MANITOBA CLEAN ENVIRONMENT COMMISSION

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TURSDAY, MAY 25, 2017
UPON COMMENCING AT 9:30 A.M.

THE CHAIRMAN: Good morning, everyone, Welcome back to our hearings into the Manitoba-Minnesota Transmission Project. Just one announcement this morning. I think most of you are aware we're only meeting here in Winnipeg, well, in this room for the morning. And then this evening we'll be meeting in La Broquerie. And again on Saturday we'll be meeting in La Broquerie. And that's to hear the public. Of course, participants are welcome to attend. There isn't a formal role there for participants. This is to hear from members of the public in the study area.

So, okay, we'll turn it over to the Southern Chiefs' Organization and their presentation from Petr Cizek, if I'm pronouncing that correctly. I hope so. And it's on land cover and land use changes over time.

And I assume you have some swearing into do, Cathy?

MS. JOHNSON: I certainly do.

(Petr Cizek sworn)

THE CHAIRMAN: Okay. Then the floor is yours.

MR. CIZEK: Thank you. Good morning, everyone. My name is Petr Cizek. I am an environmental consultant specializing in mapping, land use planning and impact assessment. I have 25 years experience across Canada. And in 2014, I completed a Ph.D. at the Faculty of Forestry at the University of British Columbia.

I'm going to be using two screens. I'll try to synchronize myself, mainly to compare two sets of maps when the time comes.

My presentation outline is as follows, which also follows the structure of my report: Number 1 is introduction.

Number 2, I'll be talking about methods that were used to obtain and compile and analyze the data, which include four steps. First of all geo-referencing and digitizing maps from circa 1930. Secondly, geo-referencing and digitizing maps from circa 1970. C, generalizing Landsat satellite land cover data from 2001 and 2005. And D, an attempt at supervised land cover classification from the most recently available Landsat 8 satellite images from 2016.

And number 3, I will then describe the results in terms of both maps and the estimated land cover data.

In number 4, I will provide analysis and comparison of the data between time periods.

Number 5, I will have a discussion and conclusion, which includes limitations to all of the data and the analysis, and some directions for future research.

So in the introduction I'll describe the scope of the project, which is based on the proposal that was submitted to the CEC.

First step, geo-reference map images and digitize the land cover and land use from these historic topographic maps at a scale of about 1:253,440, which are the old imperial scale maps of 1 inch to 1 mile, dated about 1930.

Geo-referencing simply means that you take a map image, which is usually a digitized image run through a scanner, and then you pin it into geographic space within the mapping software, so that the image is actually correctly located according to latitude and longitude coordinates.

In step 2, I would do the same thing with maps from around 1970, that are now in metric

scale, which are your commonly seen topographic maps that you would usually use to go canoeing or hiking, what you call -- the people see as the green maps, the green is the forest cover on the maps. So for those of you who go on canoe trips, you know what I mean, or go hiking. So those maps are at a scale of 1:250,000. And there's also, in this time period, there was something called the Canada land inventory, which was an attempt to classify land across Canada, which had a map for part -- a large part of the study area, the route planning area, and it had more formal land cover classes.

In step number 3, I found that for 2001 and 2005, that Manitoba has already prepared land cover maps from the Manitoba Centre for Remote Sensing that are available for download, public download at the Manitoba Lands Initiative website. And we would use those to compare land cover in 2001 and 2005.

In step number 4, I would identify land cover, the most recent land cover from the summer of 2016, using again publicly available Landsat images at 30 metre pixel resolution, which is the same resolution as the previous data for Manitoba

Centre for Remote Sensing. 30 metre pixel resolution means that if you have a satellite image, they're like any image you would take with a digital camera. A pixel is a smallest unit within a digital image, so a digital image is composed of a whole bunch of little squares. And in this case, a satellite image means when you're taking pictures of the earth from space, that this pixel covers a block 30 metres times 30 metres. You can get higher resolution satellite images, but from commercial satellites, they cost more. But for an area as large as our study area of the route planning area, if we got images at that resolution, they would be not only extremely expensive, they would also be extremely difficult to manipulate because we are covering a fairly large area.

