June 11, 2012

Dear Mr. Lipman,

We are writing to ask your help in preventing Xcel Energy from using the Hollydale Line to increase the current capacity from 69 KV to 115 KV.

When the current lines went in this area was farm land not neighborhoods. It is morally wrong to take the right of way and not consider the lives of people who have bought this land and built their homes here. The power lines will dramatically decrease our home value.

We feel the lines should run along major highways NOT through neighborhoods. Greenwood Elementary school is right across Medina Road from us. Hundreds of children go their 7 hours every day and will also be exposed. Their are obvious health hazards. There is a reason they have been banned in Europe.

The lines should be buried - cost should not be the major concern. We would like an independent

study for health, safety, noise and home value. Who is responsible for the health and potential lives that could be lost due to exposure?

Please do the right thing — stop the lines from coming through our neighborhood.

Thank-You,

Charles and Carole Eider
18240 39th Ave. N.
Plymouth, MN. 55446

Carole J. Eider
Charles M. Eider

PUC Docket No. E002/TL-11-152

June 19, 2012

Judge Lipman,

My name is Christine Stoner. My husband and I live at 14555 41st Ave No in Plymouth with our 5 children. We live on the junction of County Rd 9 and Juneau Lane, and our house sits directly on the path of alternate route A. I am writing to you to plead with you not to consider alternate route A in the Hollydale project. As I look at the map sent to me by Mr. Ek, the 115 kv transmission line would run directly on the side of our house to the south. My children play in this backyard as the south side of our house is the backyard, and my children's bedrooms face County Rd 9. I have extreme concerns about their health and the direct and indirect health issues that accompany being that close to a 115kv transmission line. I know that there is strong evidence in relationships between ELF magnetic fields and childhood leukemia, Alzheimer's and Lou Gehrig's disease, and breast cancer. This doesn't begin to cover diseases that we don't know about yet due to lack of research. Our yard is not that big and putting a transmission line along County Rd 9 (as shown in alternate Route A) places my 5 children in the less than 400 feet that research shows is the minimum distance that provides an adequate (put not proven) distance from these lines. Also, houses do not provide a physical barrier. My children are at a high risk should this alternate route be chosen. Please do not put them in this position. Our family moved here from Texas 6 years ago for the quality of life Plymouth, Minnesota had to offer. Please keep this quality of life in tact for them. There are no current transmission lines anywhere near this area of county rd 9. My husband and I would never have bought this house if we had concerns that there would ever be an issue of transmission lines being placed along a neighborhood full of children that has been well established for decades where no former power lines have been.

My children and I attended the hearings at Wayzata High School on June 7th and June 8th, and I just wanted to follow up with my letter again as well as the letters of my children in pleading with you not to choose alternate route A along County Rd 9.

Thank you for your time and consideration,

Christine Stoner

Christine and Steven Stoner, Megan, McKenna, Brady, Kylee, and Ranger

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Ranger Stoner
Address: 14553 141st Ave
City: Elkmount State: MN ZIP: 55446

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Dear Judge
Please do not choose
Alternate Route A.
That is where we play on the
trampoline and roast
marshmellows.

THANK You

Signature: Ranger Stoner Date: 6/20/12

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Mckenna Stoner
Address: 4555 41st Ave N Plymouth MN
City: Plymouth State: MN ZIP: 55446

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Dear Judge,

Please do not put the transmition line on Route A. There are a lot of sinnesses that will go along with the power lines and I do not want that for me and my family. We also have a trampoline in our back yard and the power lines would get in the way of it. We would also have to be very cattful in our back yard and my little brother who's 6 may not get it and it would be a lot of work to keep him away from it. more on back

alternate

Signature: Mckenna Stoner Date: 6/20/12

We also have all our family events at our house and we have kids in our family that are 2, 5, 6 and 6. many of those kids [redacted] would try to get near them.

Thank you for [redacted] your Consideration.

from: McKenna

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Megan Geppert
Address: 14555 41st Ave. No.
City: Plymouth State: MN ZIP: 55446

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Judge Lipman,
My name is Megan Geppert, and I attended the hearing with my mom and four younger siblings. I am writing to you to beg you to not consider alternate route A. This runs right through my property, and not only does it decrease our as well as our neighbors property valve, but it can also be harmful to my younger siblings and myself. As the oldest, I am very protective of my siblings and the other younger neighborhood children, and their bedrooms as well as my own would face the transmission line. This is very concerning to me, so I ask you not to let this happen. Thank you.

Signature: Megan Geppert Date: 6/20/12

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Brady stoner

Address: 14555

City: plymouth State: MN ZIP: 55446

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Dear Judge Lip Man,
please do not put the transmission
line on Alternity route A
because we play there
and do not want the
sicknesses that go with it.
Thank you.

from,
Brady

Signature: Brady stoner Date: 6/20 2012

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Kylee Stoner
Address: 14555 41st Ave. No
City: Plymouth State: MN ZIP: 55446

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Dear Judge,

Please do not put the transmission Pole in are yard. We do alot of fun things where they want to Put the Pole! Also we have a trampoline very close to the Line. I really wish you will not Choose Alternate route A. Thank you for Reading this letter.

from

Signature: Kylee Stoner Date: 6/20/12

The Honorable Eric L.Lipman
June 19, 2012
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, MN 55164-0620

Dear Mr. Lipman:

We are writing you regarding the closeness of the proposed Route A to our homes in The Orchards Homeowners Assn, as well as many other homes west of County Road 101. You have record of the many concerns regarding the proposed powerline routes which were voiced at the Wayzata High School meetings June 7 and 8. We see no point in listing them again here. Obviously, we have great concern over the proposed route. There are other options, and they must be considered.

We would emphatically request that the lines be buried wherever they are routed thru an existing neighborhood. Excel Energy must not be allowed to use money as an excuse to move thru any area they choose. If it means additional money to bury lines, then that they must cover the expense. If Excel chooses to not bury lines, then they must listen to the voices of several hundred homeowners and choose another route. It is unconscienceable that Excel would not listen to the many homeowners affected by the proposed powerline route, and make the necessary changes.

Thank you for your consideration.

Robert and Ruth Peterson - Orchards of Plymouth Resident

Ruth M Peters
Robert C. Peterson

Xcel Energy®

414 Nicollet Mall
Minneapolis, Minnesota 55401

June 21, 2012

VIA ELECTRONIC FILING

Hon. Eric L. Lipman
Administrative Law Judge
State of Minnesota, Office of Administrative Hearings
PO Box 64620
St. Paul, MN 55164-0620

RE: IN THE MATTER OF THE ROUTE PERMIT APPLICATION FOR THE HOLLYDALE 115 KV TRANSMISSION LINE PROJECT IN THE CITIES OF PLYMOUTH AND MEDINA, HENNEPIN COUNTY, MINNESOTA
PUC DOCKET NO. E002/TL-11-152
OAH DOCKET NO. 8-2500-22806-2

Dear Judge Lipman:

On May 4, 2012, the Minnesota Public Utilities Commission issued an order granting the petition of Northern States Power Company, doing business as Xcel Energy, and Great River Energy (collectively, Applicants) to convert the pending route permit proceeding for the Hollydale Project from the alternative permitting process to the full permitting process. One of the differences between the full permitting process and the alternative process is that the full permitting process requires an applicant to identify at least two routes, and to state a preference for one of these routes.[1] In contrast, the alternative process requires an applicant to describe its preferred route and to disclose alternative routes the applicant considered.[2]

Applicants' route permit application for the Hollydale Project included a preferred route and an evaluation of four alternative routes. Applicants would like to clarify for the record that for the purposes of Minnesota Rule 7850.1900, subp. 2, the route described in the Application as the "Proposed Route" is Applicants' preferred route and the route described as "Alternate Route Segment A" is Applicants' alternative route.

[1] Minn. R. 7850.1900, subp. 2.
[2] Minn. R. 7850.3100.

Applicants note that these designations are purely for compliance with the rule requirements for the full permitting process. Applicants acknowledge that there are many other route alternatives that have been put forth in this proceeding and that the Minnesota Public Utilities Commission will ultimately determine the route for the proposed Project.

Sincerely,

s/Mara Koeller

Mara Koeller

cc: Service List
Karen Hammel
Michael Kaluzniak
Kate McBride

Assigned Service List Members

RECEIVED

12 JUN 22 AM 8:20

ADMINISTRATIVE HEARINGS

PUC Docket No. E002/TL-11-152
OAH Docket No. 8-2500-22806-2

Service List Member Information

Electronic Service Member(s)

Last Name	First Name	Email	Company Name	Delivery Method	View Trade Secret
Agrimonti	Lisa	lagrimonti@briggs.com	Briggs And Morgan, P.A.	Electronic Service	No
Anderson	Julia	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	Electronic Service	Yes
Carpenter	Tami	tamicarp@comcast.net	N/A	Electronic Service	No
Ferguson	Sharon	sharon.ferguson@state.mn.us	Department of Commerce	Electronic Service	No
Haar	Burl W.	burl.haar@state.mn.us	Public Utilities Commission	Electronic Service	Yes
Hammel	Karen Finstad	Karen.Hammel@ag.state.mn.us	Office of the Attorney General-DOC	Electronic Service	No
Herring	Valerie	vherring@briggs.com	Briggs and Morgan, P.A.	Electronic Service	No
Kotch	Stacy	Stacy.Kotch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	Electronic Service	No
Lindell	John	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	Electronic Service	Yes
McBride	Katherine	kmcbride@meagher.com	Meagher & Geer	Electronic Service	No
Parlow	Marsha	mparlow@grenergy.com	Great River Energy	Electronic Service	No
Sedarski	Joseph G.	joseph.g.sedarski@xcelenergy.com	Xcel Energy	Electronic Service	No
Thompson	SaGonna	Regulatory.Records@xcelenergy.com	Xcel Energy	Electronic Service	No

Paper Service Member(s)

Last Name	First Name	Company Name	Address	Delivery Method	View Trade Secret
Lipman	Eric	Office of Administrative Hearings	PO Box 64620, St. Paul, MN-551640620	Paper Service	Yes

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY, A MINNESOTA CORPORATION ("XCEL ENERGY") AND GREAT RIVER ENERGY FOR A ROUTE PERMIT FOR THE HOLLYDALE PROJECT

CERTIFICATE OF SERVICE
MPUC Docket No. E002/TL-11-152
OAH DOCKET NO. 8-2500-22806-2

Theresa Senart certifies that on the 21st day of June, 2012, she filed a true and correct copy of **Letter from Applicants** by posting the same on www.edockets.state.mn.us. Said Letter has also been served via U.S. Mail or e-mail as designated on the Official Service List on file with the Minnesota Public Utilities Commission in the above-referenced docket.

/s/ Theresa Senart
Theresa Senart

Public Employees Retirement Association (PERA)
60 Empire Drive – Suite 200
St. Paul, MN 55103-2088
Member Services: (651) 296-7460 or Toll Free 1-800-652-9026
Member Fax: (651) 296-8392
Website: www.mnpera.org

FAX TRANSMITTAL

To: Eric Lipman

Date: 6-22-12

Firm/Unit:

Fax Number: 651-361-7936

Number Of Pages (Including Transmittal Sheet): 7

From: Carolyn Smith

Phone No.: 763-475-1003

If *Urgent*, Check Box ☒

Message::

Thank you. If transmission is incomplete, please call (651) 296-7489.

June 21, 2012

To: The Honorable Eric L. Lipman

From: The Medina Rd. Petitioners

Regarding: Hollydale 115KV Transmission Line

We the undersigned are opposed to the placement of the Hollydale 115 Kilovolt transmission line on Medina Rd. This is currently shown as Figure 10 in the Minnesota Department of Commerce documentation sent out December 8, 2011

The reasons why using the current line through the City of Medina is the best option:

- An existing right-of-way is in place, little additional right of way would need to be purchased.
- Fewer than 15 homes are along that line and more than half were built after the line was in.
- The current line has been in existence for several years and already has had tree growth on either side to help shield it from view.
- Using the current line would not require any additional impact on wetlands or woodlands.

- Using the current line would not disturb the six areas identified in the City of Medina Open Space Plan as significant natural areas near Medina Rd and Tamarack Road.
- The existing line is straight; Medina Rd has many curves which would require purchasing additional right-of-way.

Respectfully submitted on behalf of the attached petitioners

Carolyn Knott
545 Medina Rd
Medina, MN 55391
763-475-1003

We the undersigned are opposed to the placement of the Hollydale 115 Kilovolt (kV) transmission line on Medina Rd. This is currently shown as Figure 10 in the Minnesota Department of Commerce documentation sent December 8, 2011.

Name	Address	Phone
[illegible]	582 Medina Rd	763-473-2087
Katy King	472 Medina Rd	763-472-0318
Steve Rantala	562 Medina Rd	920 410-2350
Shari Rantala	562 Medina Rd.	920-410-2881
John Meskimen	2770 Cabaline Trail	612 310 0661
[illegible]	2770 Cabaline Trail	763-478-5998
Kristie Parrish	2725 Cabaline Tr	763 478-2936
[illegible]	2700 [illegible] Drive	[illegible]
Teresa Hallock	2715 Capriole Dr.	763-473-1469
Nancy Olson	952 Medina Rd	612-860-1701
Craig [illegible]	" " "	763 226 0119
Lisa Bittman	772 Medina Rd	612-963-6985

We the undersigned are opposed to the placement of the Hollydale 115 Kilovolt (kV) transmission line on Medina Rd. This is currently shown as Figure 10 in the Minnesota Department of Commerce documentation sent December 8, 2011.

Name	Address	Phone
[illegible]	972 MEDINA RD	612-859-1850
Bernadine Swinnea	1187 Medina Rd	612-963473 4714
Mike Abbott	1282 Medina Rd Long Lake	612-385-8134
Kristy Abbott	1282 Medina Rd Long Lake	612-[illegible]8-8034
Suzann Yue	932 Medina Rd Wayzata	763 473 0430
Jeff Yue	932 Medina Rd Wayzata	7634730430
Mary Shimshek	582 Medina Rd	763-473-2007
Janet Wendroth	565 Medina Rd	763-473-7431
Richard Wendroth	565 Medina Rd	763-473-7431

We the undersigned are opposed to the placement of the Hollydale 115 Kilovolt (kV) transmission line on Medina Rd. This is currently shown as Figure 10 in the Minnesota Department of Commerce documentation sent December 8, 2011.

Name	Address	Phone
Randy McPherson	755 Medina Rd.	m-612-369-2300 randy@remembersgroup.com
Susan K. McPherson	755 Medina Rd	612-616-5200 5054789@hotmail.com
Melissa Martinson	1815 Medina Rd	763 232 0798 martinson-family@msn.com
Mary Shumshack	582 Medina Rd	MShumshack@msn.com
Carolyn Smith	545 Medina Rd	mngypsy545@gmail.com 612-558-1556
Richard J. Jaffe	242 Medina Road	graftrichard@yahoo.com 612-802-2013

We the undersigned are opposed to the placement of the Hollydale 115 Kilovolt (kV) transmission line on Medina Rd. This is currently shown as Figure 10 in the Minnesota Department of Commerce documentation sent December 8, 2011.

Name	Address	Phone
[signature]	1765 Medina Rd Long Lake 55356	763-475-0787
[signature]	1765 Medina Rd Long Lake MN 55356	763-475-0787
[signature]	995 Medina Rd, Wayzata, MN 55391	

June 19, 2012

Sandee & Gary Plummer
15010 – 48th Avenue North
Plymouth, MN 55446

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, MN 55164-0620
Fax: 651-361-7936

RE: OAH Docket No. 8-2500-22806-2
Proposed Hollydale 115 kV Transmission Line Project

Honorable Judge Lipman,

I am writing you as we live across the street (within the 200 ft. wide route) from the proposed Hollydale 115 kV transmission line project. I would like to submit some thoughts to you before you make your recommendation.

We live in a **GREAT** neighborhood and have for 22 years. Ever since our 25 homes were built by the same builder (within a larger neighborhood) we have been close. We have a "Hood List" of everyone with various means of contact, children names and ages etc. It is kept up as neighbors move and given to the new ones. We watch out for each other. We have a Block Party in our cul-de-sac every August and have old neighbors that come back for it. We have smaller groups that do game nights. We bought a huge rolling school lunchroom table with fold down benches that comes out on some nice week-end nights for "Table Night". We have a sign we put in the front yard in the morning and people bring a "beverages" and snacks...everyone is welcome. **This will all change** if the power lines are run right through our neighborhood on the presently proposed route.

I have been to the various meetings and I can't tell you all the reasons that I think this is so wrong. Anyone who loves their home and/or neighborhood would be devastated by this. I find it amazing that people from one section of Plymouth or Medina will cry about it being next to them but are willing to recommend that it run through the next heavily populated neighborhood instead. I can't imagine anyone being right near these 90' high poles and just having to listen to the awful noise from them. These poles run right above our walking paths in our whole area. Plymouth has prided itself in its wonderful riding and walking paths to help give us a better quality of life. That quality of life is what made us the **#1 City in the NATION**, for our size. It still amazes me that we are so blessed. Then we touch on the aesthetics of these huge poles...right in your front or back yards. What can I say about that? Think about how many other homes will be looking right at these poles from blocks and blocks away.

We have a small natural wildlife area behind us that is from Orchid Lane to Minnesota Lane wide (1 block) on the south side of Schmidt Lake Road. Before the road came through, it was larger and had a lot of water and we called it "Frog Lake". We still have lots of little wildlife in that area and we all enjoy all the birds, frogs etc. These large poles will run right

along the side of this. I believe the poles will drive away the wildlife and steal away what birds and animals we have left.

As I said, we have lived here 22 years and we are an older couple. We have worked hard to improve our home interior and exterior. We have just remodeled a lot of the inside and have a beautiful yard, flowers etc. that we receive many compliments on. A lot of our money is just in this home. If these power poles go in on the proposed route the devaluation of our property will have a significant ramification on the rest of our lives.

Now to the very serious issue of EMF. I was totally impressed by the gentleman that had the EMF slide show at the Friday, June 8th meeting. **He presented the facts and figures that I think many of us believe.** I think that there are so many effects that we have not even thought about. I have migraine headaches and I have been told by doctors not to have anything even plugged in within 4 feet of my head. With all the health concerns from the power lines, please look carefully into the information that the gentleman above has submitted to you.

My suggestion is to run the power lines along Highway 494 and along Highway 55 above ground to save money. But as they go into neighborhoods, they truly need to be buried so they do not change the great quality of life that we have all worked towards.

Lastly, I would not want to be you...reading through the letters from all of us asking for all different routes. I know you take this very seriously by the way that you spoke kindly to distraught people during the meetings and that your thankless job will be made with much consideration. Thank you and God bless.

Sincerely,

Sandra J. Plummer

June 20, 2012

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, MN 55164

Dear Mr. Lipman:

We are writing you regarding the closeness of the proposed Route H to our homes in the Orchards of Plymouth Homeowners' Assn., as well as other homes west of Cty Rd 101. You have already received many letters expressing concern as well as expressions of concern at the June 7+8 Wayzata High School meetings. Obviously we are very concerned over the proposed route.

We are once again requesting that an alternate route be chosen. If an alternate route is not chosen, the lines must be buried. Additional money is not the issue. If, Excel Energy will not bury the lines, then they absolutely must choose another route.

Our homes lose value, medical devices are affected. No longer are we able to listen to AM. radio. There is only static when a radio is tuned to am and near high voltage wires. Etc, etc.

Please hear our pleas. This issue is not a small matter. Thank you kindly for your considerations.

Most sincerely,

Kenneth H. Johnson
Elaine M. Johnson

Kenneth H. Johnson Elaine M. Johnson
14930-39th Place N.
Plymouth, MN 55446

George & Lauri Klaus
2380 Hollybush Road
Medina, MN 55340
949-244-1567

June 21, 2012

The Honorable Eric L. Lipman
Office of Administrative Hearings
600 North Robert Street
St. Paul, MN 55164-0620

RE: Hollydale 115 KV Transmission Line Project

Dear Mr. Lipman,

We strongly OPPOSE the continuation of the 115 transmission line and it's upgrade along the Hollybush Road path. Excel Energy has shown a complete lack of consideration for the homeowners and land affected by this project. Our property would be impacted the most if the current line proceeds as it prevents us from upgrading our property by installing a swimming pool in our backyard because of the current easement. Obviously, the above ground line adversely affects our property value and all of those affected.

We propose using alternate routes shown in Figures 10 and 11 or ideally, burying the lines underground.

Thank you for your consideration.

Sincerely,

Lauri Klaus

George & Lauri Klaus

Parker Rosen, LLC

a professional limited liability corporation

300 First Avenue North
Minneapolis, Minnesota 55401
Telephone: 612.767-3000
Facsimile: 612.767-3001

FAX

TO: Honorable Eric L. Lipman

FAX: 651.361.7936

FROM: Tammy L. Pust

DATE: June 22, 2012

RE: In the Matter of the Route Permit Application for the Hollydale 115kV Transmission Line Project in the Cities of Plymouth and Medina, Hennepin County

MPUC Docket No. E-002/TL-11-152

OAH Docket No. 8-2500-22806-2

PAGES: 5 (including this cover sheet)

NOTE: Please include as part of the public comment regarding the above-entitled matter.

Please call 612-767-3000 if you have problems receiving this transmission.

PARKER ■ ROSEN

June 22, 2012

By Fax to 651.361.7936
And Email to: RouteComments@state.mn.us

Honorable Eric L. Lipman
Administrative Law Judge
State of Minnesota
Office of Administrative Hearings
P.O. Box 64620
St. Paul, MN 55164-0620

RE: In the Matter of the Route Permit Application for the Hollydale 115kV Transmission Line Project in the Cities of Plymouth and Medina, Hennepin County
MPUC Docket No. E-002/TL-11-152
OAH Docket No. 8-2500-22806-2

Dear Judge Lipman:

We represent Park Nicollet Health Services with respect to the proposed Hollydale 115kV transmission line permit application filed by Northern States Power Company, d/b/a Xcel Energy, and Great River Energy. Park Nicollet Health Services ("Park Nicollet") owns property located at 4155 County Road 101 North in Plymouth, Minnesota. This property is bounded by Highway 55 to the north, County Road 101 to the east, and to the south by the property operated as Len Busch Roses. A map of Park Nicollet's property's location is enclosed for your review.

