV route proceeding, MPUC Docket ET2/TL-09-38, Document 201010-55302-01

Exhibit 8, David Carpenter, MD Testimony, Exhibit 47 in Hiawatha 115 kV route proceeding, MPUC Docket ET2/TL-09-38, Document 20102-47191-06 (Schedule 11).

Exhibit 9, Final Environmental Impact Statement Excerpts in Hiawatha 115 kV route proceeding, MPUC Docket ET2/TL-09-38, Document 20106-51326-01

## WESTERN PLYMOUTH NEIGHBORHOOD ALLIANCE INFORMATION REQUEST

- Non Public Document – Contains Trade Secret Data  
 Public Document – Trade Secret Data Excised  
 Public Document

Applicants Xcel Energy and Great River Energy

Docket No.: PUC E-002/TL-11-152  
OAH 8-2500-22806-2

Response To: Western Plymouth Neighborhood Alliance                      Information Request No. 9

Date Received: October 4, 2012

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### Question:

- A. Please state the size and ampacity of the Applicants' proposed 115 kV transmission line.
- B. For the Certificate of Need ("CON") Application calculation of (mG) in Table 12 at page 114 and the Route Permit Application calculation of (mG) for the proposed Hollydale 115 kV transmission line at Table 12 on page 69, please state the following:
1. Does the term "Magnetic Flux Density" used in Table 12 of the CON Application have the same meaning as "Magnetic Fields" (MF) used in Table 12 of the Route Permit Application? If not, please explain any differences.
  2. Are the measurements in Table 12 of both the Route Permit Application and the CON Application in milligauss (mG)?
  3. Is the difference in projected magnetic fields in Table 12 of the CON Application and Table 12 of the Route Permit Application solely due to the distance above the ground at which magnetic field exposures were projected? If not, please state all other assumptions or variables that differ from one Table 12 to the other.

4. Please state for what year or years Applicants have estimated that average amperage for the 115 kV line will be 150 and peak amperage will be 250 as reflected in Table 12 of the CON and Route Permit Applications.
  5. Based on Applicants' forecasted load from 2010 through 2030, please state for each year the estimated average amperage and peak amperage on the Hollydale Project 115 kV line.
- C. Please state what Applicants estimate would be a reasonable distance above the ground to estimate (1) magnetic field exposures on the second floor of a dwelling in the Project Area, and (2) magnetic field exposure on the third floor of a dwelling in the Project Area.
- D. Please provide in a table format comparable to that of Table 12 in the CON Application and Table 12 in the Route Permit Application - with 115 kV line configurations and distances from the centerline evaluated in these Tables - estimates of the levels in mG of magnetic fields projected under the following conditions:
1. Based on an average amperage of 150 and peak amperage of 250, stating clearly during what year such amperage is projected, provide estimated mG at distances from the ground of a) 3.28 feet; b) the number of feet from the ground identified in Subpart C(1) that would reasonably reflect a second floor exposure; and c) the number of feet from the ground identified in Subpart C(2) that would reasonably reflect a third floor exposure;
  2. Based on the highest predicted average and peak load for the 115 kV line projected from 2010 through 2030 in Subpart B(5) and stating clearly during what year such amperage is projected, provide estimated mG at distances from the ground of a) 3.28 feet; b) the number of feet from the ground identified in Subpart C(1) that would reasonably reflect a second floor exposure; and c) the number of feet from the ground identified in Subpart C(2) that would reasonably reflect a third floor exposure.

Response:

- A. Please state the size and ampacity of the Applicants' proposed 115 kV transmission line.
- a. The normal load serving ampacity of the proposed 115 kV line is approximately 1800 amps.

- B. For the Certificate of Need (“CON”) Application calculation of (mG) in Table 12 at page 114 and the Route Permit Application calculation of (mG) for the proposed Hollydale 115 kV transmission line at Table 12 on page 69, please state the following:
1. Does the term “Magnetic Flux Density” used in Table 12 of the CON Application have the same meaning as “Magnetic Fields” (MF) used in Table 12 of the Route Permit Application? If not, please explain any differences.
    - a. They are essentially the same in engineering terms. The magnitude and direction of the force exerted on a moving electric charge define the magnetic field. The quantity described is the magnetic flux density.<sup>1</sup>
  2. Are the measurements in Table 12 of both the Route Permit Application and the CON Application in milligauss (mG)?
    - a. Yes. The magnetic field measurements are in milligauss.
  3. Is the difference in projected magnetic fields in Table 12 of the CON Application and Table 12 of the Route Permit Application solely due to the distance above the ground at which magnetic field exposures were projected? If not, please state all other assumptions or variables that differ from one Table 12 to the other.
    - a. Both Table 12 from the CN and the Route Permit assumed peak amps of 250 and average amps of 150. The differences in the projected magnetic fields in Table 12 of the CN Application and Table 12 of the Route Permit Application are due to the distance above ground at which magnetic field exposures were projected. The calculated magnetic fields in Table 12 of the Route Permit Application are at a height of 65.61 feet. The calculated magnetic fields in Table 12 of the CN Application are at a height of 3.28 feet.