In any case, in step number 5, the scope of work was to identify land cover and land use change in these four intervals between 1930, 1970, 2001, 2005 and 2016.

And finally in step number 6, I prepare a technical report describing methods used, outcomes and limitations.

So, this is our study area which is defined

as the route planning area of about 7,600 square kilometres, defined by Manitoba Hydro. But in this case, Manitoba Hydro's data extended slightly over the United States border, and I clipped it to be entirely within Canada.

We also used the Manitoba Township Survey Grid for Manitoba Lands Initiative for geo-referencing our map images. So the Manitoba Survey Grid is the grid that you see on this map, and the old maps have that. And that's the survey grid that was used in the 19th century and early 20th century, when the prairies were subdivided for farms. And by connecting the old paper maps, which have been scanned, to known points along that grid, we can get the paper maps to sit in accurate geographic space.

And again, based on the available geographical data that we're using going back to 1930, we have a simple land cover classification which is basically, it's just forest, non-forest and linear features. As we'll see later, we can have much more complicated land cover classifications, and we generalized from some of those complicated land cover classifications into this simple one.

In this table we summarize the datasets that we have used. So in the two columns are the old circa 1930 maps from the topographic survey of Canada, and they cover map sheet 62H called Winnipeg, and 52E Kenora. So most of the study area is covered by 62H south of Winnipeg, but there's also a smaller portion in the far southeast that's covered by map 52E, Kenora. And these are the four miles to one inch map series, again in imperial measurement.

And these are actually both available on the Internet, and were scanned at the University of Manitoba map library on a large format scanner. So they're fairly accurate. They are not photographs, they're actually from a large format scanner. And these maps form the basis of map number 2.

The next set of maps in this column are similar topographic maps, in this case again 62H and 52E, and these are from circa 1970. Slightly different dates there, as you can see, but they are the closest available maps I was able to find. And by this time they're in metric, 1:250,000. And they were provided to me custom scanned from the University of British Columbia map library.

By the way, each major university across Canada has a full set of the paper maps in the National Topographic series going back in time to the 1930s, when aerial photography first started to be used. So it's possible to do this kind of work anywhere across Canada in terms of going back in time. So these maps form the basis of map number 4.

In the next column we have the Canada Land Inventory Map, the generalized land use, and this one was only available for map sheet 62H, and it's again from circa 1970, and it's also 1:250,000, and it's available on the Internet from Agriculture and Agri-Food Canada, and it forms the basis of map number 7. In these two columns we have the two land cover maps from Manitoba Centre for Remote Sensing. And the entire study area is covered by a map sheet called Woodbridge. And we have two maps, one from September 28, 2001, and another published in 2013, but based on 2005 data. And they are based on the Landsat satellite at 30 metre resolution. And these two maps form the basis of map sheet number 7 and number 9.

And finally, I was able to obtain data from the new Landsat number 8 satellite for August 28,

2016. And you have to go through the United States Geological Survey website and find satellite images that have the least amount of cloud cover. So these two images were found to cover the study area and they form the basis of map number 11.

So first of all, these were the steps used to geo-reference and digitize the data from circa 1930. Again, we had to use two map sheets, 62H and 52E, and we used ArcGIS mapping software. GIS stands for geographic information system, and ArcGIS is the industry standard mapping software developed by the Environmental Systems Research Institute.

Once the maps are pinned into geographic space as accurately as possible, we can extract the forest cover from both map sheets using a component of ArcGIS called ArcScan. What ArcScan does is that it recognizes the different colours on the map and then it turns them into polygons. Polygons are just area shapes. And in those polygons we can actually calculate things like area, perimeter, et cetera.

We had to manually digitize the main linear features, not including local roads, trails,

paths, forestry roads, from both maps. So in this case they were traced on screen. And they were linear features to give them an area, they were buffered by 15 metres on both sides to create a 30 metre right-of-way, which is assumed to be an average. We also use 30 metres to make them consistent with the linear features in the later satellite data from Manitoba Centre for Remote Sensing, which again is based on this 30 metre pixel size. And a simple land cover map with forest, non-forest and linear features was created by combining all of the above features, using what's called a union function within ArcGIS. So enough of that. You actually might be interested in seeing these maps.