Park Nicollet purchased the property in 2006 before there was any public discussion of expansion or realignment of the existing transmission line. Park Nicollet bought the property with the specific intent to construct a maximum health clinic on the site in order to expand the health services available to the residents of surrounding communities and to create jobs in the area. Our development plans include a community-based clinic designed to expand to 90,000 square feet in order to grow with and help meet the health care needs of the broader region. Current plans also include the possible future development of a 95-unit senior housing facility plus additional commercial operations such as a grocery,

ANDREW D. PARKER
DANIEL N. ROSEN
TAMMY L. RUST
ANTHONY G. EDWARDS
FREDERICK C. BROWN
MARK J. KOERSTEN
DANIEL N. LOVEJOY
DOUGLAS G. WARDLOW

MARK R. KENNEDY

Parker Rosen, LLC
300 First Avenue North
Suite 200
Minneapolis, MN 55401

www.parkerrosen.com

Tel 612 767 3000
Fax 612 767 3001

PARKER ■ ROSEN

bank or community-sized retail operations. Given these development plans, which are in the scoping and contracting phase in order to support a construction start in late 2012 or early 2013, it is imperative that we maintain commercially viable access and egress points for the property, and also maintain maximum flexibility with regard to the internal layout of the site.

As such, Park Nicollet Health Services strongly supports the siting of the 115kV line as proposed by the applicants, that being primarily coincident with the location of the existing 69kV line. Upgrading the existing line is the most cost effective and the least disruptive option for improving the electrical service in the area, and therefore is the choice that will best protect the interests of the entire community including the commercial and residential property owners in the area.

Park Nicollet Health Services strongly opposes Alternative Routes F1, F2, F3, G and, to a somewhat lesser extent, Route B. As noted below, all of these alternative routes would significantly and negatively effect Park Nicollet's ability to develop the medical clinic site as planned.

Alternative Routes F1, F2 and F3 would impact a 200 feet swath of Park Nicollet's property fronting on Highway 55, which is the exact corner of the property on which the actual medical clinic is planned to be located. Having to allow for up to a 75 foot right of way and access easement for the transmission line would make our existing construction plans obsolete in that it would totally impair the view of the medical clinic from the roadway. Obviously, Park Nicollet will not invest significant financial resources into a facility that the public cannot see and therefore will not visit.

Alternative Route G would site the transmission towers and line on a 200 feet swath of the northern boundary of our property as well as on the property fronting on Highway 55. This location would irreparably disrupt our access to the site and so make the property unusable. In our discussions with the City of Plymouth, we have been instructed that access to the site will have to be provided via a road right of way connected to the frontage road access from County Road 101 which would then loop through our site and the dissect another portion of property to the north of

PARKER ■ ROSEN

our site as it connects to Highway 55. Alternative Route G would place the transmission line and towers directly in the path of the Highway 55 access connection, again making the property undevelopable for our planned purposes. It would also require removal of 100 year old trees on a significant portion of fully wooded land, and the disruption of an existing wetland. Given the better choice in the applicant's proposed route, Park Nicollet opposes this alternative not only because of its negative economic effect on our ability to develop the medical clinic site but also on the basis of its significant and negative effects on the natural environment in the area.

In the maps presently available, it appears that Alternative Route B locates the transmission line on the easterly side of County Road 101 in the area of Park Nicollet's property. If the map is correct, Park Nicollet's property would not be directly affected by this placement. However, we reserve the right to oppose this location as well if the route's jog to the west is ever altered such that the line is located on the west side of the road at or about the location of Park Nicollet's property.

For all of the reasons set forth above, Park Nicollet Health Services strongly supports the applicant's original proposal for the location of the subject transmission line, strongly opposes Alternative Routes F1, F2, F3, G, and opposes Alternative Route B. We thank you for your consideration of our concerns in this very important matter.

Yours very truly,

Tammy L. Pust

Enc.: Map of Site

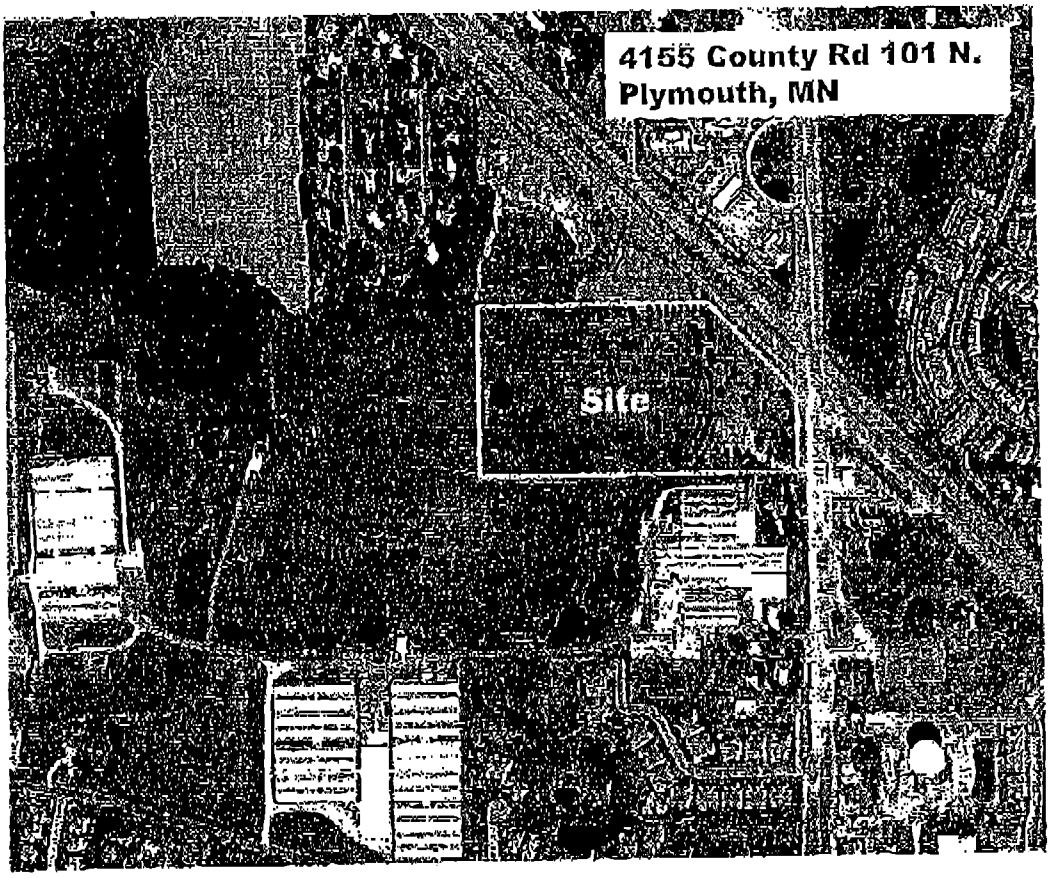
C: Donald Schlafer, Park Nicollet Health Services
Duane Spiegle, Park Nicollet Health Services

Exhibit to Letter from Tammy L. Pust, Parker Rosen, LLC,
submitted on behalf of Park Nicollet Health Services

In the Matter of the Route Permit Application for the Hollydale 115kV Transmission Line Project in the Cities of Plymouth and Medina, Hennepin County

MPUC Docket No. E-002/TL-11-152

OAH Docket No. 8-2500-22806-2



RECEIVED
2012 JUN 22 PM 3:24
ADMINISTRATIVE HEARINGS

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Katie Benusa
Address: 14915 43rd Pl. N
City: Plymouth State: MN ZIP: 55446

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Your honor,

I reside in the Quail Ridge Neighborhood and I would like to ask you to reconsider building high voltage lines in this area. The people of this community are willing to pay extra for the added expenses it would cost to build the voltage lines elsewhere, such as underground or along the 494 strip of land. My community and I would appreciate it if you would consider moving the high voltage lines to a place where they would not do so much harm.

Thank you for your time.

Signature: Katherine Benusa Date: 6/22/12

Larry & Annie Marczak

3345 Olive Lane North

Plymouth, MN 55447

June 20, 2012

The Honorable Judge Eric Lipman

Office of Administrative Hearings

P.O. Box 64620 600 North Robert Street

St. Paul, MN 55164-0620

We are writing to indicate our support for the power line placement on the existing route proposed by Xcel Energy. If this is not feasible, then we support the northern alternative routes. We strongly oppose the CSAH 24 Alternative Route due to the residential impact it will cause. In addition this is along a route with traffic to and from Wayzata High School and poses a traffic safety concern.

Thank you for the opportunity to comment and for your consideration.

Sincerely,

Larry Marczak

Annie Marczak

18120 39th Avenue N.
Plymouth, Minnesota
55446 USA

Barry J. Altman

June 20, 2012

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Re: Hollydale 115KV Transmission Line Project
Supplement to the letter submitted on May 29, 2012 and June 8, 2012

Dear Mr. Lipman:

Attached (page 6) is a satellite view of my home. The white line 22.5 feet north of my home is the existing 69kV transmission line. As you will notice this proximity has me extremely concerned.

On page 7 Is a satellite view of the Eastern portion of our neighborhood. These homes are between 22 and 50 feet from the existing transmission lines. Upgrading to 115kV along Xcel's proposed route will severely impact at least 12 homes.

Pages 10 and 11 show photos of the existing 69 kV power lines behind my house. I hope these photos present a better view of my concerns regarding Xcel's proposed routing.

At the Public meeting on June 8th, RaeLynn Asah stated for the record that "***Xcel Energy has no plans to remove any houses.***" Therefore, I can only conclude that XCEL plans to locate a 115kV transmission line 22' from my house.

I wonder why Xcel Energy appears to find arguments relating to EMF to be irrelevant. They state that there are no factual cases of humans being harmed by the proximity to high tension lines. Therefore, can they callously place high tension lines anywhere?

The table on page 7 was presented on June 8th by Ilan Zeroni and marked as Exhibit K. He expressed significant concerns of an average EMF force of 10 miliGauss (mG). My concern is that Xcel's proposed route would have areas of my house at levels that are 10 times higher than Mr. Zeroni's concerns as shown by the red line of the chart.

☎ 1-763-478-4770
1-202-207-0403
baltman@beta-tech.us

There are numerous ways of reducing the EMF radiated from transmission Lines as they effect nearby residences. Two methods are highlighted below:

> ***Distance***
> *The amount of EMF exposure is related to the distance from a power line source. The strength of both the electric and magnetic fields from traditional overhead transmission lines is inversely proportional to the square of the distance from the source. Therefore the level of exposure decreases rapidly with increasing distance from the source conductors. Utilities primary methods of increasing distance include increasing the conductor height above ground, increasing the width of the right of way, or relocating the line to a route more distant from inhabited areas.*[1]

> ***Phase Cancellation***
> *Vertical double circuiting. A common transmission line configuration is the vertical double-circuit, where a set of three conductors is attached, one above the other, to each side of the transmission tower. The three cables comprise the three phases of the power network, with each conductor carrying current. Electric utilities use the letters A, B and C to denote a three-phase circuit, with each letter representing one cable and its phase. At little extra cost, electromagnetic fields can be reduced by 50 percent or more by reversing the phase order of the other 33 circuit (i.e., C-B-A). Partial cancellation of both magnetic and electric fields is thus achieved. The effectiveness of this arrangement is also dependent on the current flowing through each circuit.*[1]

Phase Cancellation could be used if my alternate dual 69 kV line alternative is selected.

It is fairly obvious that EMF is a concern; why else would it be mentioned as *Environmental Impact Statements* from energy companies such as Xcel.[2] Energy companies, including Xcel, site many references stating that there are no conclusive studies that EMF will cause harm to humans. Yet there are thousands of articles on the internet including those from power companies that suggest a reduction in EMF exposure. Even Xcel energy's own public awareness material suggests distance improves safety.[3]

In addition to the EMF, high tension lines radiate 60 Hz noise that has not been previously addressed. Even without my hearing aids, I would be able to hear the noise generated by an active high-tension line 22 feet away.

The homes in our neighborhood have aluminum siding. Aluminum is an excellent conductor of electricity. What are the effects of the voltage induced into the siding from transmission lines in close proximity to my home? Will I receive a shock if I touch the outside of my house?

---

[1] Chapter 5: EMF Exposure Mitigation Options; *A White Paper On Electric And Magnetic Field (EMF) Policy And Mitigation Options* Prepared By The Minnesota State Interagency Working Group On EMF Issues September 2002

[2] Environmental Assessment Proposed Xcel Energy 115 kV Transmission Tap Line to Serve the City of Chaska's West Creek Substation Minnesota Public Utilities Commission Docket No. E002/LR-12-73 April 2012

[3] Xcel Energy Pamphlet: *Electric and Magnetic Fields – The Basics*

Much was mentioned about property values. Should the 115kV line go through as proposed, my property value would drop by at least 25%. I doubt that Xcel would reimburse me for the loss.

It is my opinion that Xcel has not undertaken due diligence in specifically addressing the issues that affect my home.

On Jun 11, 2012, I sent RaeLynn Asah an e-mail requesting a meeting to discuss the dual 69kV alternative that I suggested on June 8th.

In that e-mail, which was acknowledged by her at 4:19 PM the same day, I asked for the following documentation:

1. Easement Map covering my property 18120 39th Ave N. Plymouth. N45° 1.628' W93° 30.591

2. Power capacity comparisons between a single 115KV line and two 69KV lines.

3. Can the existing 69KV power poles support 2 69KV circuits with only new arms?

4. What are Xcel Energy's minimum distance standards for 69KV and 115KV power lines from residential property?

5. 24 x 36" map of all proposed routes.

Topics I planned to discuss included:

1. Routing of a second 69KV Line

2. Placement and size of power poles along existing 69KV line if this option is selected by the Public Utilities Commission.

3. Xcel's plan to recognize the existing 25' distance from the current centerline to my home.

As a response, I received the following on June 18th at 3:23 PM (Note this response offered me 4 days to research and respond before the closing of comments to the proposed Scoping Document.)

Barry,

Somehow my out of office email must not have gotten through to you. I was tied up all last week on another matter and had my voicemail and automatic email responses updated to reflect that. I understand that you would like to meet before the scoping comment deadline of the 22nd for the Route Permit Environmental Impact Statement (EIS).

I would like to say that the idea you raise of 69 kV line addition is better suited for the Certificate of Need proceeding; the Department of Commerce and the Public Utilities Commission staff will be evaluating different voltage alternatives in the Certificate of Need (CON), not the Route EIS. Xcel Energy has yet to submit its application for a Certificate of Need, but plans to by the end of the month. I very much suggest that we meet at a time when all of us are available to go through your proposal. Your comments and suggestions can then be submitted in the CON public comment period, to be given the full analysis they deserve.

Justin Michlig, the transmission planner and I are available to meet 1:30 -3:00 on Monday June 25th. Would that work for you? I believe you wanted to come to our offices at Marquette Plaza downtown Minneapolis. We are happy to host you.

Justin and I are looking forward to meeting with you and reviewing your proposal in detail.

Regards,
RaeLynn S. Asah

This response has me more confused than ever:

1. Why should my routing recommendation be a part of another process? How did alternatives A through G, CASH 24, Providence Academy, Alternates G1, H and I become part of the Draft Scoping Document? If I meet with Xcel on June 25th as suggested in Ms. Asah's e-mail, I will miss the closing date for responses to the Scoping Document. Does this mean that my suggestion for using the existing 69kV line and building a new 69kV line will not be considered?

2. I am an engineer, not a lawyer. How am I supposed to mitigate the potential damage Xcel's proposed line will cause if I am told I need to participate in a variety of different proceedings?

3. My primary concern is to not have a 115 kV transmission line 22.5 feet from my home. If Xcel says my alternative belongs with the Certificate of Need process how could it possibly be thoroughly considered without also being part of the Scoping Process?

4. It seems totally unreasonable to expect me to have to hire an attorney to figure out how to register my objections and to provide what may be a reasonable and rationale solution to the more that 400 neighbors who have raised concerns to this project.

I can only reiterate that Xcel's proposed plan to place a 115kV power line on my property is unconscionable. Routes such as **Alternate G/G1** alleviate the need to affect the 12 families on the East side of The Orchards and Walnut Grove Pond.

I hope you can appreciate my concerns:

- Family safety. Over 100mG average EMF

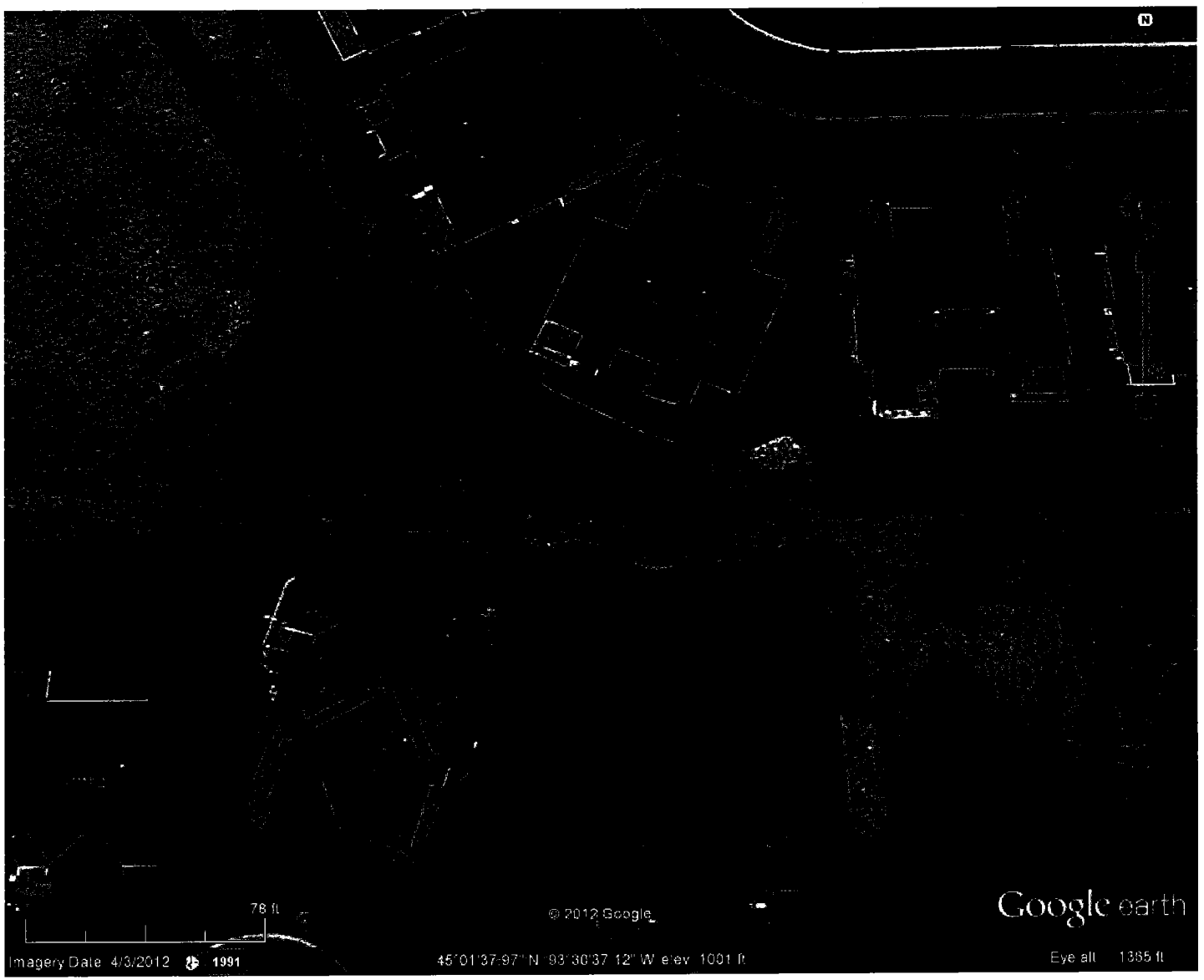
- Ambient noise levels. Noticeable 60Hz noise when outdoors.

- Property value. My home is on a quiet cul-de-sac. We paid a premium for the peace and quiet of this location. The value our my home has been calculated into our retirement. Should the value drop even 25%, we could be at risk of having our investments last our lifetime. Plymouth is a mature city as goes new housing developments. It would cost us significantly more than the market value of our home, to find an equivalent in our excellent, award winning city of Plymouth.

- Interference to home and personal electronics. I run a business from my home which depends on a variety of electronic equipment, including computers, which are located within 50' of the transmission lines.