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<sup>1</sup> EPRI AC Transmission Line Reference Book – 200 kV and Above Third Edition; IEEE Standard 644-1994, Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields From AC Power Lines.

4. Please state for what year or years Applicants have estimated that average amperage for the 115 kV line will be 150 and peak amperage will be 250 as reflected in Table 12 of the CON and Route Permit Applications.
  - a. The CN and Route Permit Applications used 150 Amps for average amperage and 250 Amps for peak amperage. This is the maximum amount of current that a fully loaded 50 MVA transformer at the Hollydale Substation could be expected to be loaded to. The peak current flowing on the proposed Project would be equal to 250 amps only if: (1) the 50 MVA transformer at the Hollydale Substation was fully loaded and (2) the 50 MVA transformer only supplied by one of its two connections (either Hollydale-Medina or Hollydale-Pomerleau Lake).

It is expected that approximately 20 MVA of distribution load will be served from the initial 50 MVA transformer installed at the Hollydale Substation as part of the proposed Project. This results in approximately 110 amps of current flowing into the high side of the distribution transformer. Following construction of the proposed Project, the current flow into the Hollydale Substation will be supplied by its two connections to the remainder of the transmission system (Pomerleau Lake and Medina substations). These sources will provide close to the same amount of power to Hollydale Substation and at the time of initial installation, the current on the Medina-Hollydale 115 kV line is expected to be 61 Amps (peak) and 37 Amps (average). The current on the Hollydale-Pomerleau Lake 115 kV line is expected to be 56 Amps (peak) and 34 amps (average) in the year 2017.

5. Based on Applicants' forecasted load from 2010 through 2030, please state for each year the estimated average amperage and peak amperage on the Hollydale Project 115 kV line.
    - a. See Response to IR No. 9 D.2.a on **Attachment 9-1** for magnetic field calculations for the year 2022 on the Medina-Hollydale portion of the 115 kV line. For 2022, average current flow on this section of the line was estimated at 40 Amps and peak current flow was estimated at 66 Amps. Beyond 2022, extrapolation could be used to determine peak and average current.
- C. Please state what Applicants estimate would be a reasonable distance above the ground to estimate (1) magnetic field exposures on the second floor of a dwelling in the Project Area, and (2) magnetic field exposure on the third floor of a dwelling in the Project Area.

- a. Applicants believe that a reasonable estimate for second floor magnetic field is to calculate these values at 4 meters above ground and that a reasonable estimate for third floor magnetic field estimates is to calculate these values at 7 meters above ground. Applicants note for the magnetic field calculations at 0 feet from the conductor and 7 meters above ground, a person or structure would be touching the conductor. NESC and Xcel Energy design criteria do not allow for persons or structures to be located this close to a conductor.

D. Please provide in a table format comparable to that of Table 12 in the CON Application and Table 12 in the Route Permit Application - with 115 kV line configurations and distances from the centerline evaluated in these Tables - estimates of the levels in mG of magnetic fields projected under the following conditions:

1. Based on an average amperage of 150 and peak amperage of 250, stating clearly during what year such amperage is projected, provide estimated mG at distances from the ground of a) 3.28 feet; b) the number of feet from the ground identified in Subpart C(1) that would reasonably reflect a second floor exposure; and c) the number of feet from the ground identified in Subpart C(2) that would reasonably reflect a third floor exposure;

a. See **Attachment 9-1**.

2. Based on the highest predicted average and peak load for the 115 kV line projected from 2010 through 2030 in Subpart B(5) and stating clearly during what year such amperage is projected, provide estimated mG at distances from the ground of a) 3.28 feet; b) the number of feet from the ground identified in Subpart C(1) that would reasonably reflect a second floor exposure; and c) the number of feet from the ground identified in Subpart C(2) that would reasonably reflect a third floor exposure.

a. See **Attachment 9-1**.