So here we're able to see both screens. And you can see on this screen is the original map from circa 1930 within the study area, the route planning area is outlined in this fuchsia colour. And you can see how in this map sheet 62H, Winnipeg, we pinned into geographic space that map sheet, and adjacent to it in order to cover this southeastern corner, we have the Kenora map sheet, 52E, joined next to it.

And this map has, in green, it has the

forest. It has some of the wetlands, using this wetland point symbol. Unfortunately, we weren't able to digitize the wetlands, it just has the various points symbols depicting wetland. We couldn't accurately find the perimeter of the wetland.

And you can see in the map next to it how the software has accurately extracted that green colour. And from that we can actually calculate the particular area within, the study area within the route planning area, and come up with total percentages in terms of 60 per cent forest, 38 per cent non-forest, and 1 per cent linear features. And I have also calculated or estimated the length of the linear features, the main linear features at about 2,600 square kilometres. So a linear feature can be thought of as an area where you take the line, and in this case we put 15 metres on either side for a total 30 metre right-of-way. So that gives it an area, but you can also calculate that as a length to give you another kind of an estimate.

So next we move to geo-referencing and digitizing maps from circa 1970. In this case we're using the similar large format sheets within

the National Topographic System, 62H Winnipeg and 52E Kenora. But here we have a slightly different wrinkle, since we're able to use the Canada Land Inventory generalized land use map sheet, which I guess we have more confidence in using because it provides clear definitions about the data. And in this case, in the Canada Land Inventory map sheet, it defines woodland as the land cover class, and I note in bold italics there:

> "...which includes forestry cut blocks and fire burns."

And that will affect some of our results going down the road. Again, in order to be able to make sure that we're comparing apples to apples instead of apples to oranges, we, in the later land cover data from Manitoba Centre for Remote Sensing, we include forestry, cut blocks and forest fire burns within forest. So that affects the data further down the road.

We were able to quickly extract the woodland land cover class using something called ISO cluster unsupervised classification in ArcGIS. Again, that's just a fancy way of describing a component of the software that identifies the particular colour combinations in that map and

turns them into a polygon, an area that has a known area and perimeter. So it's, in technical terms, it's converting it from a raster image, which is just a bunch of pixels, to what's called a vector polygon that has a known perimeter and area and can be sliced and diced as needed.

However, in the adjacent map sheet, we ran into further problems because the forest cover there wasn't a solid colour, it was dots. So we had to manually digitize it. Again, the main linear features were manually digitized, not including local roads, trails, paths, forestry roads, et cetera, and buffered by 15 metres to create a 30 metre wide right-of-way to be consistent with the Landsat data which follows. Again, a simple land cover map with forest, non-forest and linear features was created. So here are the actual maps for comparison.

So here on the left side, we have the 1:250,000 green maps, so-called green maps from the National Topographic System. On here we have map sheet, 62H Winnipeg is here, so that extends about to here. And again, in green is the forest cover. You see in various shades of red, the main roads. The township grid is in grey, so that's

what we were able to pin the map to. And here in this, you can see the joint between the maps. To the east we have, just covering this far southeast area, we have map sheet 52E Kenora joined together.

And to the right, on the right screen, we have the map sheet 62H, however this map sheet is from the old Canada Land Inventory data and it's -- you can see the different land cover classes are more clearly defined here, not only in terms of the colour, but also in the legend on the right. And we use the green land cover class called woodland in this case, and that forms the basis of our forest cover class. And again, based on this definition here, it includes forest cut blocks and burns, which will affect our subsequent data.

So here we can see on the new map number 6, on the right screen, how the three land cover classes have been extracted from those original map sheets. And here we have estimated land cover from circa 1970, about 57 per cent forest, 41 per cent non-forest, and 1.6 per cent linear features. And the length of the linear features, of the main linear features in any case has

increased to 4,100 some odd linear kilometres.

Next we move onto data from 2001 and 2005, which is obtained from the Manitoba Centre for Remote Sensing, available to the public at the Manitoba Lands Initiative website. And these data have 17 land cover classes, and very detailed. And in order for these data to be compatible with the earlier historic data, we had to generalize them to a more simple land cover classification.