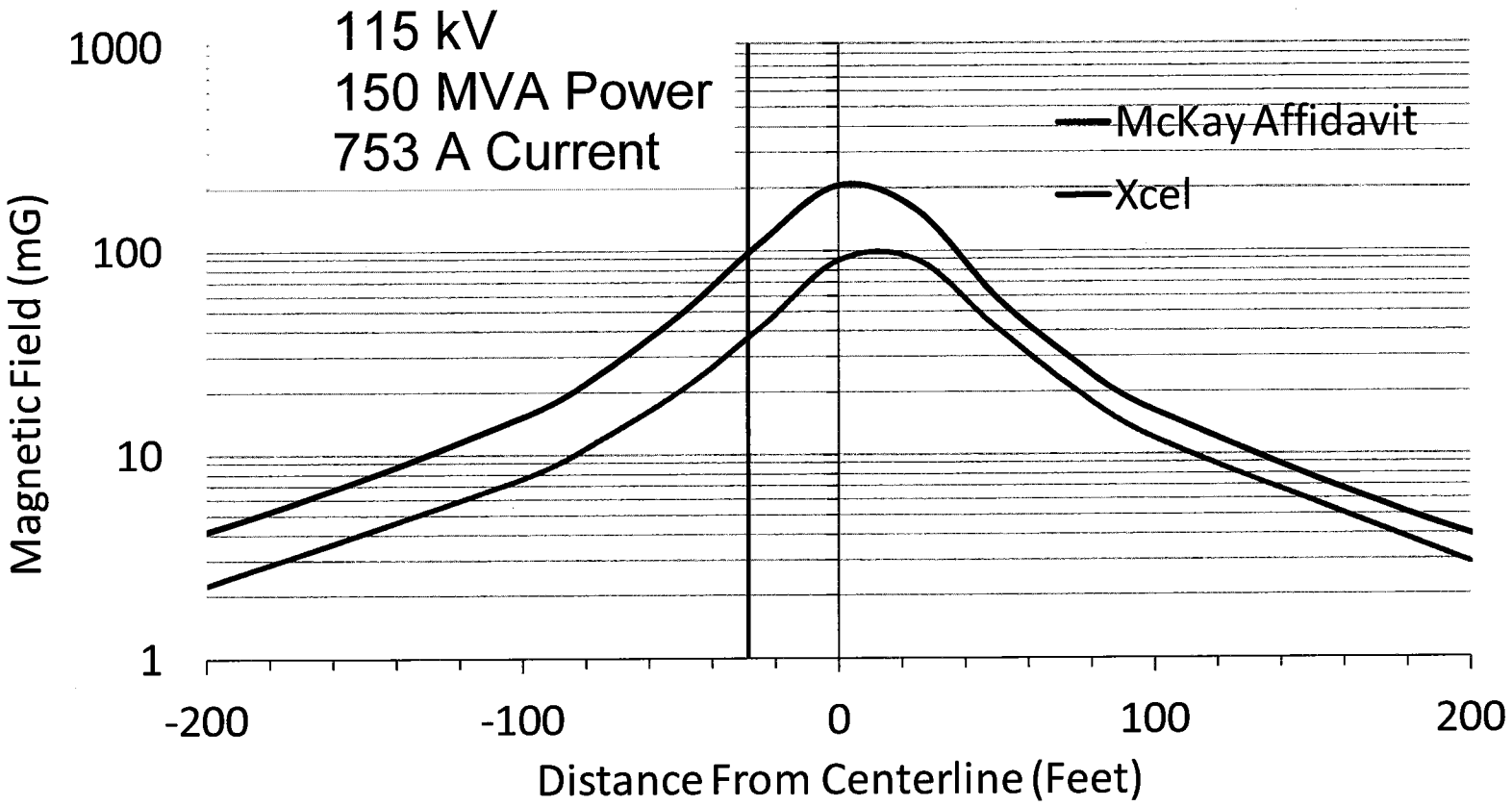
Respectfully,

Barry J. Altman



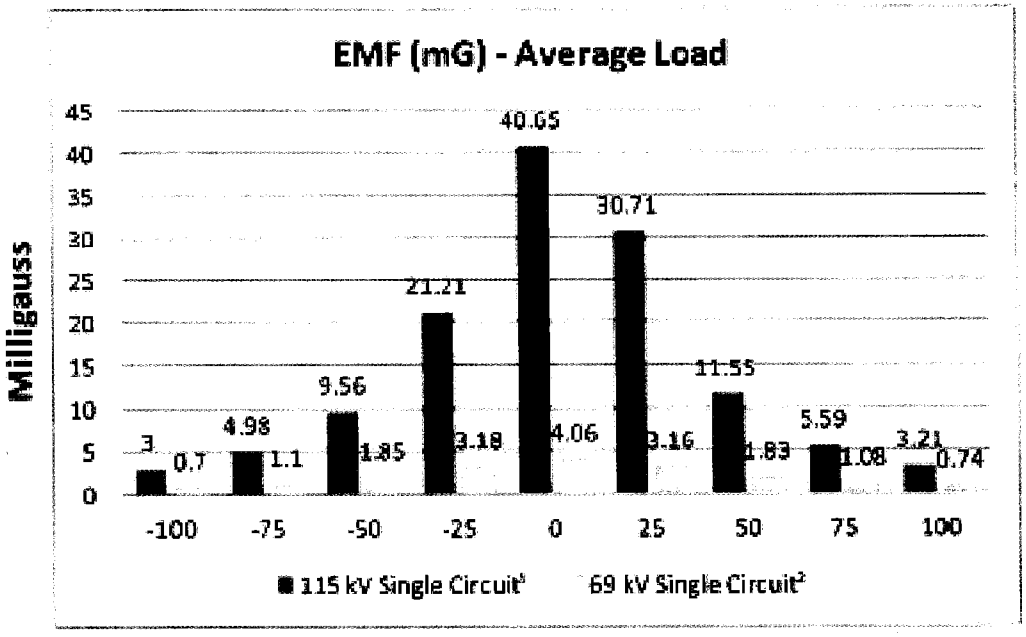
18120 39th Ave N (Bottom)

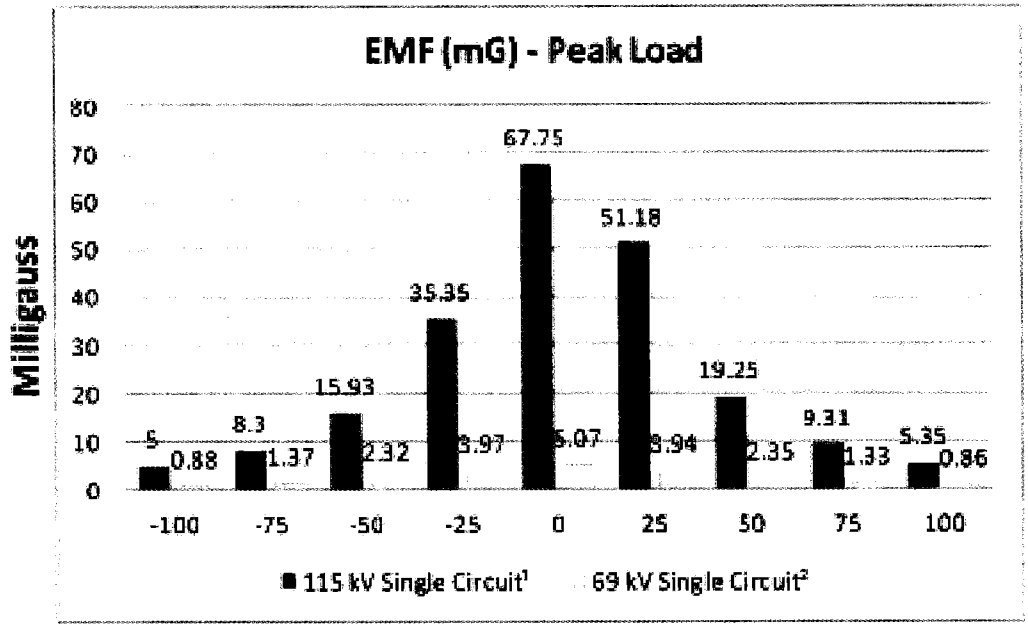
EMF For Proposed Line – 753 A Current



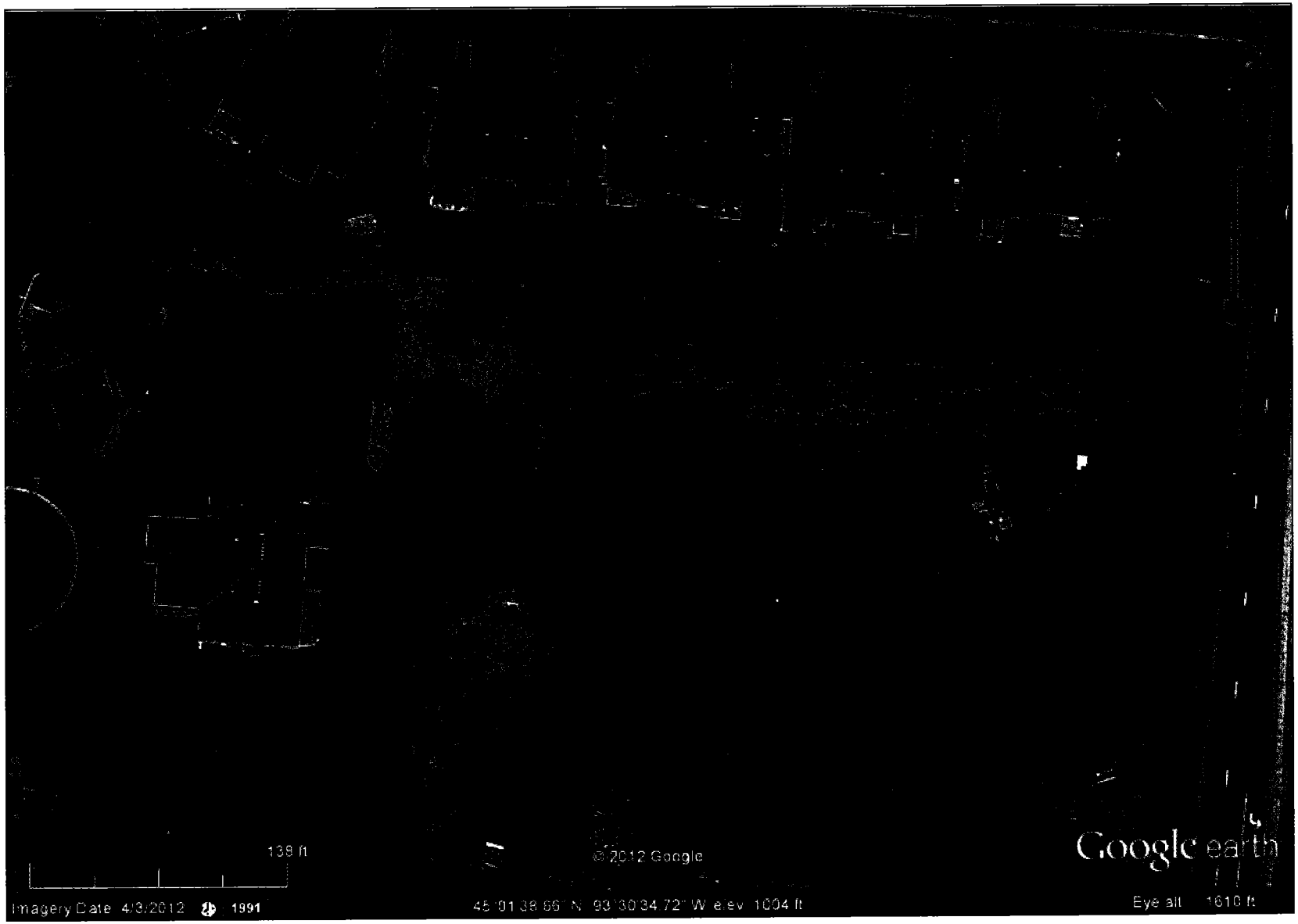
MTEP 2011, appendices A, B, C; Affidavit of Bruce McKay, P.E., PUC docket no. E002/CN-10-694

Magnetic Field Table from Ilan Zeroni (Exhibit K) showing the expected 100 mG levels from a 115kV line 25' from our home.

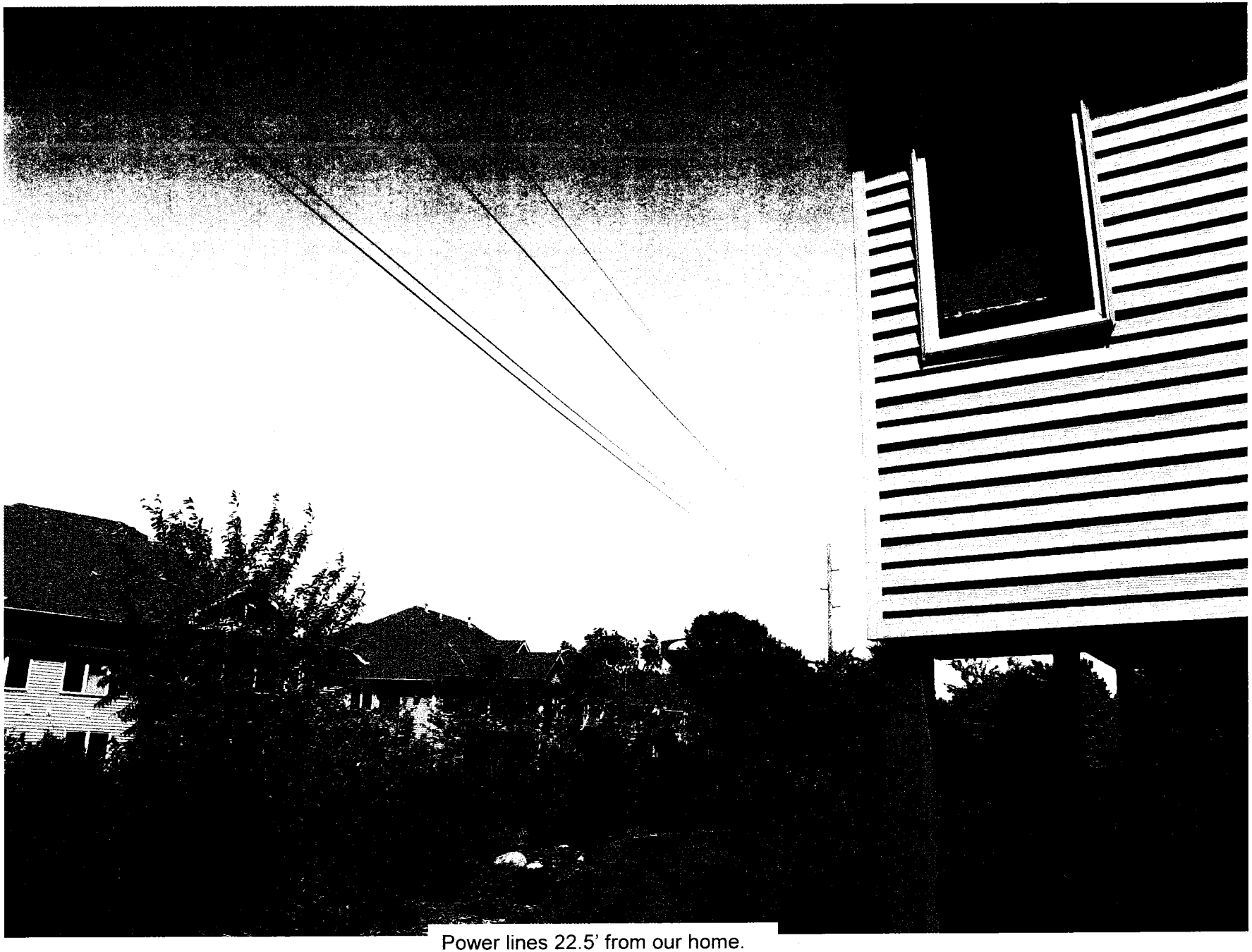




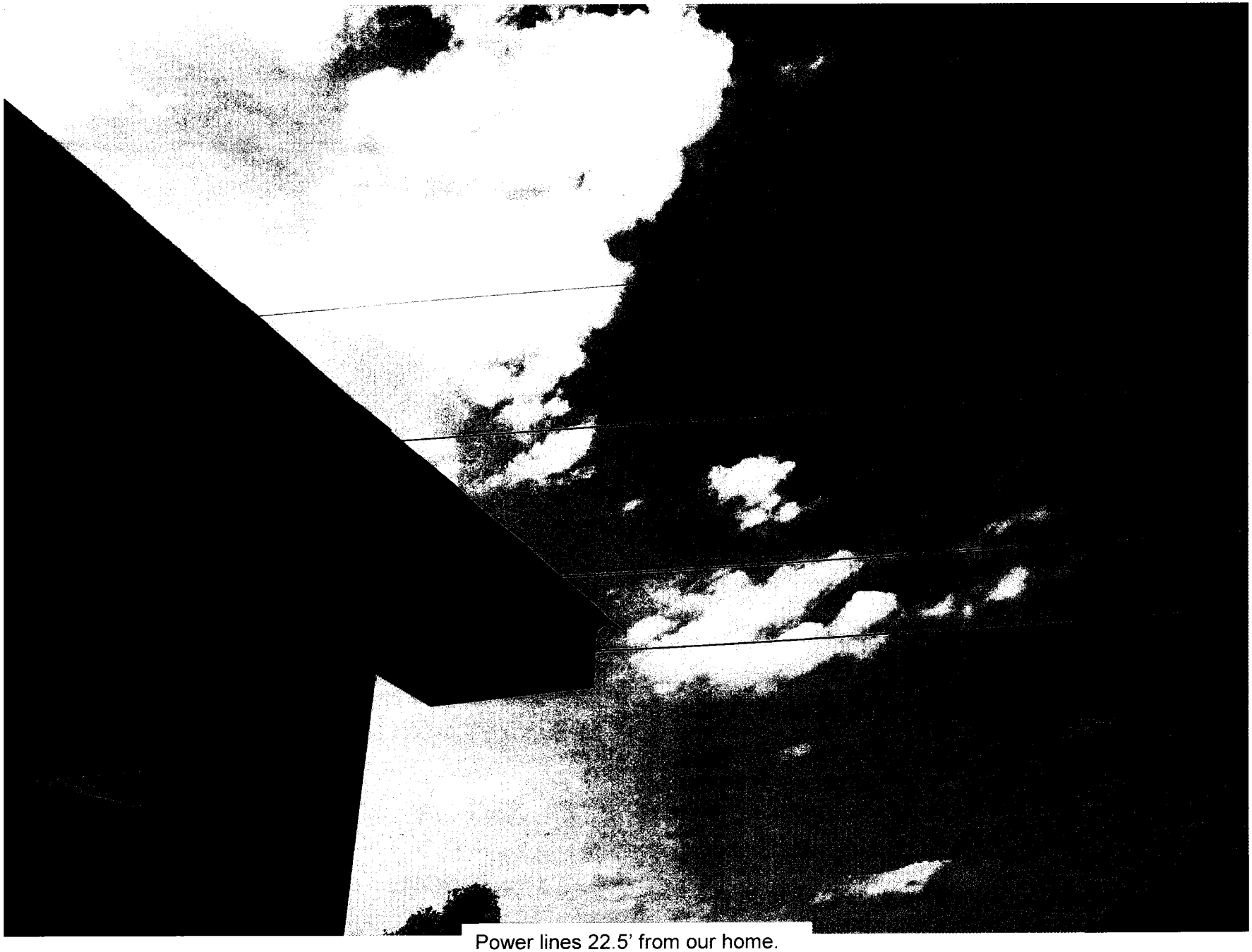
Comparison of the EMF Generated from 115 kV and 69 kV transmission lines. Note the EMF is dramatically lower for the 69 kV line which validates the need to consider running two 69 kV lines rather than a single 115 kV line.



South side of the Orchards bordering on Perl's Landscaping and Our home in Walnut Grove Ponds



Power lines 22.5' from our home.



Power lines 22.5' from our home.

Erik and Christine Sass
17805 32nd Place N
Plymouth, MN 55447

June 20, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164 – 0620

RE: Proposed Hollydale 115 kV transmission line

We are writing to indicate our support for the power line placement on the existing route proposed by Xcel Energy and Great River Energy. If this is not feasible, then we support the northern alternative routes.

We strongly oppose the CSAH 24 Alternative Route due to the much greater impact on existing homes that that this alternative would cause.

Thank you the opportunity to comment and for your consideration.

Sincerely,

Erik & Christine Sass

Erik and Christine Sass
17805 32nd Place N
Plymouth, MN 55447

MINNESOTA DEPARTMENT OF COMMERCE

Energy Facility Permitting
85 7th Place East, Suite 500
St. Paul, Minnesota 55101-2198
651.296.4026 | fax 651.297.7891
www.energyfacilities.puc.state.mn.us

December 8, 2011

Dear Landowner,

You are receiving this letter because your property may be directly or indirectly affected by route alternatives for the proposed Hollydale 115 kilovolt (kV) transmission line rebuild project. The 13 route alternatives suggested during the scoping process will be evaluated in an environmental assessment (EA), which is being prepared by the Minnesota Department of Commerce Energy Facility Permitting staff (EFP).

This letter provides you with information on the transmission line project, the route permitting process, and future opportunities to participate in the process. I encourage you to familiarize yourself with the proposed project, sign up for the project mailing list, and participate in the route permitting process.

Project Overview

A high-voltage transmission line route permit application (RPA) for the project was filed by the applicants on June 30, 2011, and was accepted by the Minnesota Public Utilities Commission (Commission) on August 25, 2011. The route permit will be reviewed under the alternative review process, pursuant to Minnesota Statues 216E (Power Plant Siting Act) and Minnesota Rules 7850.2800 to 7850.3900. Under the alternative permitting process the Commission has six months from the date the application was accepted as complete to make a decision on the route permit. The Commission may extend this time limit up to three months for just cause or upon agreement of the applicant (Minnesota Rule 7850.3900, subpart 1).

As described in the RPA, Xcel Energy and Great River Energy (applicants) are proposing a rebuild of 8 miles of the existing Great River Energy (GRE) 69 kV transmission line to a 115 kV transmission line, constructing approximately 0.8 miles of new 115 kV transmission line, constructing a new 115 kV substation and modifying associated facilities.

The applicants are requesting a 200 foot route width where the transmission line is to be rebuilt along the existing 69 kV transmission line route, which extends from the existing Medina substation located southwest of the intersection of Willow Drive and County State Aid Highway 24 to the intersection of GRE's existing 115 kV transmission line just north of Fernbrook Lane in the city of Plymouth. A 400 foot route width is being requested for the 0.8 miles of new 115 kV transmission that would run from the intersection of the existing GRE 115 kV transmission line and follow along the north side of the Canadian Pacific Railway east to Cheshire Lane, then south along Cheshire Lane, and east along Schmidt Lake Road to the proposed location of Substation Site A.