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Response by: Justin Michlig; Mythili Chaganti  
Titles: Specialty Engineer; Senior Specialty Engineer  
Department: Transmission Planning; Engineering and Design - Outsourcing  
Telephone: 612-330-5893; 612-330-6360  
Date: November 5, 2012

**IR No. 9 D.1.a**

**Calculated Magnetic Flux Density (milligauss) for Proposed 115 kV Transmission Line Designs  
 (3.28 feet above ground)**

Segment	System Condition	Current <sup>1</sup> (Amps)	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
Single Pole, Braced Post, 115 kV Single Circuit	Peak	250	0.32	0.69	2.53	4.25	8.30	12.47	19.43	32.10	16.27	10.50	7.04	3.63	2.16	0.55	0.24
	Average	150	0.19	0.41	1.52	2.55	4.98	7.48	11.66	19.26	9.76	6.30	4.22	2.18	1.29	0.33	0.14
Single Pole, Horizontal Post (All Ph one side), 115 kV Single Circuit	Peak	250	0.36	0.76	2.55	3.99	6.93	9.60	13.83	29.87	29.97	20.64	13.91	6.96	4.01	0.98	0.42
	Average	150	0.21	0.46	1.53	2.39	4.16	5.76	8.30	17.92	17.98	12.38	8.34	4.18	2.41	0.59	0.25
Single Pole, Horizontal Post, 115 kV Single Circuit	Peak	250	0.64	1.37	4.85	7.86	14.33	20.16	28.38	47.01	37.45	25.24	17.08	8.79	5.18	1.31	0.57
	Average	150	0.38	0.82	2.91	4.72	8.60	12.09	17.03	28.21	22.47	15.14	10.25	5.27	3.11	0.79	0.34
Single Pole, Davit Arm, 115 kV/115kV Double Circuit	Peak	250/250	0.21	0.37	1.76	3.59	8.91	15.12	25.75	41.99	24.30	13.91	7.97	3.02	1.39	0.28	0.18
	Average	150/150	0.12	0.22	1.06	2.15	5.35	9.07	15.45	25.19	14.58	8.34	4.78	1.81	0.83	0.17	0.11

**IR No. 9 D.1.b**

**Calculated Magnetic Flux Density (milligauss) for Proposed 115 kV Transmission Line Designs  
 (4 meters above ground) 2<sup>nd</sup> Floor Dwelling**

Segment	System Condition	Current (Amps) <sup>2</sup>	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
Single Pole, Braced	Peak	250	0.32	0.69	2.64	4.58	9.69	15.94	29.57	77.17	23.22	13.03	8.10	3.89	2.24	0.56	0.24

<sup>1</sup> The peak current flowing on the proposed Project would be equal to 250 amps only if: (1) the 50 MVA transformer at the Hollydale Substation was fully loaded and (2) the 50 MVA transformer only supplied by one of its two connections (either Hollydale-Medina or Hollydale-Pomerleau Lake).

<sup>2</sup> The peak current flowing on the proposed Project would be equal to 250 amps only if: (1) the 50 MVA transformer at the Hollydale Substation was fully loaded and (2) the 50 MVA transformer only supplied by one of its two connections (either Hollydale-Medina or Hollydale-Pomerleau Lake).

Segment	System Condition	Current (Amps) <sup>2</sup>	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
	Average	150	0.19	0.42	1.58	2.75	5.82	9.57	17.74	46.30	13.93	7.82	4.86	2.33	1.35	0.34	0.14
Single Pole, Horizontal Post (All Ph one side), 115 kV Single Circuit	Peak	250	0.36	0.77	2.66	4.25	7.74	29.35	54.51	84.35	54.85	29.57	17.50	7.79	4.28	0.99	0.43
	Average	150	0.21	0.46	1.59	2.55	4.64	6.73	10.42	32.71	50.61	32.91	17.74	10.50	2.57	0.60	0.26
Single Pole, Horizontal Post, 115 kV Single Circuit	Peak	250	0.64	1.39	5.10	8.58	17.01	25.99	41.21	86.98	63.09	34.15	20.73	9.68	5.48	1.33	0.57
	Average	150	0.38	0.83	3.06	5.15	10.20	15.60	24.72	52.19	37.85	20.49	12.44	5.81	3.29	0.80	0.34
Single Pole, Davit Arm, 115 kV/115kV Double Circuit	Peak	250/250	0.21	0.36	1.82	3.94	11.23	21.91	48.00	96.06	46.49	20.92	10.56	3.58	1.58	0.30	0.18
	Average	150/150	0.12	0.22	1.09	2.37	6.74	13.14	28.80	57.63	27.90	12.55	6.34	2.15	0.95	0.18	0.11