Also important to note here, as I mentioned several times before, that forest cut blocks and burns were included in the generalized forest cover class in order to be consistent with the definition of woodland from the circa 1970 data and consistent with the earlier 1930 data. So this is the scheme that's used to generalize these data.

In the left column, we have the original land cover classes which -- and you can see I have also colour coded it here in terms of forest, non-forest and linear features. So the original land cover classes for forest were more detailed in terms of conifer forest, number 2 deciduous forest, number 3 mixed wood forest, number 4 open deciduous forest, number 5 treed rock, number 6

treed bog, number 7 forest cut blocks, and number 8 burns. And all of that is generalized using the ArcGIS software into land cover class called forest.

And then further down we have the non-forest land cover classes, which in the more detailed data include cultural features, which includes towns and villages. It may also include some quarries and gravel pits: Number 10, agriculture, 11 forage crops, 12 grassland, 13 marsh, 14 water, 15 bare rock, sand and gravel, I guess the quarries wouldn't be cultural, they would be number 15, and 16 no data.

I should also point out that I didn't attempt to separate out water since there are very few lakes in the study area, they are more like small ponds. And the rivers are so narrow that the Landsat satellite had trouble because of the 30 metre pixel resolution identifying continuous rivers or creeks.

Finally, in the grey boxes we have roads and trails, which includes Hydro transmission lines, other linear features that can be detected by 30 metre pixel resolution, and this probably excludes most trails and forestry roads which are

much narrower. And those are all defined as linear features within our classification.

So here we have, on the left map we have the raw data in 17 land cover classes as obtained from Manitoba Centre for Remote Sensing on the Manitoba Lands Initiative website. All of this is publicly available. And you can see colour coded are the land cover classes. The easiest ones to quickly identify are the band of coniferous forest in dark green deciduous forest, light green agriculture, white towns and villages in kind of brown. Steinbach is here.

And on the right screen then you can see how using the software, we generalized from all of those detailed colours into our simple three land cover classification, where we, again, in this case had about 48 per cent forest, 49.7 per cent non-forest, and 2.2 per cent linear features. And by this time, the length of the linear features had increased to about 6,000 linear kilometres.

The reason the linear features appear more prominent on the right map, the land cover map, that's a cartographic trick where they actually have a definite line thickness, whereas here on the left side map in the image, they kind of

appear as little chunks. That's just a visual artifact. The fact that I'm displaying the linear features thicker on the right-hand side is just so you can see them, it doesn't affect the actual calculations.

Next, we have the 2005 data on the left-hand screen where you have the original 17 land cover classes, and then there on the right-hand screen, where they have been generalized into three land cover classes. And it doesn't -- it looks very similar to the previous map. And it has, forest cover is now 46.3 per cent, non-forest has increased slightly to 51.2 per cent. What's increased a lot are linear features. And here you can see what may be a mapping accuracy issue. For some reason, the linear features captured in the 2005 data include a lot of driveways, like rural driveways and rural subdivisions, from what I can tell. It has also captured more of the existing Hydro transmission corridors running from the north to the southeast, which for some reason weren't captured in the previous 2001 data. So as we'll see later, there are accuracy issues when comparing the Manitoba Centre for Remote Sensing data from 2001 to 2005.

The next step was an attempt to find a land classification from the most recent Landsat 8 images in 2016. Landsat 8 images with the smallest area of land cover were identified on August 28, 2016, and downloaded from the United States Geological Survey website. Again, this data is publicly available. We found on those dates the cloud cover and land cover -- I mean, cloud cover and shadow is only about .5 per cent of the route planning area, so it's a very good image. We used a 3 band image suitable for vegetation analysis, using band 6, short wave infrared, band 5, near infrared, and band 4, red. And then based on the 2005 data from Manitoba Centre for Remote Sensing, we picked 24 training samples to classify the image into forest and non-forest. However, we found that the pixel colour combinations are overlapping.