June 18, 2012

The Honorable Eric L.Lipman
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, MN 55164-0620

Dear Mr. Lipman

We are writing you regarding the closeness of the proposed Route A to our homes in The Orchards Homeowners Association, as well as many other homes west of County Road 101. You have record of the many concerns regarding the proposed powerline routes which were voiced at the Wayzata High School meetings June 7 and 8. We see no point in listing them again here. Obviously, we have great concern over the proposed route. There are other options, and they must be considered.

We would emphatically request that the lines be buried wherever they are routed thru an existing neighborhood. Excel Energy must not be allowed to use money as an excuse to move through any area they choose. If it means additional money to bury lines, then that they must do. If Excel chooses to not bury lines, then they must listen to the voices of several hundred homeowners and choose another route. It is unacceptable that Excel would not listen to the many homeowners affected by the proposed power line route, and make the necessary changes.

Thank you for your consideration.

Ron & Victoria Boyd

Ron and Victoria Boyd
Orchards of Plymouth Residents

June 20, 2012

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, Minnesota, 55164-0620

Re: Hollydale 115 KV Transmission Line in Plymouth

Dear Mr. Lipman

I am writing to you to ask for your help to prevent Xcel Energy from upgrading a current 69 KV power line to 115 KV.

It is my understanding that there are other routes which can be used, and which would have less negative impact on residence. In fact, I believe there are open fields between the "substations" in question for which power line crossing would have little or no detriment to the residence of the area.

Perhaps some "forward planning" regarding 'land use' in the community as a whole is appropriate before Xcel is allowed to proceed. Many communities do this to be forewarned of unexpected projects like this one has become.

I and many of the residents in the area of the current planned Hollydale upgrade are mostly senior citizens. I would appreciate it if you would work with our community officials to work out an option for the power line route so we all can be proud to say our elected officials are open to the concerns of all its residents

With much appreciation for your services on this project, I Thank You.

Gerald W. Altman
18100 39th Avenue N
Plymouth, MN, 55446-6800
763-478-2414

June 13, 2012

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, Minnesota, 55164-0620

Re:Xcel Energy and Great River Energy
Hollydale 115 kV Transmission Line Project
PUC Docket No. E002/TL-11-152

Dear Sir:
We are residential property owners in Medina abutting CSAH 24.

We respectfully but strongly disagree with any proposal to replace the existing power line route in Medina. The Alternative Route to which we object is illustrated in Figure 11 of the draft scoping document.

The existing route in Medina has been in place for generations and development occurring over the years has been done in harmony with the power line. It is disingenuous for some to now suggest that it be rerouted for no apparent justifiable reason other than to place it in someone else's 'back yard'.

We fully recognize that both Xcel Energy and Great River Energy must strengthen their power line infrastructure to meet the growing demands of our developing northwest Hennepin County Area and for reliable electric energy service. Their power line upgrade proposed routing recognizes the wisdom of utilizing existing power line easements for such upgrades insofar as is practical. Figure 1 in the May 25th scoping document illustrates, in our view, a rational approach to upgrading the existing 69 kV line to 115kV without substantially longer routes, and cost, to reach the proposed substation in Plymouth.

Thank you for considering our concerns and views are you proceed to evaluate the subject proposal.

Yours truly,

Christina Woy
1082 Oak Circle
Medina, MN 55391

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Tere Wright
Address: 15760 52nd Ave N
City: Plymouth, MN 55446 State: _____ ZIP: _____

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Dear Sir,

I write in protest to Alternate Route B. This route runs along the railroad track which immediately abuts my home and those of my neighbors in the Seven Greens subdivision.

Not only is there the financial concern of the immediate and serious negative impact to the value of my home that power lines would bring, but there is also the destruction of a warm and thriving, close-knit community. I have a four-year-old and my neighbors' children include two 18-month olds, another 4 year old, a 3 year old and several others roughly ranging from 7-16 years old.

Signature: _____ Date: 6/12/2012

COMMENT FORM

Public Information Meetings – June 7 and 8, 2012
PROPOSED HOLLYDALE 115 KV TRANSMISSION LINE PROJECT
OAH No. 8-2500-22806-2 | MPUC No. E002/TL-11-152

Name: Tere Wright

Address: 15760 52nd Ave N

City: Plymouth, MN 55446 State: _____ ZIP: _____

Comments must be received no later than 4:30 p.m., Friday, June 22, 2012.

Please turn this form in tonight or mail to: Judge Eric L. Lipman, Office of Administrative Hearings, 600 North Robert Street, P.O. Box 64620, St. Paul, MN 55164-0620. You may use additional sheets, as necessary. Comments can also be e-mailed to Judge Lipman at: eric.lipman@state.mn.us with OAH Docket No. 8-2500-22806-2 in the e-mail subject line.

Concern for their health may drive many of us away.

Those of us who stay would have to live in constant fear of the invisible and incalculable harm being caused to our children.

Signature: _____ Date: 6/12/2012

(page 2)

June 19, 2012

Sandee & Gary Plummer
15010 – 48th Avenue North
Plymouth, MN 55446

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, MN 55164-0620
Fax: 651-361-7936

RE: OAH Docket No. 8-2500-22806-2
Proposed Hollydale 115 kV Transmission Line Project

Honorable Judge Lipman,

I am writing you as we live across the street (within the 200 ft. wide route) from the proposed Hollydale 115 kV transmission line project. I would like to submit some thoughts to you before you make your recommendation.

We live in a **GREAT** neighborhood and have for 22 years. Ever since our 25 homes were built by the same builder (within a larger neighborhood) we have been close. We have a "Hood List" of everyone with various means of contact, children names and ages etc. It is kept up as neighbors move and given to the new ones. We watch out for each other. We have a Block Party in our cul-de-sac every August and have old neighbors that come back for it. We have smaller groups that do game nights. We bought a huge rolling school lunchroom table with fold down benches that comes out on some nice week-end nights for "Table Night". We have a sign we put in the front yard in the morning and people bring a "beverages" and snacks...everyone is welcome. **This will all change** if the power lines are run right through our neighborhood on the presently proposed route.

I have been to the various meetings and I can't tell you all the reasons that I think this is so wrong. Anyone who loves their home and/or neighborhood would be devastated by this. I find it amazing that people from one section of Plymouth or Medina will cry about it being next to them but are willing to recommend that it run through the next heavily populated neighborhood instead. I can't imagine anyone being right near these 90' high poles and just having to listen to the awful noise from them. These poles run right above our walking paths in our whole area. Plymouth has prided itself in its wonderful riding and walking paths to help give us a better quality of life. That quality of life is what made us the **#1 City in the NATION**, for our size. It still amazes me that we are so blessed. Then we touch on the aesthetics of these huge poles...right in your front or back yards. What can I say about that? Think about how many other homes will be looking right at these poles from blocks and blocks away.

We have a small natural wildlife area behind us that is from Orchid Lane to Minnesota Lane wide (1 block) on the south side of Schmidt Lake Road. Before the road came through, it was larger and had a lot of water and we called it "Frog Lake". We still have lots of little wildlife in that area and we all enjoy all the birds, frogs etc. These large poles will run right

along the side of this. I believe the poles will drive away the wildlife and steal away what birds and animals we have left.

As I said, we have lived here 22 years and we are an older couple. We have worked hard to improve our home interior and exterior. We have just remodeled a lot of the inside and have a beautiful yard, flowers etc. that we receive many compliments on. A lot of our money is just in this home. If these power poles go in on the proposed route the devaluation of our property will have a significant ramification on the rest of our lives.

Now to the very serious issue of EMF. I was totally impressed by the gentleman that had the EMF slide show at the Friday, June 8th meeting. **He presented the facts and figures that I think many of us believe.** I think that there are so many effects that we have not even thought about. I have migraine headaches and I have been told by doctors not to have anything even plugged in within 4 feet of my head. With all the health concerns from the power lines, please look carefully into the information that the gentleman above has submitted to you.

My suggestion is to run the power lines along Highway 494 and along Highway 55 above ground to save money. But as they go into neighborhoods, they truly need to be buried so they do not change the great quality of life that we have all worked towards.

Lastly, I would not want to be you...reading through the letters from all of us asking for all different routes. I know you take this very seriously by the way that you spoke kindly to distraught people during the meetings and that your thankless job will be made with much consideration. Thank you and God bless.

Sincerely,

Sandra J. Plummer

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Honorable Lipman,

I am writing to support the power line route proposed by Xcel Energy and Great River Energy. This appears the most acceptable route among the various route proposals in materials available at the June 7th public meeting at Wayzata High School. One of the northern alternative routes should be selected if the proposed route is not an option. CSAH 24/Alternative Route H is the most objectionable route and will cause multiple hardships for the families near the route.

Thanks for including my comments in the public record.

Sincerely,

Jessica Bremseth

Jessica Bremseth
3105 Olive Lane N
Plymouth MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Honorable Lipman,

I am writing to support the power line route proposed by Xcel Energy and Great River Energy. This appears the most acceptable route among the various route proposals in materials available at the June 7th public meeting at Wayzata High School. One of the northern alternative routes should be selected if the proposed route is not an option. CSAH 24/Alternative Route H is the most objectionable route and will cause multiple hardships for the families near the route.

Thanks for including my comments in the public record.

Sincerely,

Roberta Wu

Roberta Wu
3115 Olive Ln N
Plymouth, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe the proposed route is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

Dave & Kathy Mornssy

Dave & Kathy Morrissey
3120 Olive Lane N.
Plymouth, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing to support the power line route initially proposed by Xcel Energy and Great River Energy. I believe the "proposed" route is the least disruptive and most acceptable alternative among the various route proposals presented. The most disruptive one is Alternative Route H (SCAH 24) as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School and therefore should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thank you for permitting me to express my view.

Sincerely,

Janet & Josias Lima

Janet & Josias Lima
3140 Olive Ln N
Plymouth, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Honorable Lipman,

I am writing to support the power line route proposed by Xcel Energy and Great River Energy. This appears the most acceptable route among the various route proposals in materials available at the June 7th public meeting at Wayzata High School. One of the northern alternative routes should be selected if the proposed route is not an option. CSAH 24/Alternative Route H is the most objectionable route and will cause multiple hardships for the families near the route.

Thanks for including my comments in the public record.

Sincerely,

Connie K McClurg

Connie K. McClurg
3155 Olive Lane N
Plymouth MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe the proposed route is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

Shaolin Zhong

SHAOLIN ZHONG
3165 Olive Lane N.
Plymouth, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

Our family is writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe this is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

Sandy McKown
Sandy McKown
3170 Olive Ln N
Plymouth MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe the proposed route is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

RAM V ALLABHU
3450 Holly Lane N
Plymouth MN - 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Honorable Lipman,

I am writing to support the power line route proposed by Xcel Energy and Great River Energy. This appears the most acceptable route among the various route proposals in materials available at the June 7th public meeting at Wayzata High School. One of the northern alternative routes should be selected if the proposed route is not an option. CSAH 24/Alternative Route H is the most objectionable route and will cause multiple hardships for the families near the route.

Thanks for including my comments in the public record.

Sincerely,

Dee J McCarthy

Dee J McCarthy
3455 Holly Ln N
Plymouth, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe the proposed route is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

GREGORY R. KATCHMARIC (HOMEOWNER)
3475 HOLLY LN
PLYMOUTH, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing to support the power line route initially proposed by Xcel Energy and Great River Energy. I believe the "proposed" route is the least disruptive and most acceptable alternative among the various route proposals presented. The most disruptive one is Alternative Route H (SCAH 24) as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School and therefore should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thank you for permitting me to express my view.

Sincerely,

Heidi Johnson

Heidi Johnson
3485 Holly Lane N.
Plymouth MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe the proposed route is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

David J Mawes

17780 32 PL. N.
PLYMOUTH, MN
55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

Our family is writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe this is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

Kelly Hurda Robert J Hurda

Kelly Hurda
Robert J Hurda
[redacted]
17790 32nd Place N.
Plymouth, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Honorable Lipman,

I am writing to support the power line route proposed by Xcel Energy and Great River Energy. This appears the most acceptable route among the various route proposals in materials available at the June 7th public meeting at Wayzata High School. One of the northern alternative routes should be selected if the proposed route is not an option. CSAH 24/Alternative Route H is the most objectionable route and will cause multiple hardships for the families near the route.

Thanks for including my comments in the public record.

Sincerely,

K Fryer
Kelly Fryer
1745 32nd PL N
Plym MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing to support the power line route initially proposed by Xcel Energy and Great River Energy. I believe the "proposed" route is the least disruptive and most acceptable alternative among the various route proposals presented. The most disruptive one is Alternative Route H (SCAH 24) as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School and therefore should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thank you for permitting me to express my view.

Sincerely,

Dan Trizulny
17430 32nd Ave N
Plymouth MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

Our family is writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe this is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

MICHAEL HAGERTY
17435 32nd AVE N
PLYMOUTH, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Honorable Lipman,

I am writing to support the power line route proposed by Xcel Energy and Great River Energy. This appears the most acceptable route among the various route proposals in materials available at the June 7th public meeting at Wayzata High School. One of the northern alternative routes should be selected if the proposed route is not an option. CSAH 24/Alternative Route H is the most objectionable route and will cause multiple hardships for the families near the route.

Thanks for including my comments in the public record.

Sincerely,

17440 32nd Ave
Raymond Schaper

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Honorable Lipman,

I am writing to support the power line route proposed by Xcel Energy and Great River Energy. This appears the most acceptable route among the various route proposals in materials available at the June 7th public meeting at Wayzata High School. One of the northern alternative routes should be selected if the proposed route is not an option. CSAH 24/Alternative Route H is the most objectionable route and will cause multiple hardships for the families near the route.

Thanks for including my comments in the public record.

Sincerely,

17510 32nd Ave N
Plymouth, MN. 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing to support the power line route initially proposed by Xcel Energy and Great River Energy. I believe the "proposed" route is the least disruptive and most acceptable alternative among the various route proposals presented. The most disruptive one is Alternative Route H (SCAH 24) as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School and therefore should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thank you for permitting me to express my view.

Sincerely,

Dawn Baeson
17515 32nd Ave N
Plymouth, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe the proposed route is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

Douglas M. Ramler
17520 32nd Ave No.
Plymouth MN
55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

Our family is writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe this is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

REBECCA REMLEY
Rebecca Remley
17530 32ND AVE N.
PLYMOUTH, MN 55447

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

Our family is writing in support of the power line change initially proposed by Xcel Energy and Great River Energy. We believe this is the least disruptive and most acceptable alternative among the various route proposals presented. Alternative Route H as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thanks for permitting us to express our view.

Sincerely,

William J Garlick
17550 32nd Ave. N.
Plymouth
55447
763-475-6667

June 17, 2012

The Honorable Judge Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
600 North Robert Street
St. Paul, MN 55164-0620

Judge Lipman,

I am writing to support the power line route initially proposed by Xcel Energy and Great River Energy. I believe the "proposed" route is the least disruptive and most acceptable alternative among the various route proposals presented. The most disruptive one is Alternative Route H (SCAH 24) as shown on the map available at the Thursday June 7, 2012 public hearing at Wayzata High School and therefore should be avoided. One of the northern alternative routes should be selected if the proposed route is eliminated from consideration.

Thank you for permitting me to express my view.

Sincerely,

Penny Meier

Penny Meier
17555 32nd Ave N
Plymouth, MN
55447

The Honorable Eric L. Lipman

Office of Administrative Hearing
P.O. Box 64620, 600 North Robert Street

St. Paul, Minnesota, 55164-7936

Dear Judge Lipman:

RE: Excel proposal:

My husband, Tom, our two children, and I were among the very first families to build in Bridlewood Farms. We chose, what we felt to be, the very best lot available of the future six homes-woods behind us (Now also wildflowers that Tom has planted.) We indulged ourselves with a first floor master suite and a basic) finished lower level.

We are both senior citizens and intend to stay as long as we are physically able. Tom has Parkinson's disease; we can't predict the progress of that, but the main level is so necessary.

Our daughter and her husband, high school sweethearts from the local high school, have already expressed interest in our home when we move to smaller quarters.

Now we are in limbo. Excel's most recently proposed power line will be centered into @ a 45-feet width, from the property line to the far/east side of our deck. We have been told there will be continues noise: entertaining or loafing on our deck? Gone. Powerful storms that could bring down the lines: Dangerous!

Thank you for your careful consideration of our concerns,

Sharon L. Taragos

Sharon L. Taragos

Karin K. Cotter
15025 43rd Place North
Plymouth, MN 55446

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620, 600 North Robert Street
St. Paul, MN 551164-0620

PUC Docket No. E002/TL-11-152

June 20, 2012

Dear Judge Eric L. Lipman,

Thank you for taking the time to read our comments about the proposed Hollydale project. I submitted a handwritten comment at one of the information sessions, but I want to provide some photos and articles to support my previous comments. Our family would strongly prefer Alternative E. If that is not an option, we strongly believe that a project of this size be placed as far as possible from private residences, private yards, schools, and public park land. It belongs along major traffic routes, on more developed property, or on uninhabited and unused rural land.

My family and I live at 15025 43rd Place North, Plymouth, MN 55446. Our home is along the proposed route as shown in Figure 4 in the notice materials. On the map, it looks as though the proposed route runs along a road (Niagara Lane North). However, Niagara Lane does not connect all the way through, and a fair portion of the project will not run along a street. Instead, it will cut through residential yards, across wetlands, through Turtle Lake Park, and along a public bike path before reaching Providence Academy. Furthermore, Niagara is a very narrow residential street, providing less buffer room.

I had to struggle with a short tape measure, but the existing transmission line seems to be about 24 feet from the western side of our house. However, the existing line does not run down the center of the easement (which I believe predates the homes and was sold when this was open rural land). Rather, the 70 foot easement puts 23 feet to the East of the lot line (on our property) and 47 feet to the West. At the closest points, I believe there are less than 75 feet between the two homes, though I do not possess sophisticated measuring equipment and neither the state nor Xcel felt it was necessary to measure last winter when I asked them to. This side of our home includes our home office where my husband often works from home. There is also an outdoor faucet which I frequently use when gardening. To walk around this side of the house, you have to go around the bushes and the drain spout so we routinely walk near the low voltage overflow line. We do not want this to be increased to 115kV or more.

There is a billboard currently visible on 394 West as you are driving toward the Plymouth area from Minneapolis (just before the Hopkins Crossroads on the northern side). It is put up by Xcel Energy. It says: "Stay back. Stay safe. Stay alive," or something to that effect. Then it advises the public to stay at least 10 feet away from overhead power lines. It is very troubling to read this billboard regularly;

especially because we have had representatives from Xcel Energy insist that it is perfectly safe to run a high voltage power line right through our yard. The company shouldn't be allowed to have it both ways.

When I spoke with Xcel representatives on the phone last winter, they could not even tell me precisely how close to our home the new line would be. I am still not sure if they would run the line exactly down the current lot line (so it will be about 24 feet from our house), or if it will run down the center of the easement (pushing it farther away from our house, taking out the neighbors' trees). For official application purposes, I am not sure if our home is considered a home within 25 feet of the line or a home considered over 35 feet from the line. I understand that it is premature to answer all of these questions, but it is of great concern to those of us who are directly impacted.

A project of this scope will most certainly involve the loss of trees in and around our property, disrupt our ability to enjoy our yards, and potentially decrease the value of our homes. We have invested a great deal in our home, and we do not wish to relocate, live in jeopardized health, or take a significant financial hit if we finally decide to sell.

I have a step son who is 12 who likes to play outside, and I am expecting a baby girl at the end of August. I enjoy gardening, and I want our family to be able to get the mail out of the mail box, walk to the park, play in the park, or bike along the bike paths without worrying about being within 10 feet of the line. My concerns are partially related to falling lines, electric fields and EMF (see enclosed articles) and other safety and health issues, but I am also concerned about the potential noise of the line, the possible disruption to our radio service, and the impact the construction will have on my ability to care for a young child in my home and yard (noise). I am also dismayed that the line runs all along the route to Turtle Lake Park and right through the park. I would not even be able to walk to the park to play with my new daughter without escaping the shadows of a high voltage line.

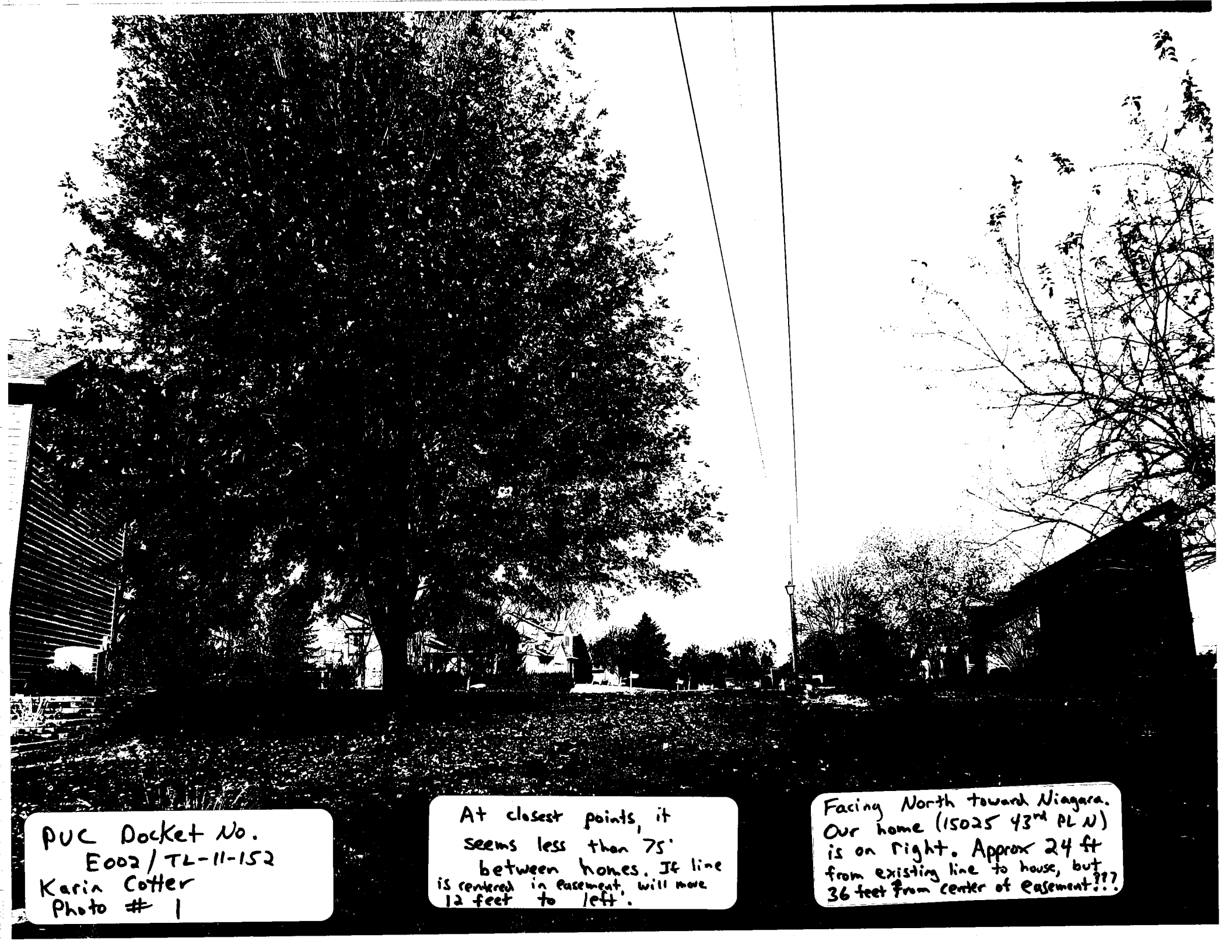
I also object to running the line through Turtle Lake Park and the wetlands just north of Rockford road when there are other routes available. To the extent possible, I think these natural environments should be left undisturbed. There are plenty of alternative routes, and the cost to the electric companies should not be the deciding factor. The personal costs, the health risks, and the loss of environmental assets are all important and should be weighed against cost savings to a company.