**IR No. 9 D.1.c**

**Calculated Magnetic Flux Density (milligauss) for Proposed 115 kV Transmission Line Designs  
 (7 meters above ground) 3<sup>rd</sup> Floor Dwelling**

Segment	System Condition	Current (Amps) <sup>3</sup>	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
Single Pole, Braced Post, 115 kV Single Circuit	Peak	250	0.32	0.70	2.71	4.79	10.74	18.98	41.61	318.2 6	31.26	15.22	8.88	4.06	2.30	0.56	0.24
	Average	150	0.19	0.42	1.62	2.88	6.44	11.39	24.97	190.9 6	18.76	9.13	5.33	2.43	1.38	0.34	0.14
Single Pole, Horizontal Post (All Ph one side), 115 kV Single Circuit	Peak	250	0.36	0.78	2.73	4.44	8.38	12.58	20.72	99.74	101.1 3	39.90	20.92	8.44	4.47	1.00	0.43
	Average	150	0.22	0.47	1.64	2.67	5.03	7.55	12.43	59.84	60.68	23.94	12.55	5.06	2.68	0.60	0.26
Single Pole, Horizontal Post, 115	Peak	250	0.64	1.40	5.29	9.14	19.50	32.73	62.46	163.5 9	103.2 5	43.37	23.99	10.37	5.70	1.34	0.57

<sup>3</sup> The peak current flowing on the proposed Project would be equal to 250 amps only if: (1) the 50 MVA transformer at the Hollydale Substation was fully loaded and (2) the 50 MVA transformer only supplied by one of its two connections (either Hollydale-Medina or Hollydale-Pomerleau Lake).

Segment	System Condition	Current (Amps) <sup>3</sup>	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
	Average	150	0.39	0.84	3.17	5.48	11.70	19.64	37.48	98.15	61.95	26.02	14.39	6.22	3.42	0.81	0.34
Single Pole, Davit Arm, 115 kV/115kV Double Circuit	Peak	250/250	0.20	0.35	1.83	4.17	13.31	29.47	87.43	189.14	86.91	29.19	13.13	4.08	1.76	0.32	0.19
	Average	150/150	0.12	0.21	1.10	2.50	7.99	17.68	52.46	113.48	52.14	17.51	7.88	2.45	1.05	0.19	0.11

**IR No. 9 D.2.a**

**Calculated Magnetic Flux Density (milligauss) for Proposed 115 kV Transmission Line Designs (Year: 2022) and (3.28 feet above ground)**

Segment	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
Single Pole, Braced Post, 115 kV Single Circuit	Peak	66	0.08	0.18	0.67	1.12	2.19	3.29	5.13	8.47	4.30	2.77	1.86	0.96	0.57	0.15	0.06
	Average	40	0.05	0.11	0.40	0.68	1.33	1.99	3.11	4.14	2.60	1.68	1.13	0.58	0.34	0.09	0.04
Single Pole, Horizontal Post (All Ph one side), 115 kV Single Circuit	Peak	66	0.09	0.20	0.67	1.05	1.83	2.53	3.65	7.89	7.91	5.45	3.67	1.84	1.06	0.26	0.11
	Average	40	0.06	0.12	0.41	0.64	1.11	1.54	2.21	4.78	4.79	3.30	2.23	1.11	0.64	0.16	0.07
Single Pole, Horizontal Post, 115 kV Single Circuit	Peak	66	0.17	0.36	1.28	2.08	3.78	5.32	7.49	12.41	9.89	6.66	4.51	2.32	1.37	0.35	0.15
	Average	40	0.10	0.22	0.78	1.26	2.29	3.23	4.54	7.52	5.99	4.04	2.73	1.41	0.83	0.21	0.09
Single Pole, Davit Arm, 115 kV/115kV Double Circuit	Peak	66/66	0.05	0.10	0.46	0.95	2.35	3.99	6.80	11.09	6.42	3.67	2.11	0.80	0.37	0.07	0.05
	Average	40/40	0.03	0.06	0.28	0.57	1.43	2.42	4.12	6.72	3.89	2.23	1.28	0.48	0.22	0.04	0.03