I realize that somebody will be unhappy wherever the line is placed, but certain routes push the line closer to more homes, parks, and schools than others. This route is too close to things that should be protected. Also, many other proposed routes already have roads, landscaping, fences, and other factors that mitigate the impact of any new construction. I think as much space should be given as possible to protect residences, parks, schools, and other areas people use to escape urban life.

Thank you again for your time and consideration.

Sincerely,

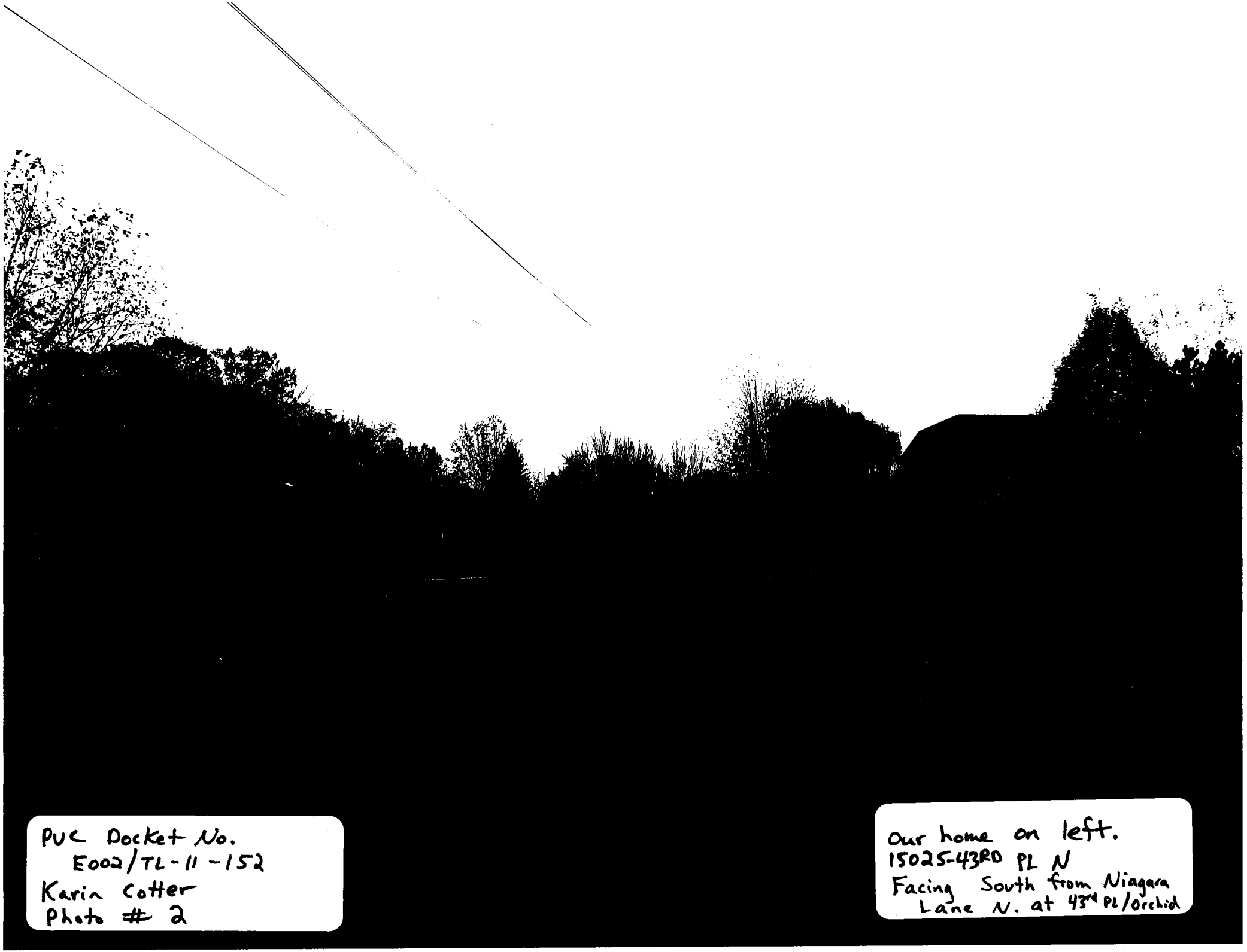
Karin K. Cotter



PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 1

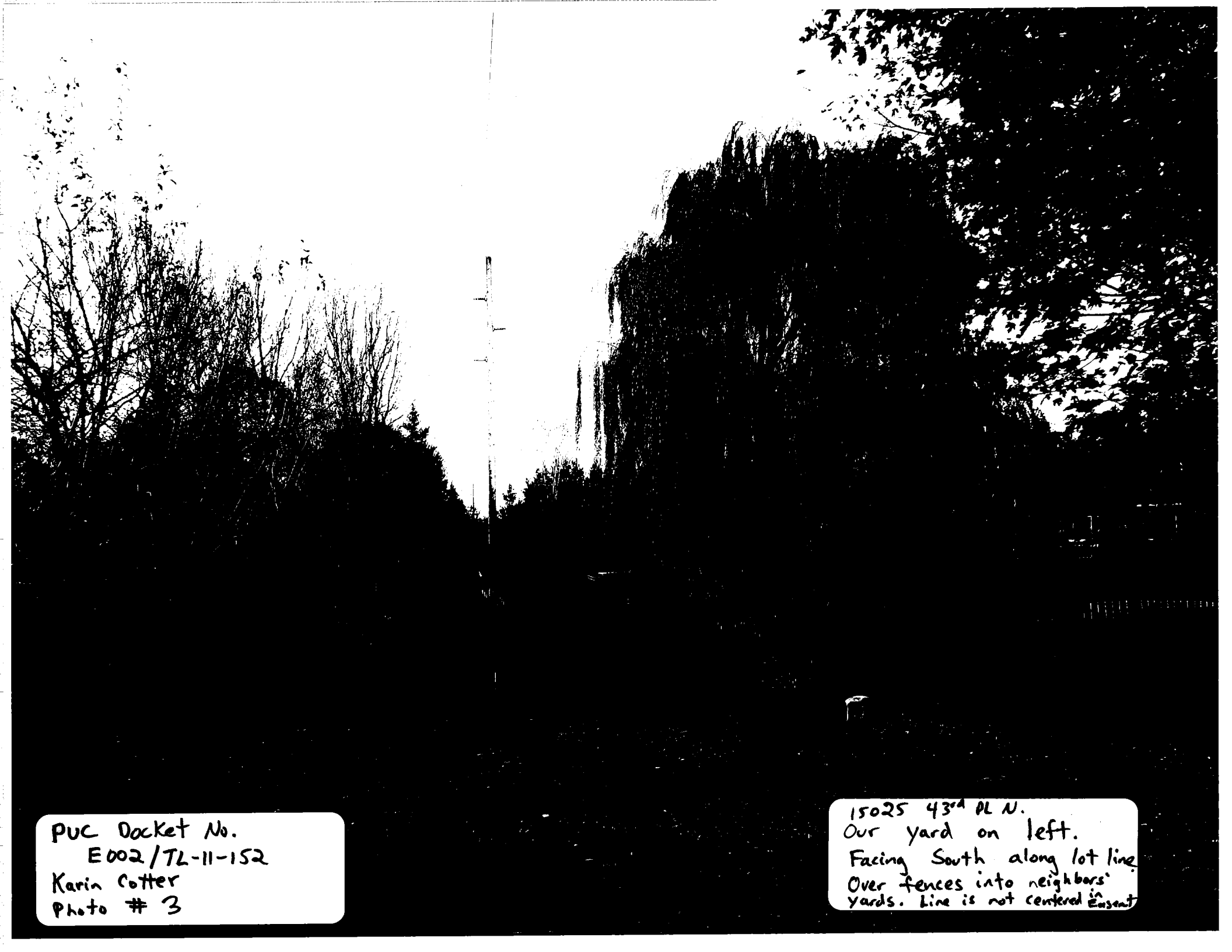
At closest points, it seems less than 75' between homes. If line is rentered in easement, will move 12 feet to left'.

Facing North toward Niagara. Our home (15025 43rd PL N) is on right. Approx 24 ft from existing line to house, but 36 feet from center of easement!!?



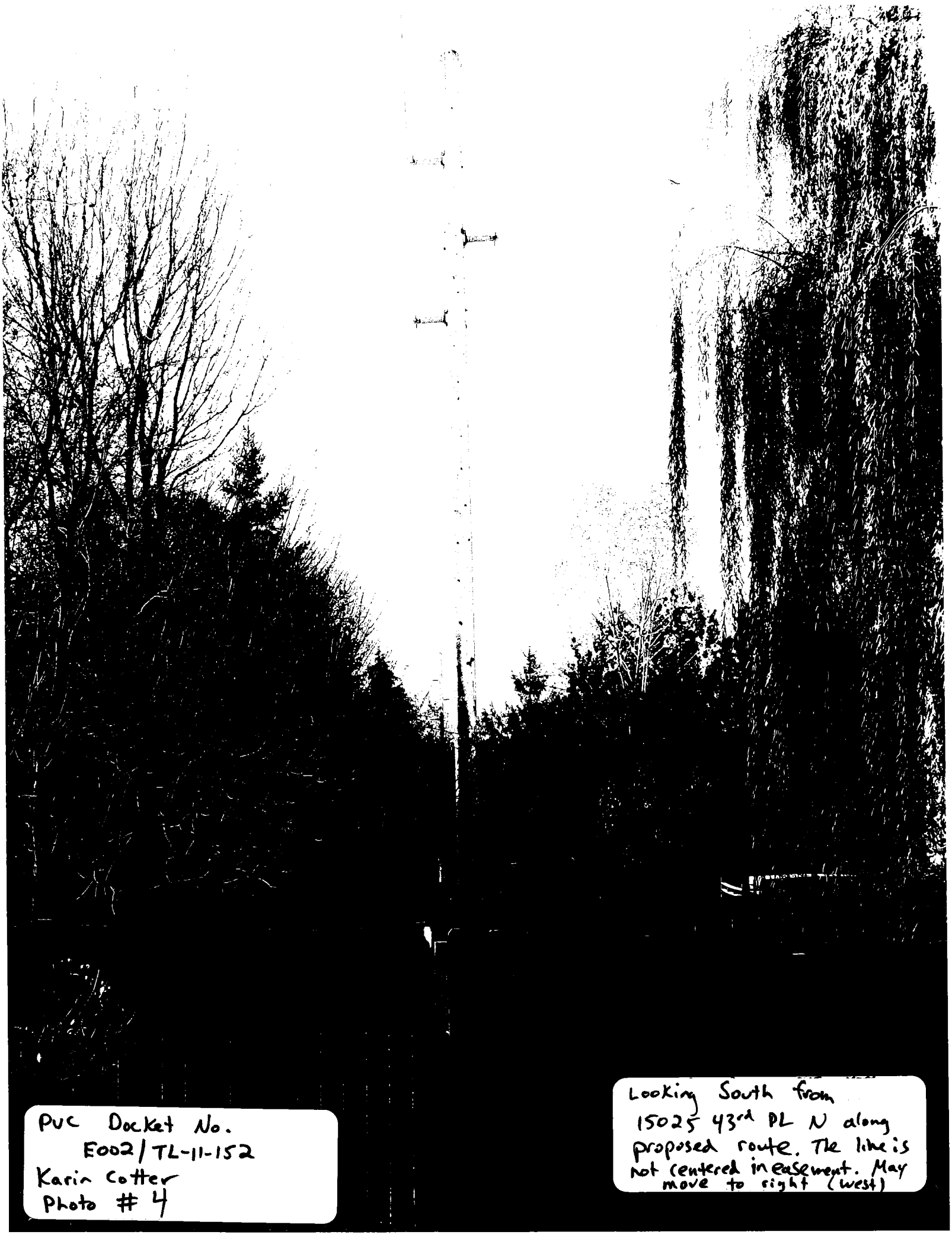
PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 2

Our home on left.
15025-43RD PL N
Facing South from Niagara Lane N. at 43rd Pl/Orchid



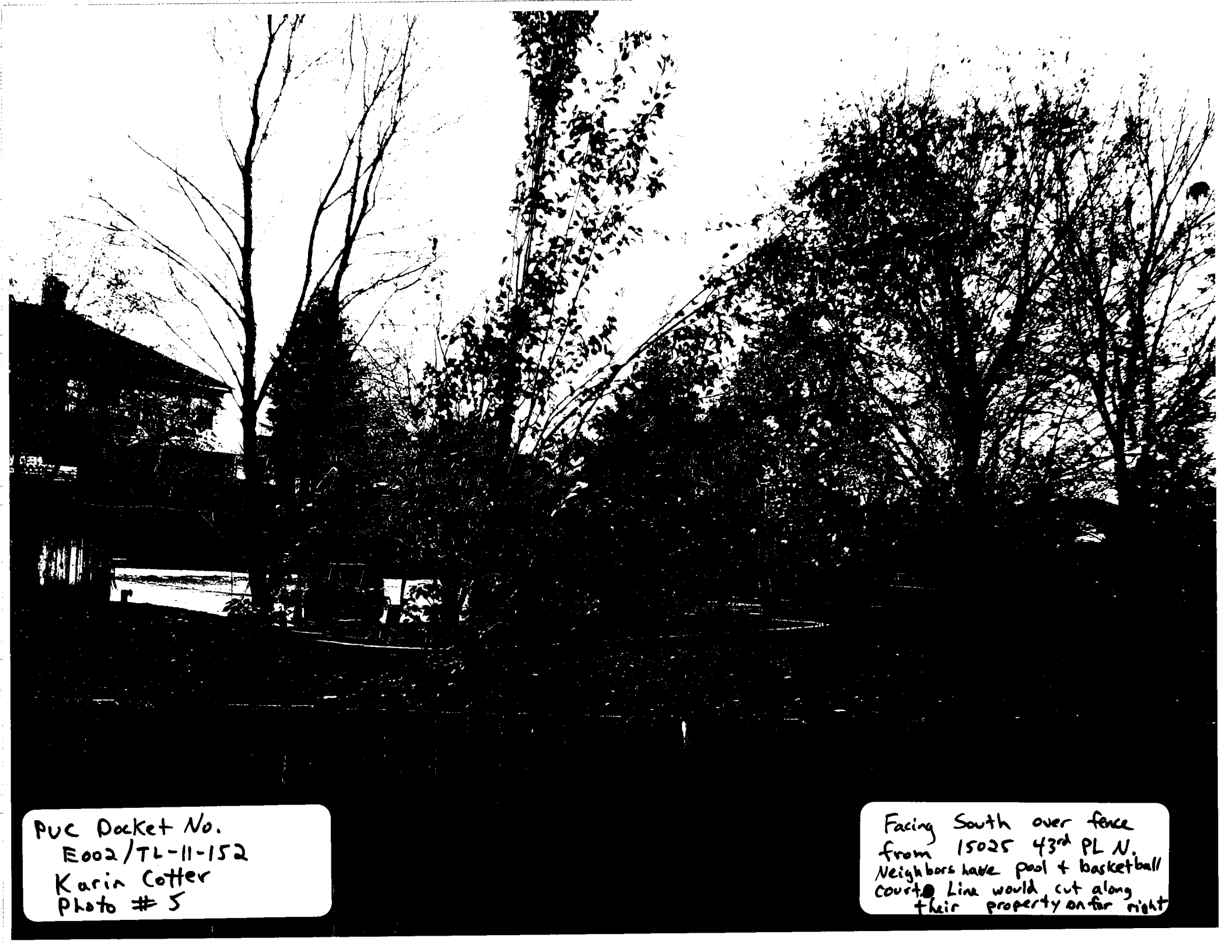
PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 3

15025 43rd Pl N.
Our yard on left.
Facing South along lot line.
Over fences into neighbors' yards. Line is not centered in Easement



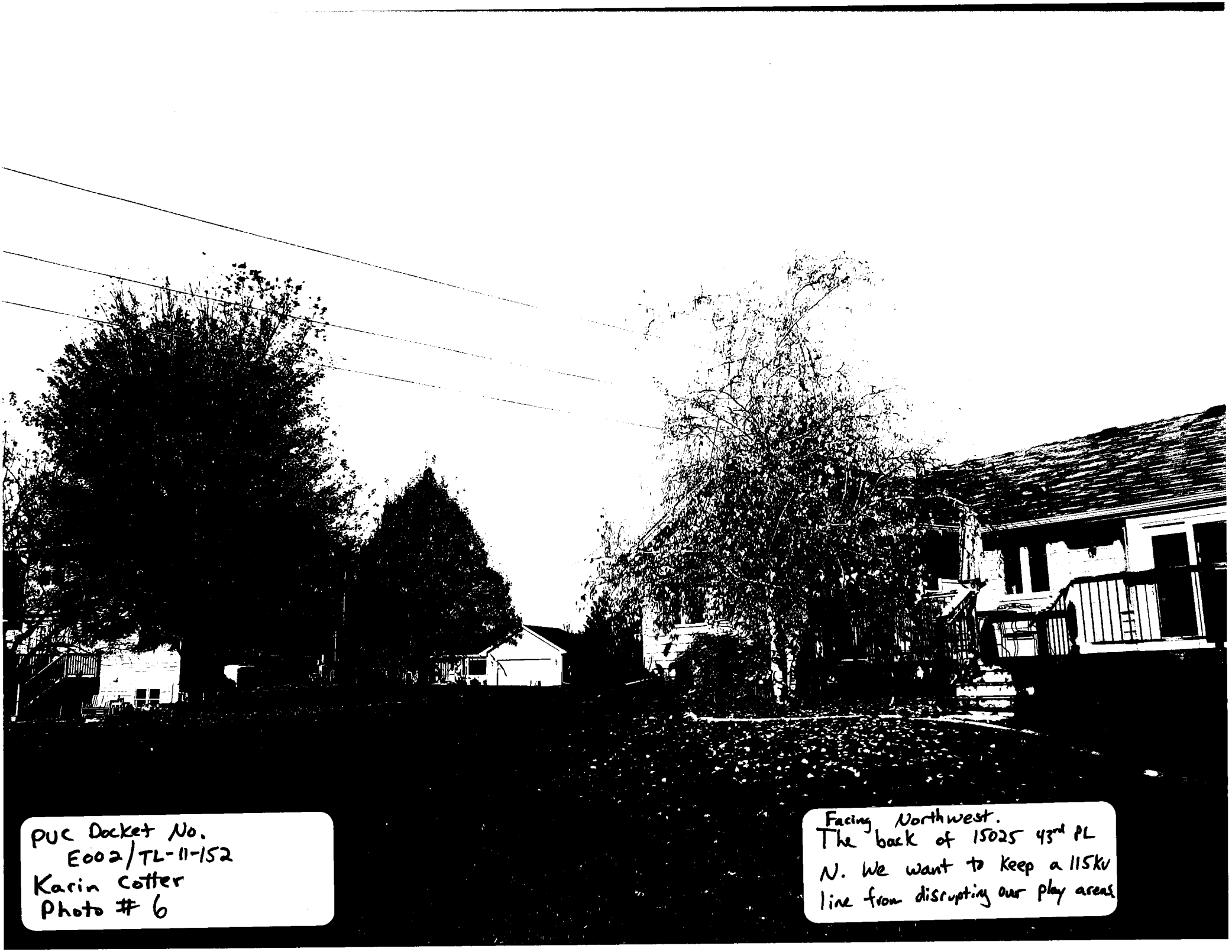
PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 4

Looking South from 15025 43rd PL N along proposed route. The line is not centered in easement. May move to right (west)



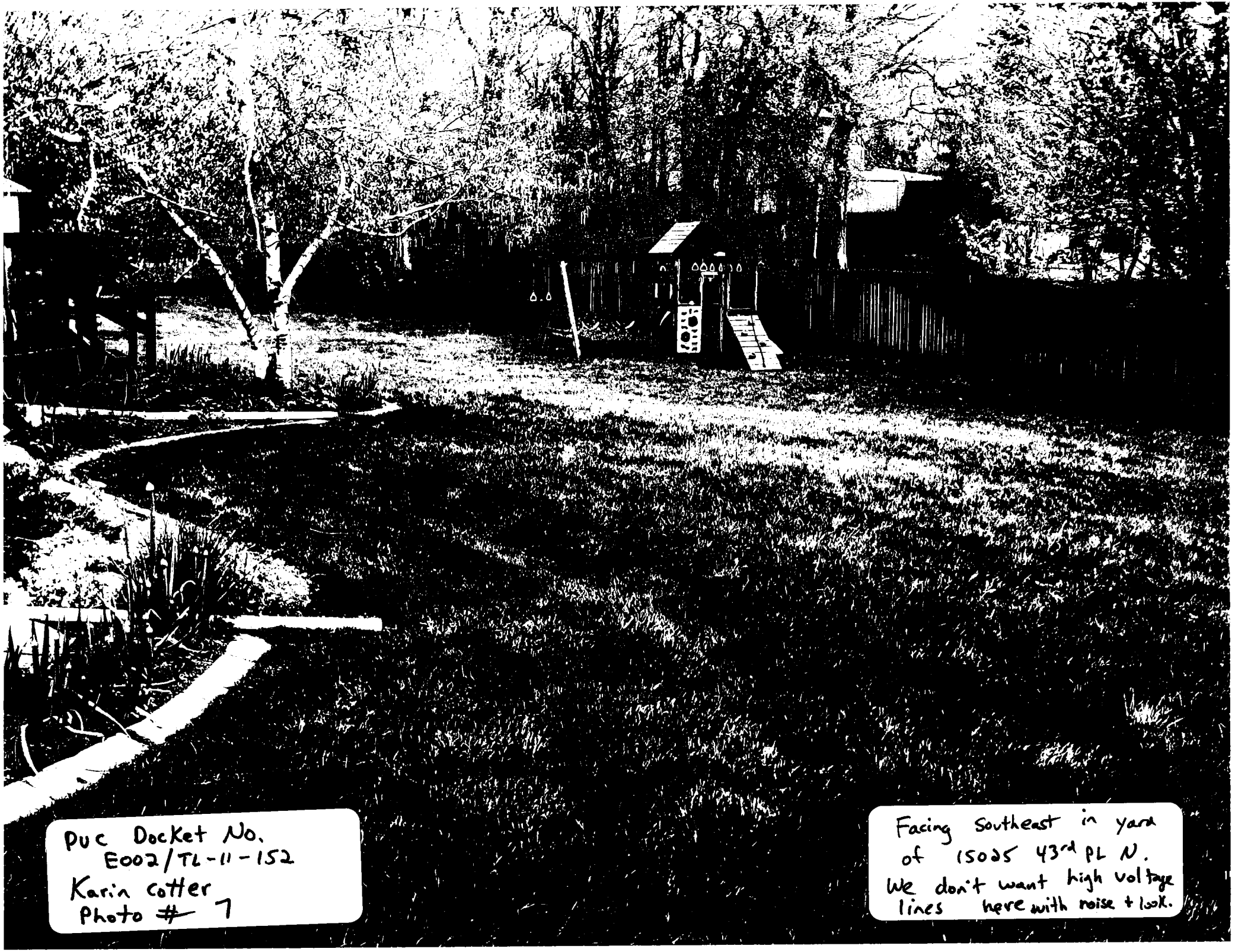
PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 5

Facing South over fence from 15025 43rd PL N. Neighbors have pool + basketball court. Line would cut along their property on far right



PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 6

Facing Northwest.
The back of 15025 43rd PL N. We want to keep a 115kv line from disrupting our play areas



PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 7

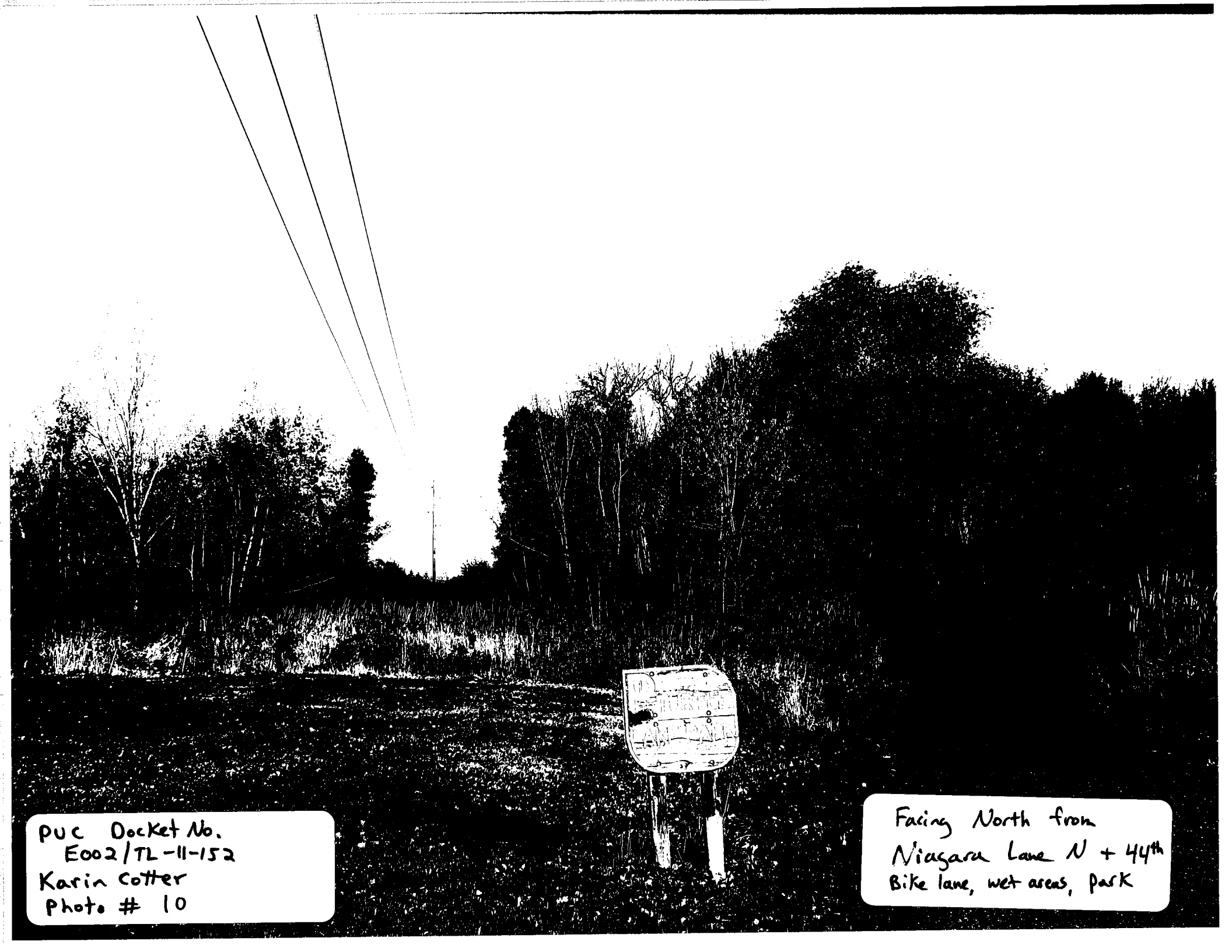
Facing Southeast in yard of 15025 43rd PL N. We don't want high voltage lines here with noise + look.

PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 8

Facing North from 15025 43rd PL N. Kids' bus stop is right under/near the line. Our yard on right.

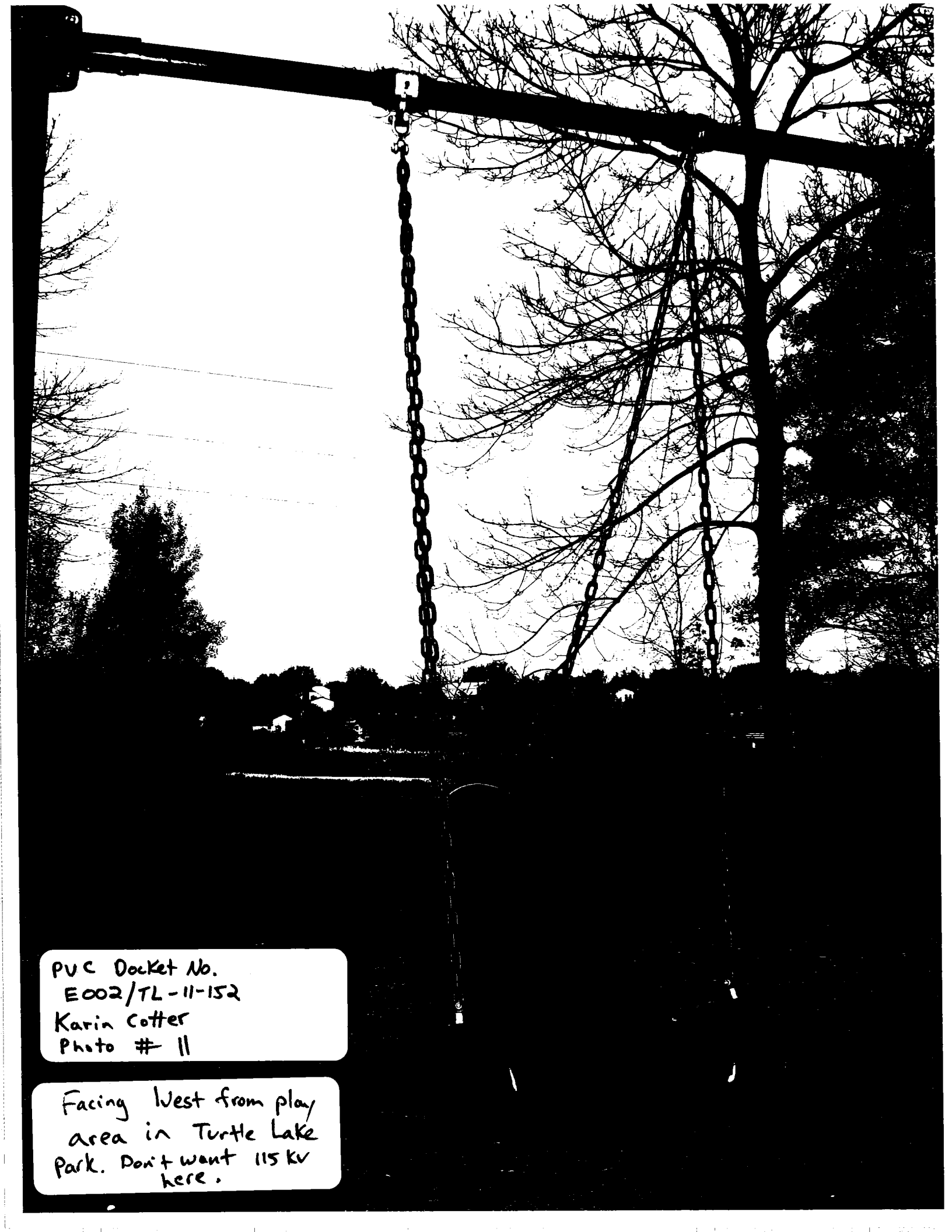
PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 9

Facing North along Niagara Lane N. Residential street with many kids, mailboxes. Stay 10 feet away?



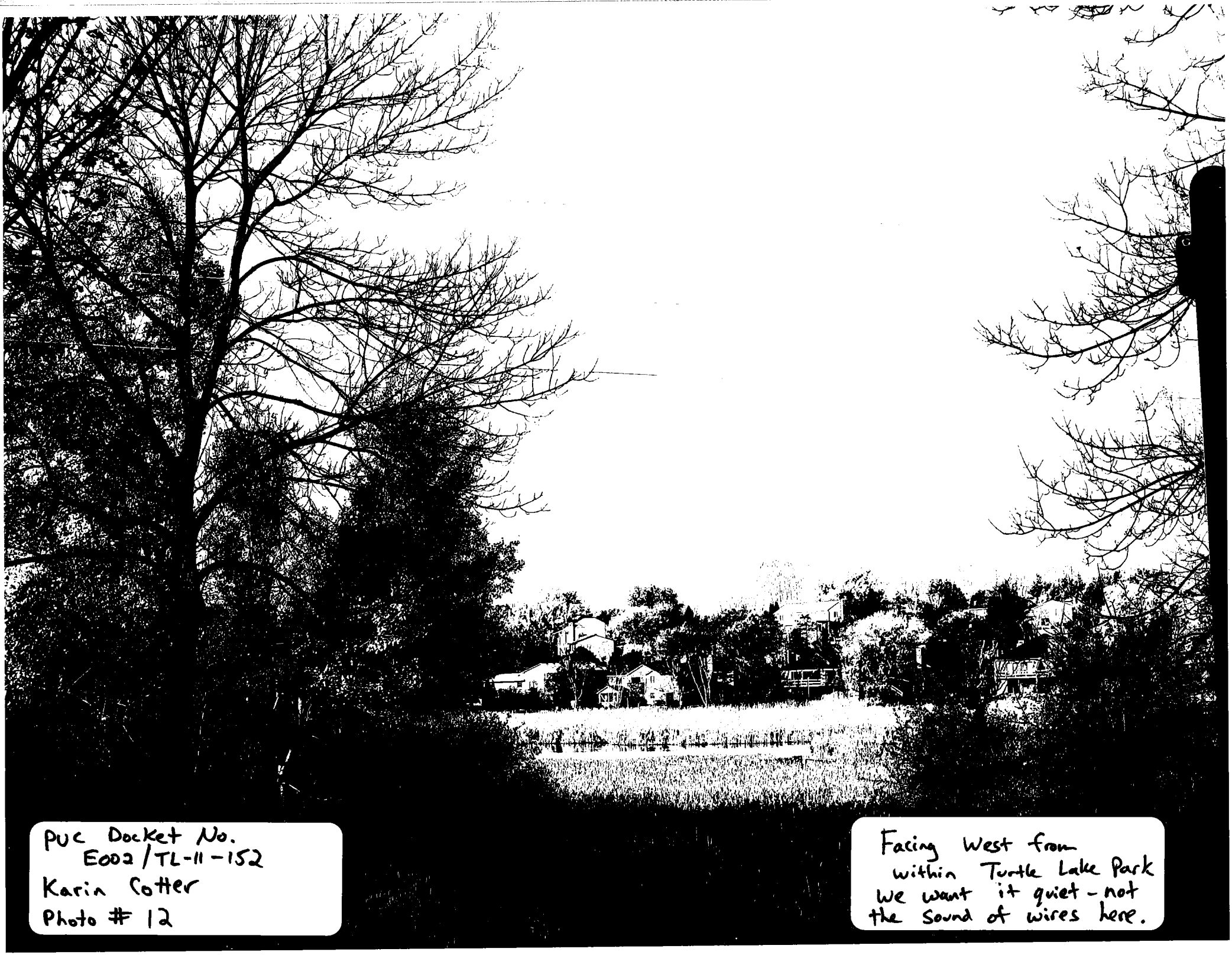
PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 10

Facing North from
Niagara Lane N + 44th
Bike lane, wet areas, park



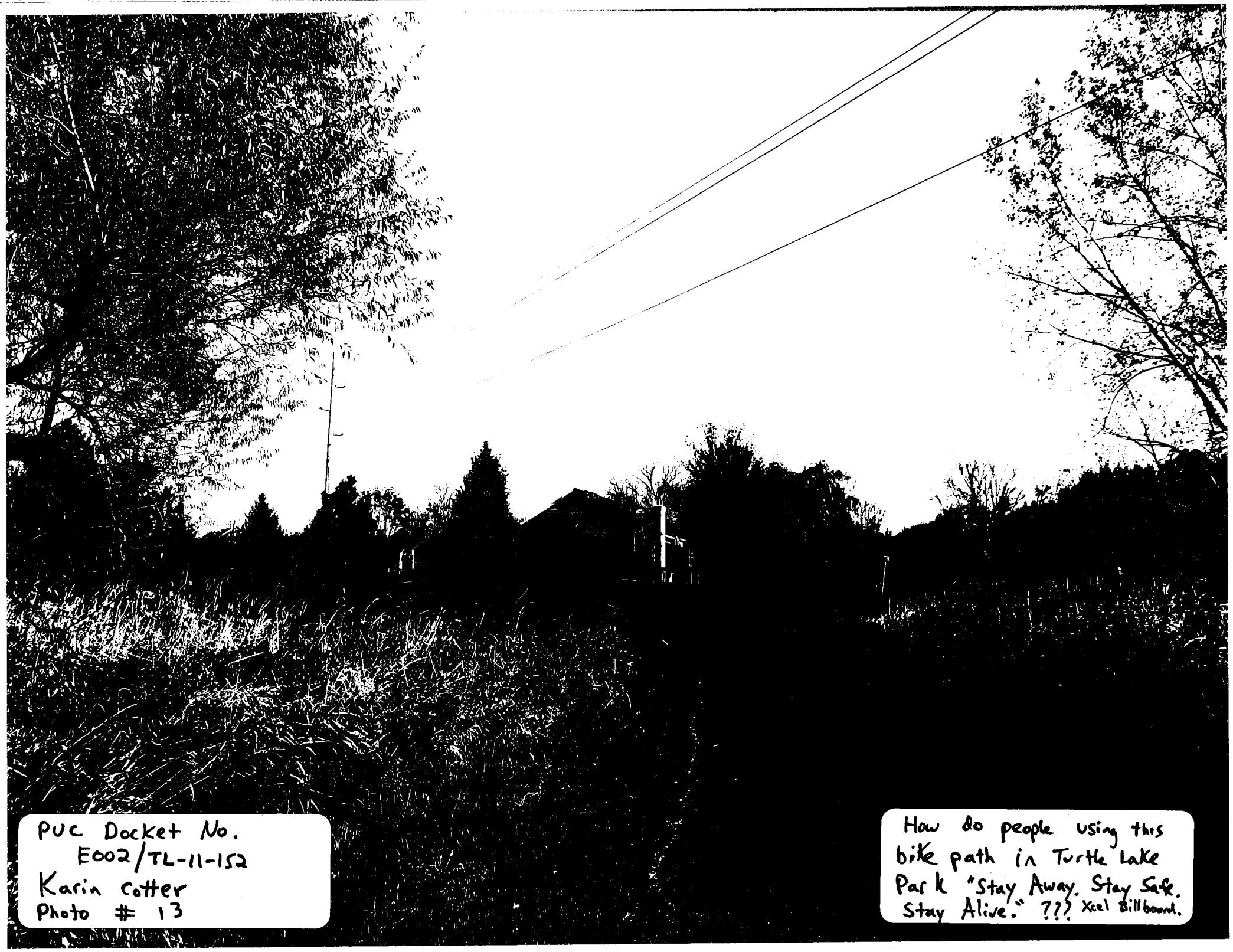
PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 11

Facing West from play area in Turtle Lake Park. Don't want 115 kV here.



PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 12

Facing West from within Turtle Lake Park We want it quiet - not the sound of wires here.



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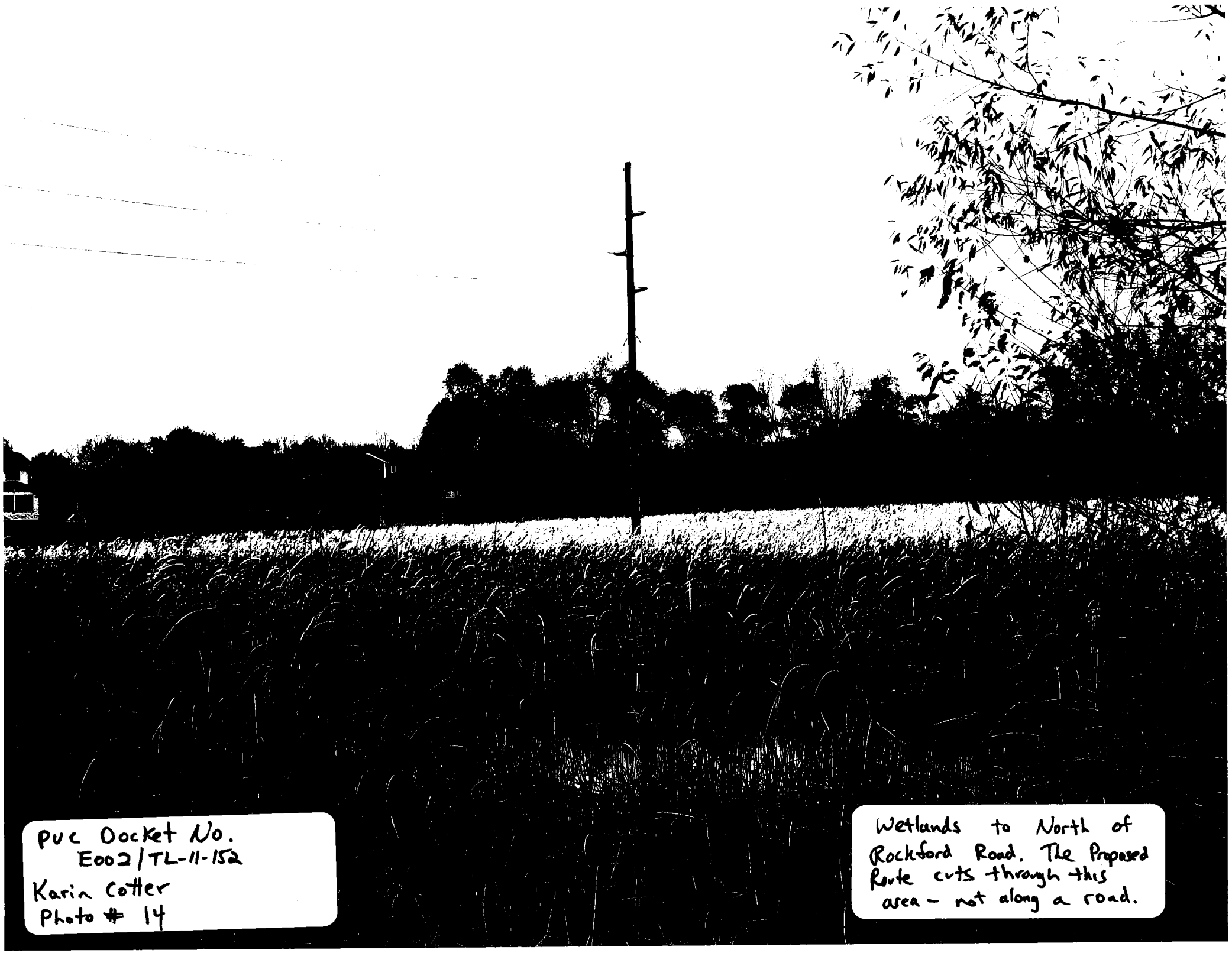
Karin Cotter
Photo # 13

How do people using this bike path in Turtle Lake Park "Stay Away. Stay Safe. Stay Alive." ??? Xcel Billboard.