**IR No. 9 D.2.b**

**Calculated Magnetic Flux Density (milligauss) for Proposed 115 kV Transmission Line Designs  
 (Year: 2022) and (4 meters above ground)**

Segment	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
Single Pole, Braced Post, 115 kV Single Circuit	Peak	66	0.08	0.18	0.70	1.21	2.56	4.21	7.81	20.37	6.13	3.44	2.14	1.03	0.59	0.15	0.06
	Average	40	0.05	0.11	0.42	0.73	1.55	2.55	4.73	12.35	3.72	2.09	1.30	0.62	0.36	0.09	0.04
Single Pole, Horizontal Post (All Ph one side), 115 kV Single Circuit	Peak	66	0.09	0.20	0.70	1.12	2.04	2.96	4.59	14.39	14.48	7.81	4.62	2.06	1.13	0.26	0.11
	Average	40	0.06	0.12	0.43	0.68	1.24	1.79	2.78	8.72	8.78	4.73	2.80	1.25	0.68	0.16	0.07
Single Pole, Horizontal Post, 115 kV Single Circuit	Peak	66	0.17	0.37	1.35	2.27	4.49	6.86	10.88	22.96	16.65	9.02	5.47	2.56	1.45	0.35	0.15
	Average	40	0.10	0.22	0.82	1.37	2.72	4.16	6.59	13.92	10.09	5.46	3.32	1.55	0.88	0.21	0.09
Single Pole, Davit Arm, 115 kV/115kV Double Circuit	Peak	66/66	0.05	0.10	0.48	1.04	2.96	5.78	12.67	25.36	12.27	5.52	2.79	0.94	0.42	0.08	0.05
	Average	40/40	0.03	0.06	0.29	0.63	1.80	3.50	7.68	15.37	7.44	3.35	1.69	0.57	0.25	0.05	0.03

**IR No. 9 D.2.c**

**Calculated Magnetic Flux Density (milligauss) for Proposed 115 kV Transmission Line Designs  
 (Year: 2022) and (7 meters above ground)**

Segment	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
Single Pole, Braced Post, 115 kV Single Circuit	Peak	66	0.08	0.18	0.71	1.27	2.84	5.01	10.99	84.02	8.25	4.02	2.35	1.07	0.61	0.15	0.06
	Average	40	0.05	0.11	0.43	0.77	1.72	3.04	6.66	50.92	5.00	2.44	1.42	0.65	0.37	0.09	0.04
Single Pole, Horizontal Post (All Ph one side), 115 kV Single Circuit	Peak	66	0.09	0.21	0.72	1.17	2.21	3.32	5.47	26.33	26.70	10.53	5.52	2.23	1.18	0.26	0.11
	Average	40	0.06	0.12	0.44	0.71	1.34	2.01	3.32	15.96	16.18	6.38	3.35	1.35	0.71	0.16	0.07
Single Pole,	Peak	66	0.17	0.37	1.40	2.41	5.15	8.64	16.49	43.19	27.26	11.45	6.33	2.74	1.51	0.35	0.15

Segment	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)														
			-300	-200	-100	-75	-50	-37.5	-25	0	25	37.5	50	75	100	200	300
	Average	40	0.10	0.22	0.85	1.46	3.12	5.24	9.99	26.17	16.52	6.94	3.84	1.66	0.91	0.21	0.09
Single Pole, Davit Arm, 115 kV/115kV Double Circuit	Peak	66/66	0.05	0.09	0.48	1.10	3.51	7.78	23.08	49.93	22.94	7.71	3.47	1.08	0.46	0.08	0.05
	Average	40/40	0.03	0.06	0.29	0.67	2.13	4.71	13.99	30.26	13.90	4.67	2.10	0.65	0.28	0.05	0.03

5003029v1

## WESTERN PLYMOUTH NEIGHBORHOOD ALLIANCE INFORMATION REQUEST

- Non Public Document – Contains Trade Secret Data  
 Public Document – Trade Secret Data Excised  
 Public Document

Applicants Xcel Energy and Great River Energy

Docket No.: PUC E-002/TL-11-152  
OAH 8-2500-22806-2

Response To: Western Plymouth Neighborhood Alliance                      Information Request No. 4

Date Received: October 4, 2012

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### Question:

For Applicants entire Proposed Route for the Hollydale Project, please state:

- A. The number of dwelling units within the following feet of the proposed route centerline:
1. 0 to 25 feet;
  2. 25 to 50 feet;
  3. 50 to 100 feet;
  4. 100 to 200 feet;
  5. 200 to 500 feet.
- B. By name and address, identify each school, child care facility, religious institution, organic farm or historical (NHRP or NHRP eligible) property within the following distances of the proposed route center line:
1. 0 to 25 feet;
  2. 25 to 50 feet;
  3. 50 to 100 feet;
  4. 100 to 200 feet;
  5. 200 to 500 feet.
- C. The number of linear feet of the proposed route that cross:
1. Wetlands;
  2. wetlands with no adjacent road access;
  3. floodplains;
  4. areas containing mature trees;

5. agricultural crop lands.

Response:

A. The number of dwelling units within the following feet of the Proposed Route centerline for the entire Proposed Route:

	Distance from Proposed Route Centerline <sup>1</sup>				
	(1) 0 to 25 feet	(2) 25 to 50 feet	(3) 50 to 100 feet	(4) 100 to 200 feet	(5) 200 to 500 feet
Number of Dwelling Units	2	60	106	121	585

B. By name and address, identify each school, child care facility, religious institution, organic farm or historical (NHRP or NHRP eligible) property within the following distances of the Proposed Route center line for the entire Proposed Route:

	Distance from Proposed Route Centerline				
	(1) 0 to 25 feet	(2) 25 to 50 feet	(3) 50 to 100 feet	(4) 100 to 200 feet	(5) 200 to 500 feet
Number of Schools	0	0	0	1 - Providence Academy, 15100 Schmidt Lake Road	0
Number of Child Care Facilities	0	0	0	1 - Rockford Kinder Care, 15755 Rockford Road	0
Number of Religious Institutions	0	0	0	0	0
Number of Organic Farms <sup>[1]</sup>	0	0	0	0	0

<sup>1</sup> Applicants note that the data presented in this table differs slightly from the data presented in the Route Permit Application. For instance the Route Permit identifies 286 dwellings within 0-200 feet of the Proposed Route centerline and the table above identifies 289 dwellings. The differences between these two data sets is a result of Applicants refining the locations used to calculate distances between the Proposed Route centerline and dwelling units along the route.

Number of Historical Properties (only NRHP or NRHP Eligible) <sup>[2]</sup>	0	0	0	1 (HE-MDC-020, 2322 Tamarack Dr.)	2 (HE-PLC-147, 4020 Hwy 101 & HE-PLC-182, 1xxxx TH 55)
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[1] Presence of Organic Farms evaluated based on listed address information for certified organic farming operations available from Minnesota Department of Agriculture (MDA) Organic Farm directory 2012-2013 (voluntary directory for 215 of the estimated 700 certified organic farms in the state of Minnesota), MN Department of Agriculture’s Minnesota Grown Directory, accessible organic certifier directories for GOA, ICO, ICS/FVO, Iowa Department of Agriculture and Land Stewardship, MCIA, MOSA, NICS, OCIA, OTCO, and “Farmers Pal” website (<http://www.farmerspal.com/organic-farms/region/hennepin-county-minnesota/page/1/>).

[2] Historical Features (as reported in SHPO database, May 2012). None of these structures are on the NRHP. Eligibility of these three structures for listing on the NRHP is unknown; however, HE-PLC-147 appears to be razed and it is not clear whether HE-MDC-020 and HE-PLC-182 are still present.

C. The number of linear feet of the Proposed Route (for the entire Proposed Route) that cross:

(1)Wetlands <sup>[1]</sup>	(2) Wetlands with No Adjacent Road Access <sup>[2]</sup>	(3) Floodplains <sup>[3]</sup>	(4) Areas of Mature Trees <sup>[4]</sup>	(5) Agricultural Crop Lands <sup>[5]</sup>
11894	5596	4564	851	3769

[1] Based on Wetland determination by Barr Engineering.

[2] Based on Wetland determination by Barr Engineering and proximity to named road.

[3] Based of FEMA Q3 Flood Hazard Areas.

[4] Based on MnDNR GAP Data.

[5] Based on Met Council 2010 Land Use Data.

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Response by: RaeLynn Asah  
 Title: Permitting Analyst  
 Department: Siting and Land Rights  
 Telephone: 612-330-6512  
 Date: October 16, 2012