PUC Docket No.
E002/TL-11-152
Karin Cotter
Photo # 14

Wetlands to North of Rockford Road. The Proposed Route cuts through this area - not along a road.

ONLINE FIRST

Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring

De-Kun Li, MD, PhD; Hong Chen, MPH; Roxana Odouli, MSPH

Objective: To determine whether maternal exposure to high levels of magnetic fields (MFs) during pregnancy is associated with the risk of asthma in offspring.

Design: A prospective cohort study.

Setting: Kaiser Permanente Northern California.

Participants: Pregnant Kaiser Permanente Northern California members in the San Francisco area.

Main Outcome Measures: Asthma was clinically diagnosed among 626 children who were followed up for as long as 13 years. All participants carried a meter to measure their MF levels during pregnancy.

Results: After adjustment for potential confounders, a statistically significant linear dose-response relationship was observed between increasing maternal median daily MF exposure level in pregnancy and an increased risk of asthma in offspring: every 1-mG increase of maternal MF level during pregnancy was associated with a 15% increased rate of asthma in offspring (adjusted hazard ratio [aHR], 1.15; 95% confidence interval [CI], 1.04-1.27). Using the categorical MF level, the results showed a similar dose-response relationship: compared with the children whose mothers had a low MF level (median 24-hour MF level, ≤0.3 mG) during pregnancy, children whose mothers had a high MF level (>2.0 mG) had more than a 3.5-fold increased rate of asthma (aHR, 3.52; 95% CI, 1.68-7.35), while children whose mothers had a medium MF level (>0.3-2.0 mG) had a 74% increased rate of asthma (aHR, 1.74; 95% CI, 0.93-3.25). A statistically significant synergistic interaction was observed between the MF effect and a maternal history of asthma and birth order (firstborn).

Conclusion: Our findings provide new epidemiological evidence that high maternal MF levels in pregnancy may increase the risk of asthma in offspring.

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ASTHMA IS THE MOST COMMON chronic condition among children. Approximately 13% of children younger than 18 years (9.4 million children in the United States) have asthma.[1] Based on reports from the Centers for Disease Control and Prevention, asthma is a leading cause of hospitalization and emergency department visits for children younger than 18 years in the United States, with staggering annual costs of more than $30 billion (http://www.cdc.gov/HealthyYouth/asthma).[1] The prevalence of asthma has been steadily rising during the last several decades, with an increase of about 74% from 1980 to 1996. While not ruling out genetic susceptibility, such a secular increase indicates the presence of important environmental risk factors that remain elusive.

Environmental exposures during pregnancy could affect fetal development of the immune system and lungs and thus have an impact on the risk of asthma in offspring.[2-5] Among the limited research, chemical exposures have represented much of the focus, while the potential of environmental physical exposures has rarely been examined. One such physical exposure is increasing man-made electromagnetic fields (EMFs). In addition to traditional low-frequency EMFs from power lines and appliances, the buildup of increasingly stronger wireless networks both inside and outside living and work spaces

For editorial comment see page 959

and the proliferation of cell phones and other wireless devices have led to human populations being surrounded by EMFs of increasing intensity. This parallel increase in both EMF exposure and asthma prevalence in the past several decades warrants examination.

Studies have shown that EMFs could adversely affect reproductive outcomes and the immune system.[6-15] A recent study also

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showed an EMF effect on brain cell activities.[16,17] Therefore, it is conceivable that exposure to high EMFs, especially during pregnancy (the period of fetal development), may have an impact on the risk of asthma in offspring. To examine this hypothesis, we conducted a prospective study based on a cohort of pregnant women whose daily exposure to magnetic fields (MFs) was captured objectively by a meter during their pregnancy and whose offspring from the index pregnancy were followed up for as long as 13 years for their asthma diagnosis.

METHODS

A prospective cohort study was conducted to examine the effect of EMF exposure on the risk of miscarriage among pregnant members of Kaiser Permanente Northern California (KPNC) in the San Francisco area who were recruited from 1996 to 1998.[6] The members of KPNC are representative of the racially/ethnically diverse underlying population. All pregnant women who submitted a pregnancy test in the KPNC facilities of the San Francisco area were informed of the study, and those with a positive pregnancy test result were recruited for their possible participation. The study was approved by the KPNC institutional review board, and all participants signed an informed consent form.

RECRUITMENT

Women who spoke English and intended to carry the pregnancy to term at the time of recruitment were eligible for participation in the study. We recruited pregnant women early in gestation (5-13 weeks) because miscarriage usually occurs during the first trimester.[6] All participants were interviewed in person during pregnancy to ascertain risk factors for adverse pregnancy outcomes and potential confounders. Of the original 1063 recruited women, 829 delivered a live birth. Of these offspring, 28 did not have medical records in our KPNC system, which means that they likely received their pediatric care outside the KPNC system and therefore were not included in the study.

EXPOSURE MEASUREMENT: MFs

Electromagnetic field refers to both electric fields and MFs. In this study, because the instrument we used (EMDEX-II meter; Enertech Consultants, Campbell, California) measures only MFs, hereafter we will refer to our exposure as *MFs*. All participants were asked to wear an EMDEX-II meter for 24 hours during the first or second trimester so that their actual MF exposure level throughout the day from all sources could be measured objectively. The EMDEX-II meter collected MF measurements in the frequency range of 40 to 800 Hz every 10 seconds. The MF level was measured in milligauss. The meter was programmed to show only the time of day, without displaying any MF exposure level, so that participants were not aware of their MF exposure during the measurement period. This design was implemented to avoid changes of any routine daily activities due to the MF level displayed. At the end of the measurement period, the women were asked to rate their activity patterns during the measurement period as either similar to or quite different from those during a typical day of their pregnancy. Of 801 participants whose children had pediatric care at KPNC, 67 did not have complete 24-hour MF measurements. These mother-child pairs were excluded from the study.

OUTCOME MEASUREMENT: ASTHMA IN OFFSPRING

The children of the remaining 734 pairs with complete maternal 24-hour MF measurements during pregnancy were followed up until (1) they received a diagnosis of asthma, (2) they left the KPNC system (no longer a KPNC member), or (3) the end of the study period (August 31, 2010). To be considered as having a case of asthma, a child had to have received a clinical diagnosis of asthma (*International Classification of Diseases, Ninth Revision*, codes 493.00-493.99) on at least 2 occasions within a 1-year period during follow-up. We excluded those who had either only 1 diagnosis (n=67) or 2 diagnoses that were more than 1 year apart (n=17) or those who used antiasthmatic medications without a clinical diagnosis of asthma (n=24). These children were considered to have suspected asthma and formed a separate outcome group. They were not included in the main analyses but were analyzed separately for comparison. The final analyses included 626 mother-child pairs with both maternal MF measurements and a known asthma status.

POTENTIAL CONFOUNDERS

Although the number of known potential confounders are likely limited because of (1) a lack of association between MF exposure and many commonly known social, demographic, and behavioral factors and (2) the small number of known risk factors for asthma,[2,4] we evaluated many common sociodemographic characteristics and known prenatal and postnatal risk factors for asthma to ensure that they truly did not confound the association between maternal MF exposure during pregnancy and the risk of asthma in offspring. Because most variables evaluated were not confounders, we included the common sociodemographic variables such as maternal age, education, and race/ethnicity as well as the main risk factors for asthma such as a maternal history of asthma and smoking during pregnancy in the final model.

DATA ANALYSIS

We used the Cox proportional hazard regression model to examine the relationship between in utero MF exposure and the risk of asthma in offspring after controlling for potential confounders. Survival analysis has the advantage of taking into account different follow-up times for the offspring with regard to asthma diagnosis. All children were followed up starting from birth until (1) they received diagnoses of asthma (failed), (2) they left the KPNC system (censored), or (3) the end of the study (censored).

To quantify a woman's overall daily MF exposure burden, we used median 24-hour MF exposure to reflect her overall MF exposure during pregnancy to reduce the impact of outliers. Because everyone is exposed to MF at some level, we examined whether an increasing MF exposure during pregnancy is associated with an increased risk of asthma in offspring, a dose-response relationship rather than a dichotomized variable of yes/no. We first examined the dose-response relationship using the median MF level as a continuous variable. To present the association as categorical MF exposure for an easier interpretation, we divided the median MF level into 3 categories: low (≤10th percentile [≤0.3 mG]), medium (>10th-90th percentile [>0.3-2.0 mG]), and high (>90th percentile [>2.0 mG]).

RESULTS

Table 1 presents the characteristics of the study population according to their MF exposure level during pregnancy. We examined maternal, prenatal, genetic, and

Table 1. Characteristics of the Study Population

Characteristic	Median Magnetic Field (MF) Level, %			χ^2 Test (P Value)
	Low,[a] (n=81)[d]	Medium,[b] (n=482)[d]	High,[c] (n=63)[d]	
Sociodemographic factors				.91
Maternal age, y				
≤25	19.7	18.3	19.1	
26-30	32.1	31.5	31.7	
31-35	30.9	32.8	38.1	
>35	17.3	17.4	11.1	
Maternal education				.93
<College	51.8	55.8	57.1	
College	32.1	27.8	28.6	
Postgraduate	16.1	16.4	14.3	
Maternal race/ethnicity				.66
White	40.7	38.4	47.5	
Black	4.9	8.3	4.8	
Hispanic	21.0	19.5	17.5	
Asian/Pacific Islander	24.7	29.1	25.4	
Other	8.6	4.7	4.8	
Maternal prepregnancy BMI				.97
≤25	71.6	71.6	73.0	
>25	28.4	28.4	27.0	
Family income, $				.004
<30 000	24.4	18.4	13.3	
≥30 000	26.9	44.7	60.0	
≥60 000	48.7	36.8	26.7	
Prenatal factors				.90
Smoke during pregnancy				
Yes	8.6	9.5	7.9	
No	91.4	90.5	92.1	
Infection in pregnancy				.66
Yes	34.6	32.6	38.1	
No	65.4	67.4	61.9	
Antibiotic use in pregnancy				.48
Yes	34.6	41.3	42.9	
No	65.4	58.7	57.1	
Mode of delivery				.66
Vaginal birth	77.3	79.7	83.6	
Cesarean section	22.7	20.3	16.4	
Genetic factor				.85
Maternal history of asthma				
Yes	8.6	7.1	6.3	
No	91.4	92.9	93.7	
Infant factors				.89
Breastfed				
Yes	88.9	91.7	90.5	
No	11.1	8.3	9.5	
Sex				.66
Female	44.4	49.4	46.1	
Male	55.6	50.6	53.9	
Parity				.48
First child	51.9	45.6	50.8	
Not first child	48.1	54.4	49.2	
Low birthweight, <2500 g				.07
Yes	9.9	4.1	3.2	
No	90.1	95.9	96.8	
Preterm, <37 wk				.95
Yes	7.4	7.5	6.3	
No	92.6	92.5	93.7	
KPNC member at the end of follow-up				.92
Yes	58.0	60.4	60.3	
No	42.0	39.6	39.7	
NICU admission				.34
Yes	11.8	7.9	5.1	
No	88.2	92.1	94.9	
Use of antibiotics before the first diagnosis of asthma				.10
Yes	84.8	87.3	77.4	
No	15.2	12.7	22.6	
Other factors				.99
MF level measured on a typical day				
Yes	64.2	63.9	63.5	
No	35.8	36.1	36.5	

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); NICU, neonatal intensive care unit; KPNC, Kaiser Permanente Northern California.

[a] Less than or equal to the 10th percentile (≤0.3 mG).

[b] Greater than the 10th percentile to the 90th percentile (>0.3-2.0 mG).

[c] Greater than the 90th percentile (>2.0 mG).

[d] The following 3 variables had missing data: family income (n=32), maternal mode of delivery (n=22), and NICU admission (n=24).

Table 2. Maternal Exposure to Magnetic Fields (MFs) During Pregnancy and the Risk of Asthma in Offspring

Maternal Daily Median MF Level	Asthma in Children		cHR (95% CI)	aHR[a] (95% CI)
	Yes	No		
Continuous MF level, mean[b] (SD), mG	1.22 (1.22)	0.98 (1.09)	1.12 (1.02-1.23)	1.15 (1.04-1.27)
MF level in category, No. (%)				
Low, ≤10th percentile	11 (13.6)	70 (86.4)	1 [Reference]	1 [Reference]
Medium, >10th-90th percentile	98 (20.3)	384 (79.7)	1.65 (0.88-3.08)	1.74 (0.93-3.25)
High, >90th percentile	21 (33.3)	42 (66.7)	3.16 (1.52-6.57)	3.52 (1.68-7.35)

Abbreviations: aHR, adjusted hazard ratio (adjusted for maternal age, race, education, smoking during pregnancy, and a history of asthma; further adjustment for the remaining variables in Table 1 did not materially change the results); cHR, crude hazard ratio; CI, confidence interval.

[a] Trend test, $P<.001$.

[b] Mean of median.

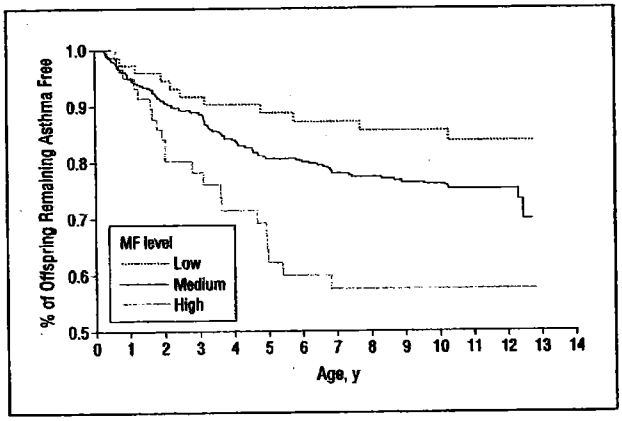

Figure. Kaplan-Meier estimates of asthma risk by maternal magnetic field (MF) exposure level during pregnancy.

infant factors that may be related to MF exposure, the risk of asthma, or both (ie, potential confounders). Of the 19 factors examined, none was related to MF exposure level except family income, which did not show a clear pattern of a relationship (Table 1). The percentages of children who were unavailable for follow-up at the end of the study because of their exiting KPNC membership and those whose MF exposure was measured on a typical day during pregnancy were quite similar among all MF exposure levels (Table 1).

Overall, 130 children (20.8%) of the study participants developed asthma during 13 years of follow-up, with most cases (>80%) diagnosed by 5 years of age. **Table 2** presents the results examining the dose-response relationship between increasing maternal MF exposure level in pregnancy and the risk of asthma in offspring using MF exposure level as both a continuous and a categorical variable. After adjustment for maternal age, race, education, smoking during pregnancy, and a history of asthma, a statistically significant linear dose-response relationship was observed between increasing maternal median daily MF exposure level in pregnancy and an increased risk of asthma in offspring (adjusted hazard ratio [aHR], 1.15; 95% confidence interval [CI], 1.04-1.27). In other words, 1 unit (1 mG) of increase in the maternal median MF exposure level during pregnancy was associated with a 15% increased rate of asthma in offspring (Table 2). Using the categorical MF level (low, medium, and high) as dummy variables, the results confirmed the linear dose-response relationship: compared with children whose mothers had a low MF level (<0.3 mG) during pregnancy, children whose mothers had a medium MF level (>0.3-2.0 mG) had a 74% increased rate of developing asthma (aHR, 1.74; 95% CI, 0.93-3.25). Furthermore, children whose mothers had a high MF level (>2.0 mG) during pregnancy had more than a 3.5-fold increased rate of developing asthma (aHR, 3.52; 95% CI, 1.68-7.35). Further adjustment for the remaining 14 factors, including family income, listed in Table 1 did not materially change the results. Finally, a similar association was also observed using suspected asthma cases, although the association was weaker, perhaps because of the misclassification of asthma cases. The aHRs were 1.24 and 1.41 for medium and high maternal MF exposure levels, respectively.

The **Figure** shows the Kaplan-Meier survival curves for the percentages of offspring who remained free of asthma during the 13-year follow-up period for 3 different maternal MF exposure levels in pregnancy. The cumulative asthma risks (1−cumulative survival rate) in offspring were 0.16, 0.30, and 0.43 for low, medium, and high maternal MF exposure levels, respectively.

To determine whether other factors would modify the observed association, we examined the association stratified by 2 known risk factors for asthma: maternal history of asthma (a possible genetic risk factor) and firstborn child (a possible environmental risk factor, the hygiene hypothesis).[2-5] **Table 3** shows that the observed association was noticeably stronger among the children whose mothers had a history of asthma (aHR, 6.06; a more than 6-fold increased rate of asthma for 1 unit [1 mG] of increase in MF level in the maternal median MF exposure level during pregnancy) than among those whose mothers did not have a history of asthma (aHR, 1.12). Similarly, the association between increasing maternal MF exposure levels in pregnancy and the risk of asthma in offspring was stronger among firstborn children (aHR, 1.40; a 40% increased rate of asthma for every 1 unit [1 mG] of increase in MF level) than among later-born children (aHR, 1.07) (Table 3). The presence of these 2 risk factors (ie, history of maternal asthma [$P<.005$] and being a firstborn child [$P<.05$]) significantly exacerbated the adverse effect of maternal MF exposure in pregnancy on the risk of asthma in offspring.

Table 3. Maternal Exposure to Magnetic Fields During Pregnancy and the Risk of Asthma in Offspring in Relation to Other Risk Factors for Asthma

Other Risk Factor for Asthma	Total No.	Asthma in Children, Mean (SD)		aHR (95% CI)	*P* Value
		Yes	No		
Maternal history of asthma					*P*<.005
Yes	45	1.17 (0.87)	0.65 (0.49)	6.06 (2.20-16.72)	
No	581	1.22 (1.25)	1.01 (1.11)	1.12 (1.01-1.25)	
Birth order					*P*<.05
First child	294	1.33 (1.31)	0.96 (0.88)	1.40 (1.16-1.70)	
Not first child	332	1.13 (1.14)	1.01 (1.25)	1.07 (0.92-1.25)	

Abbreviations: CI, confidence interval; aHR, adjusted hazard ratio (adjusted for maternal age, race, education, smoking during pregnancy, and a history of asthma; further adjustment for the remaining variables in Table 1 did not materially change the results).

Table 4. The Strengths of the Association in Relation to the Measurement Accuracy of Magnetic Fields (MFs)

Maternal Daily Median MF Level	Asthma in Children, No. (%)		aHR (95% CI)
	Yes	No	
Measured on a typical day			
Low, ≤10th percentile	5 (9.6)	47 (90.4)	1 [Reference]
Medium/high, >10th percentile	73 (21.0)	275 (79.0)	2.52 (1.01-6.30)
Measured on a nontypical day			
Low, ≤10th percentile	6 (20.7)	23 (79.3)	1 [Reference]
Medium/high, >10th percentile	46 (23.3)	151 (76.7)	1.31 (0.55-3.13)

Abbreviations: CI, confidence interval; aHR, hazard ratio (adjusted for maternal age, race, education, smoking during pregnancy, and a history of asthma).

COMMENT

In this prospective cohort study, we found that a high maternal MF exposure level in pregnancy is associated with a significantly increased risk of asthma in offspring. The observed association showed a dose-response relationship. Given the lack of understanding of the causes of asthma, our findings could open up a new research area to elucidate risk factors of asthma that are unknown and have not been examined before. Also, our study provides new findings for the potential adverse health effect of MF exposure on an end point (asthma) that, to our knowledge, has not been previously studied. While the public has been increasingly aware of EMF exposure owing to the increasing presence of infrastructure of wireless networks and the pervasive use of wireless devices, studies on EMF health effects remain limited. Because EMF exposure is ubiquitous and exposure to it is involuntary, these new findings have important public health implications. Nevertheless, they need to be replicated by other studies.

While prenatal risk factors for asthma are not well understood, pregnancy is one of the most influential periods when allergic sensitization (atopy) is developed in the fetus.[2,18,19] The underlying pathogenesis of asthma is likely structural and due to functional defects in epithelium and an impaired innate immune system.[3] Prenatal exposure to high MF levels could interfere with the development of both epithelial cells and normal immune systems. Research by multidisciplinary collaborative studies is needed to understand these mechanisms.

The current study has several methodological strengths that enhanced the validity of the new findings. First, it was a prospective cohort study in which MF exposure was measured in pregnancy, long before the diagnosis of asthma in offspring. This study design substantially reduces the likelihood of potential biases associated with participation influenced by the presence of outcomes. Second, both the exposure (MF levels) and the outcome (diagnosis of asthma) in this study were measured objectively without the knowledge of each other, thus reducing the concern of recall bias associated with the ascertainment of exposure and outcome variables that has existed in many epidemiological studies. Unlike many case-control studies of the MF health effect, in which MF exposure in the etiologically relevant period of the past was either reconstructed or surrogated by the current exposure measurement (eg, studies of childhood leukemia), MF exposure levels in this study were prospectively measured during the etiologically relevant period (eg, pregnancy). Also, while EMF exposure measurement in past studies was frequently based only on recalls, surrogate measures, and home spot measurements, the current study asked participants to carry an EMDEX-II meter that objectively captured their MF exposure from all sources during pregnancy. Furthermore, all diagnoses of asthma were based on clinical records, not on self-report by the participants, thereby reducing measurement errors of the outcome of interest. Finally, MF exposure is not related to most sociodemographic, behavioral, and commonly known risk factors (Table 1).[6,9] Given that confounders have to be associated with the exposure of interest, a lack of association between MF exposure and those factors limits the number of potential confounders, making the observed association robust against potential biases.

While, compared with previous studies, we improved the accuracy of measuring MF exposure by asking participants to wear an EMDEX II meter for 24 hours, it was not feasible to measure MF exposure throughout pregnancy. Therefore, the accuracy of the MF measurement in reflecting the MF exposure in pregnancy may still be questioned, although one study has reported that MF exposure levels were relatively stable within 12 to 36 months.[20] Assuming that there was some misclassification of MF exposure because of measurement errors, given that this was a cohort study and MF was measured long before the diagnosis of asthma, such misclassification would be nondifferential (ie, the same degree of misclassification to both mothers of children with and without asthma). Nondifferential misclassification generally leads to attenuation of observed associations. Without such misclassification, the observed association could have been stronger. In fact, our reanalysis of the association, stratified by whether the MF measurement was conducted on a typical day of pregnancy (more representative of MF exposure in pregnancy) or a nontypical day (less representative of MF exposure in pregnancy, thus more measurement errors) provided evidence supporting this argument. As shown in **Table 4**, we indeed observed that less measurement error (ie, measured on a typical day) led to a stronger observed association (>2.5 times risk of asthma associated with a higher maternal MF exposure level during pregnancy) compared with more measurement error (ie, measured on a nontypical day), a nonstatistically significant 31% increased risk of asthma. Therefore, had we been able to measure participants throughout pregnancy, the observed association between maternal MF exposure in pregnancy and the risk of asthma might have been stronger than that presented in Table 2.

In addition to observing an association between high maternal MF exposure during pregnancy and the risk of asthma in offspring with a dose-response relationship, we also observed a statistically significant interaction between the MF effect on asthma and the other 2 risk factors for asthma: maternal history of asthma and birth order (firstborn). A maternal history of asthma is a well-established risk factor for genetic susceptibility that has been supported by the results of both genome-wide association studies and candidate gene studies.[2,5] Such an interaction with known risk factors for asthma not only revealed possible synergistic adverse effects between prenatal MF exposure and these 2 risk factors on the risk of asthma but also provided further support for the underlying association between maternal MF exposure in pregnancy and the risk of asthma in offspring. Synergistic factors themselves are often independent risk factors.

In conclusion, the findings of the present study open up a new area in understanding the risk factors for asthma and the health effects of ubiquitous MF exposure, especially during pregnancy. As with any epidemiological study, these findings need to be replicated. If confirmed, they have the potential to inform new intervention strategies to reduce asthma, the most prevalent chronic disease among children.

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Author Contributions: *Study concept and design:* Li. *Acquisition of data:* Li and Odouli. *Analysis and interpretation of data:* Li and Chen. *Drafting of the manuscript:* Li. *Critical revision of the manuscript for important intellectual content:* Chen and Odouli. *Statistical analysis:* Li and Chen. *Obtained funding:* Li. *Administrative, technical, and material support:* Li and Odouli. *Study supervision:* Li.
Financial Disclosure: None reported.
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REFERENCES

1. 2004 National Health Interview Survey Data, Table 1-1, Lifetime Asthma Population Estimates, in thousands, by Age, United States. Centers For Disease Control and Prevention Web site. http://www.cdc.gov/asthma/nhis/04/table1-1.htm. Accessed July 22, 2010.
2. Bracken MB, Belanger K, Cookson WO, Triche E, Christiani DC, Leaderer BP. Genetic and perinatal risk factors for asthma onset and severity: a review and theoretical analysis. *Epidemiol Rev.* 2002;24(2):176-189.
3. Holgate ST, Arshad HS, Roberts GC, Howarth PH, Thurner P, Davies DE. A new look at the pathogenesis of asthma. *Clin Sci (Lond).* 2010;118(7):439-450.
4. Holgate ST. Has the time come to rethink the pathogenesis of asthma? *Curr Opin Allergy Clin Immunol.* 2010;10(1):48-53.
5. Subbarao P, Mandhane PJ, Sears MR. Asthma: epidemiology, etiology and risk factors. *CMAJ.* 2009;181(9):E181-E190.
6. Li DK, Odouli R, Wi S, et al. A population-based prospective cohort study of personal exposure to magnetic fields during pregnancy and the risk of miscarriage. *Epidemiology.* 2002;13(1):9-20.
7. Lee GM, Neutra RR, Hristova L, Yost M, Hiatt RA. A nested case-control study of residential and personal magnetic field measures and miscarriages. *Epidemiology.* 2002;13(1):21-31.
8. Li DK, Checkoway H, Mueller BA. Electric blanket use during pregnancy in relation to the risk of congenital urinary tract anomalies among women with a history of subfertility. *Epidemiology.* 1995;6(5):485-489.
9. Li DK, Yan B, Li Z, et al. Exposure to magnetic fields and the risk of poor sperm quality. *Reprod Toxicol.* 2010;29(1):86-92.
10. Akan Z, Aksu B, Tulunay A, Bilsel S, Inhan-Garip A. Extremely low-frequency electromagnetic fields affect the immune response of monocyte-derived macrophages to pathogens. *Bioelectromagnetics.* 2010;31(8):603-612.
11. Simkó M, Mattsson MO. Extremely low frequency electromagnetic fields as effectors of cellular responses in vitro: possible immune cell activation. *J Cell Biochem.* 2004;93(1):83-92.
12. Rajkovic V, Matavulj M, Johansson O. Combined exposure of peripubertal male rats to the endocrine-disrupting compound atrazine and power-frequency electromagnetic fields causes degranulation of cutaneous mast cells: a new toxic environmental hazard? *Arch Environ Contam Toxicol.* 2010;59(2):334-341.
13. Boscolo P, Di Gioacchino M, Di Giampaolo L, Antonucci A, Di Luzio S. Combined effects of electromagnetic fields on immune and nervous responses. *Int J Immunopathol Pharmacol.* 2007;20(2)(suppl 2):59-63.
14. Di Giampaolo L, Di Donato A, Antonucci A, et al. Follow up study on the immune response to low frequency electromagnetic fields in men and women working in a museum. *Int J Immunopathol Pharmacol.* 2006;19(4)(suppl):37-42.
15. Grigoriev YG, Grigoriev OA, Ivanov AA, et al. Confirmation studies of Soviet research on immunological effects of microwaves: Russian immunology results. *Bioelectromagnetics.* 2010;31(8):589-602.
16. Volkow ND, Tomasi D, Wang GJ, et al. Effects of cell phone radiofrequency signal exposure on brain glucose metabolism. *JAMA.* 2011;305(8):808-813.
17. Lai H, Hardell L. Cell phone radiofrequency radiation exposure and brain glucose metabolism. *JAMA.* 2011;305(8):828-829.
18. Peden DB. Development of atopy and asthma: candidate environmental influences and important periods of exposure. *Environ Health Perspect.* 2000;108(suppl 3):475-482.
19. Dietert RR, Etzel RA, Chen D, et al. Workshop to identify critical windows of exposure for children's health: immune and respiratory systems work group summary. *Environ Health Perspect.* 2000;108(suppl 3):483-490.
20. Bracken TD, Rankin RF, Senior RS, Alldredge JR. *The EMDEX Project: Residential Study, Final Report.* Palo Alto, CA: Electric Power Research Institute; 1994.

A Recurring Question

Are There Health Effects of Power-Frequency Magnetic Fields?

EXPOSURES THAT OCCUR IN UTERO OR DURING childhood have long been the cornerstone of research examining the effects of environmental agents, since these groups are considered susceptible subpopulations most likely to be impacted by toxic physical or chemical agents. Since the first reports suggesting a linkage between residential proximity to power lines and childhood cancer appeared in 1979,[1] an ongoing scientific and public debate[2] has raged over the possible health effects of power-frequency (50-60 Hz) magnetic fields (MFs). Despite years of effort, a special federal funding emphasis,[3,4] heated discussions, name-calling,[5,6] and some innovative research, no scientific consensus has emerged on the topic. Epidemiologists have honed their methods and examined a vast array of alternative hypotheses; some physicists declared that such effects are theoretically impossible[7]; and biologists continue to search for a consistent and reproducible cellular or animal model, while other investigators have cataloged the wide array of biological effects associated with exposure to power- or radio-frequency fields.[8] Comprehensive scientific reviews conducted by various agencies, including the World Health Organization, the World Health Organization International Agency for Research on Cancer, the Health Protection Agency National Radiological Protection Board, and the National Institutes of Health National Institute of Environmental Health Sciences,[9-12] all have found that power-frequency MFs may play a role in childhood cancer and possibly other childhood disorders but were unable to establish a mechanism or animal model to definitively support their findings. The debate for more than 2 decades has hinged on the persistent observation that prolonged exposure of children to MFs higher than a threshold of about 4 milligauss is associated with an approximate 2-fold elevation in leukemia risk. Since the earliest reports, we have learned a great deal about improving MF exposure assessment and the application of study designs to address possible selection biases or confounders. Yet the underlying biological basis for this association has not advanced that much, partly because much scientific scrutiny has focused on testing alternative hypotheses or examining other potential explanations. Perhaps the biology needs a closer look.

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In this issue of the *Archives*, Li et al[13] provide us with evidence of a somewhat novel and relatively understudied health effect associated with MFs: an association with childhood asthma. They report that maternal exposure to MFs during pregnancy is associated with an increased risk of asthma in the offspring. After adjusting for confounders, children exposed in utero to a median MF more than 2 milligauss had about a 3.5-fold elevated risk of developing asthma, and a linear dose-response relationship also was observed. This unexpected result comes from a pregnancy cohort study designed to assess miscarriages[14] where MFs were measured prospectively on each mother using a personal monitor. The 24-hour exposure monitoring was sensitive and specific for MFs and was conducted during the first or second trimester of pregnancy with strong attention to quality control. Asthma outcomes were identified from clinical diagnosis of asthma twice within a 1-year period and confirmed by medical records. Relatively complete follow-up was reported. Of 829 live births in the original study, 734 eligible mother-infant pairs with measurements of MFs during pregnancy were identified; 626 were included in this analysis after exclusions (mostly owing to asthma diagnostic uncertainty).

Since the underlying cohort study was designed to assess MF effects, the Li et al article offers a number of strengths, including the use of several strategies to minimize selection bias, prospective personal exposures measured during early pregnancy, specific clinical diagnostic methods, and good follow-up with strong data quality control. However, since the study was not designed with asthma in mind, little information was available on possible confounders for asthma or respiratory disease, which limited the ability of Li et al to control for a long list of other known or potential asthma risk factors, such as allergens (pollen, cockroach or pet dander, mold, mildew), chemical sensitizers (cleaning products, fragrances), stress, diet, social contacts, or respiratory toxins such as air pollutants. Further, only a single 24-hour period was used to measure MF exposures, and it is not possible to carefully examine to what extent the measured exposures came from various sources in the environment or to what extent the measured period was representative of the entire exposure interval during pregnancy. For example, a change in residence during pregnancy might impact exposures. One study of congenital anomalies in California, the state where this study was performed, found that approximately 25% of women changed residences between the time of conception and delivery.[15] However, the investigators did ask participants whether their measurement day was representative of their typical activity, and the risks were stronger

among offspring of women who reported their measurements were more representative of their typical daily activities. A related issue is to what extent the 24-hour MF exposures reflected just the residential exposures or if they were dominated by work or other activities.

While the report by Li et al represents a novel and important finding, it is not the first to suggest a linkage between MFs and asthma. Beale et al[16] conducted a cross-sectional study in Auckland, New Zealand, of 560 residents living near high-voltage transmission lines and examined the relationship between MF exposure of adults in their homes and the prevalence of immune-related and other chronic illnesses. This study reported about a 3-fold elevated risk for asthma in adults in a dichotomized analysis of MF exposure and also found a significant linear dose-response relationship with exposure. Although the Beale et al study is substantially less compelling in terms of the study design (cross-sectional), outcomes measured (self-assessed/interview), and exposure assessment (spot readings at the home) than the article by Li et al, it still offers supporting evidence of a connection between MFs and asthma or immune function that deserves further study. Nor is it the only study to provide supporting evidence for such an association. There is a broad literature that has examined immune system perturbations in conjunction with MF exposures. Documented plausible molecular or biochemical processes that may mediate MF effects on the immune system include changes in stress protein or other gene expression; changes in enzymatic activity such as ornithine decarboxylase or enzymes that use radical pair recombination to catalyze reactions, a process that is sensitive to MF effects; changes in melatonin or other hormone secretion; or changes in ion flux across cellular membranes.[9,17-21] There also are beneficial (therapeutic) MF exposure applications that likely modulate the immune system.[17,19]

Scientists appraising these results on asthma in children, as always, are faced with 2 possible interpretations: either judge the observed results to be real or false. If the results are considered false, then one must be prepared to provide an alternative explanation. For example, the reported association could be due to a confounding factor, such as socioeconomic status (which was addressed in the Li et al analysis), or from an unmeasured exposure, for example, air pollution from roadway traffic, which is elevated along dense urban corridors that also frequently serve as routes for major power distribution lines and other MF sources. This is a difficult argument to sustain, since any confounding factor must also convey a risk of asthma that is stronger than the association reported for MFs, assuming the 2 factors are less than perfectly correlated. One also could argue that some source of bias explains the study results, such as differences in exposure among those lost to follow-up or residential instability. Exposures among excluded persons would have to be selectively different among cases or controls to substantially impact the direction of the observed effects, otherwise the resulting (nondifferential) exposure misclassification would most likely have led to an underestimate of risk. Since scant information was provided by Li et al, this issue is difficult to ascertain in the present study.

Alternatively, if one contends that the results actually were true, then there should be a plausible underlying biological mechanism to support the findings. In particular, how could the observed association with asthma relate to the other frequently cited MF health outcomes? As pointed out earlier, one of the most consistent associations in the literature is with childhood leukemia, which is an immune disease that is inherently linked to genetic anomalies but is often driven by exposure to certain environmental agents. The progression of acute lymphoblastic leukemia, the most common form of cancer among children, is strongly influenced by genetic factors like the Philadelphia chromosome trait.[22] Despite some compelling findings, the considerable effort to determine whether power-frequency MF or radiofrequency exposures can induce DNA damage and thereby initiate the carcinogenesis process has yet to be resolved unequivocally.[9,10,21,23,24] Nonetheless, a known inverse association between atopy and leukemia[25] may suggest a common underlying mechanism of action, particularly since maternal history of asthma was a strong modifying factor in the results of Li et al. There is enough evidence suggesting that gene expression or changes in DNA repair may be elicited by MF exposures to warrant continued research, particularly since MF exposures are so ubiquitous. Furthermore, the potential impact of MFs on epigenetic processes is understudied.[24] Given the results of Li et al and the evidence suggesting that "epigenetic imprinting" may be a key determinant of asthma,[26,27] this avenue of future research is clearly warranted. Finally, if MF exposures early in life or in utero are critical in relation to disease risk, this may have important implications for understanding the inconsistent literature on leukemia risk from power lines since MF exposures measured many years after the referent pregnancy may be substantially misclassified.

So we appear to have come full circle. The report by Li et al appearing in this issue of the *Archives* should stimulate new investigations of the potential health effects of MFs on asthma and other immune-related diseases in children. Appropriately, the earliest calls will likely be for studies to confirm or "replicate" these findings (although true replication is often unattainable). Certainly, follow-up work will be needed to see if the asthma association remains as described. We suggest that rather than focusing solely on alternative explanations such as potential confounding, that some resources also be devoted to exploring the biology associated with this hypothesis. The potential public health implications of this work are significant since MF exposures at the levels described herein are widespread, affecting about 14% of women in the United States,[12] and asthma (unlike childhood leukemia) is a relatively common disease. Asthma prevalence among children remains at historically high levels following a dramatic rise into the late 1990s; about 9% of children have asthma (approximately 6.5 million) according to Centers for Disease Control and Prevention estimates in 2005. Although childhood asthma deaths are relatively rare, the disease burden is large; the annual direct health care costs of asthma treatment are approximately $15.6 billion, and they disproportionately target minority populations.[28] The trend of in-

[redacted] coincides with an increase in [redacted] agents and lifestyle factors that may [redacted] disease, including a plethora of technological [redacted] consumer products that emit MFs. Elucidating [redacted] environmental linkages that help us understand the development or course of this disease, including MFs, have the potential to significantly impact prevention and treatment efforts and are therefore worth pursuing in the years ahead.

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1. Wertheimer N, Leeper E. Electrical wiring configurations and childhood cancer. *Am J Epidemiol.* 1979;109(3):273-284.
2. Brodeur P. *Currents of Death: Power Lines, Computer Terminals, and the Attempt to Cover Up the Threat to Your Health.* New York, NY: Simon and Schuster; 1989.
3. National Energy Policy (NEP) Act of 1992, 2118 USC §102-486 (1992).
4. Electric and Magnetic Fields Research and Public Information Dissemination (EMFRAPID) Program; Environmental Toxicology Program, Office of Special Programs; National Institute of Environmental Health Sciences, National Institutes of Health. Second EMF Science Review Symposium—EMFRAPID Program. *Fed Regist.* 1997;62(241):65814-65815. http://ntp.niehs.nih.gov/go/13791.
5. Park RL. *Voodoo Science: The Road From Foolishness to Fraud.* Oxford, England: Oxford University Press; 2001.
6. Josephson B. Review of *Voodoo Science: The Road from Foolishness to Fraud.* http://www.tcm.phy.cam.ac.uk/~bdj10/articles/park.html. Published October 2000. Accessed July 15, 2011.
7. Adair RK. Static and low-frequency magnetic field effects: health risks and therapies. *Rep Prog Phys.* 2000;63(3):415-454. doi:10.1088/0034-4885/63/3/204.
8. Blank M. Preface. *Pathophysiology.* 2009;16(2-3):67-69.
9. World Health Organization. *Extremely Low Frequency Fields.* Geneva, Switzerland: World Health Organization; 2007. Environmental Health Criteria Monograph 238.
10. World Health Organization International Agency for Research on Cancer. *Non-ionizing Radiation, Part 1: Static and Extremely Low-frequency (ELF) Electric and Magnetic Fields.* Lyon, France: IARC Press; 2002. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Vol 80.
11. *Electromagnetic Fields and the Risk of Cancer: Report of an Advisory Group on Non-ionising Radiation.* Vol 12. No. 1. London, England: Health Protection Agency National Radiological Protection Board; 2001.
12. Portier CJ, Wolfe MS, eds. *Assessment of Health Effects From Exposure to Powerline Frequency Electric and Magnetic Fields: NIEHS Working Group Report.* Research Triangle Park, NC: National Institutes of Health National Institute of Environmental Health Sciences. 1999.
13. Li DK, Chen H, Odouli R. Maternal exposure to magnetic fields during pregnancy in relation to the risk of asthma in offspring. *Arch Pediatr Adolesc Med.* 2011;165(10):945-950.
14. Li DK, Odouli R, Wi S, et al. A population-based prospective cohort study of personal exposure to magnetic fields during pregnancy and the risk of miscarriage. *Epidemiology.* 2002;13(1):9-20.
15. Shaw GM, Malcoe LH. Residential mobility during pregnancy for mothers of infants with or without congenital cardiac anomalies: a reprint. *Arch Environ Health.* 1992;47(3):236-238.
16. Beale IL, Pearce NE, Booth RJ, Heriot SA. Association of health problems with 50-Hz magnetic fields in human adults living near power transmission lines. *ACNEM J.* 2001;20(2):9-30.
17. Bassett CA. Beneficial effects of electromagnetic fields. *J Cell Biochem.* 1993;51(4):387-393.
18. Ichinose TY, Burch JB, Noonan CW, et al. Immune markers and ornithine decarboxylase activity among electric utility workers. *J Occup Environ Med.* 2004;46(2):104-112.
19. Gordon GA. Designed electromagnetic pulsed therapy: clinical applications. *J Cell Physiol.* 2007;212(3):579-582.
20. Johansson O. Disturbance of the immune system by electromagnetic fields: a potentially underlying cause for cellular damage and tissue repair reduction which could lead to disease and impairment. *Pathophysiology.* 2009;16(2-3):157-177.
21. Robertson JA, Thomas AW, Bureau Y, Prato FS. The influence of extremely low frequency magnetic fields on cytoprotection and repair. *Bioelectromagnetics.* 2007;28(1):16-30.
22. Hongo T, Okada S, Inoue N, et al. Two groups of Philadelphia chromosome-positive childhood acute lymphoblastic leukemia classified by pretreatment multidrug sensitivity or resistance in in vitro testing. *Int J Hematol.* 2002;76(3):251-259.
23. Phillips JL, Singh NP, Lai H. Electromagnetic fields and DNA damage. *Pathophysiology.* 2009;16(2-3):79-88.
24. Ruiz-Gómez MJ, Martínez-Morillo M. Electromagnetic fields and the induction of DNA strand breaks. *Electromagn Biol Med.* 2009;28(2):201-214.
25. Linabery AM, Jurek AM, Duval S, Ross JA. The association between atopy and childhood/adolescent leukemia: a meta-analysis. *Am J Epidemiol.* 2010;171(7):749-764.
26. Marsh LM, Pfefferle PI, Pinkenburg O, Renz H. Maternal signals for progeny prevention against allergy and asthma. *Cell Mol Life Sci.* 2011;68(11):1851-1862.
27. North ML, Ellis AK. The role of epigenetics in the developmental origins of allergic disease. *Ann Allergy Asthma Immunol.* 2011;106(5):355-361.
28. Asthma and children fact sheet. American Lung Association Web site. http://www.lungusa.org/lung-disease/asthma/resources/facts-and-figures/asthma-children-fact-sheet.html. Updated February 2010. Accessed July 6, 2011.