So what that means is that, based on the 2005 data from Manitoba Centre for Remote Sensing, what we thought was forest and non-forest are the same colour combinations, or similar colour combinations in the satellite. So we weren't able to do a very accurate land cover classification, which required a fair amount of manual editing.

So, for example, the software thought that mature corn crops were forest because they have a similar spectral signature as trees. They're tall and high biomass. So that kind of thing continued to happen.

The image also thought that forest cut blocks and burn areas were not part of the forest. And what's happened, and you can see this in the raw image itself, is that between 2005 and 2016, there are very large cut blocks and burn areas within the forest. So although it's beyond the scope of my work to calculate those areas, which would require a fair amount of manual work, the landscape has changed significantly between 2005 and 2016. However, in order to be consistent with the previous definition, we had to include the cut blocks and the burn areas within the forest area.

We also added the new linear features manually by comparing the 2005 linear features with the satellite image, and then adding new linear features that were visually present in the image and, again, buffered both sides by 15 metres to create a 30 metre right-of-way.

So these data results from 2016 must be treated with caution, but they illustrate some

important things.

So, again, on the left side image we have the raw satellite data based on the 2 infrared bands and the number 4 red. So this is what's technically called a false colour image. It simply means that if you were to be hanging out of the international space station and looking down on the earth, these aren't the colours that you'd see with your eye, because your eye doesn't see infrared unless, of course, you're Superman. But the satellite has the capability of seeing things beyond the human visible spectrum.

So in this case there's some very obvious things in this image. This is because we are using infrared to better define the vegetation, the fields that have been cleared, that have no crops on them at the moment are all in various shades of purple, and you can see southeast of Winnipeg. Fields that still have some crops on them, and you can see right here in the southeast, for the middle of the image. And here, of course, you can see this very clear vertical north/south line, which is the boundary between the private land and the Crown land, from what I understand.

What's very significant here is the size of

this clear-cut in particular, which has occurred since 2005. And that clear-cut is about 30 kilometres long and 10 kilometres wide. And this all appears to be a large burned area, which has also occurred since 2005. And this would all require quite a bit more analysis.

In any case, on the right screen, according to this, the forest cover has continued to decrease, but this is probably overestimating the amount of forest cover decrease, based on some of the problems we ran into. However, the linear features have increased only slightly from the visual analysis.

So, to move to the results section, we can then begin to start seeing the actual numbers in comparison. And here are the estimated areas, side by side, on the left screen and on the right screen as percentages. The totals are off by .1 kilometre. And that may have to do with some technical issues since we were dealing side by side with maps in different projections. The Winnipeg map is in Universal Transverse Mercator zone number 14, and the Kenora map sheet is Universal Transverse Mercator 13. Also the maps in 1930 and 1970 are in NAD 27. Those are all

complicated cartographic issues, but we have pretty high accuracy in the totals.

In any case, we can see according to these estimates, the area of forest, circa 1930, went from 4,600 square kilometres to possibly as low as 3,300 square kilometres in 2016, which is probably an overestimate. Probably the more accurate number is in 2001, 3,600. But nevertheless, that's a loss of about a thousand square kilometres of forest.

We can be more confident in the estimate of the area of linear features, which has more than doubled in terms of area. Certainly the major linear features from circa 1930 to 2001 and 2016.

For further comparison, you get very similar -- you get different numbers but similar changes in terms of actual length of the linear features, if that makes sense, starting with 2,600 some odd linear kilometres in circa 1930, to more than doubling by 2016 to over 7,000 linear kilometres.

Analysis. Here you can see it on a line graph, all of those numbers. Forest is in blue. And here you can actually see a rate of change between the different time intervals. So the

forest declined from 4,600 square kilometres to 4,300 square kilometres in the 40-year period between circa 1930 to 1970. But you can again see the slope here is fairly shallow. Then it becomes quite steeper between 1970 and 2001, and not as steep to 2005, and then actually most steep here. But, again, I think that's an overestimate in the decline of forest for the reasons mentioned above.

Linear features down here in green, again, it's quite a substantial change, but because it's part of this graph it doesn't appear to be. So 79.5 to here, it seems to all be going up at a very similar slope, and more than doubling by 2016 to 189.7 square kilometres.

Here we can see the actual change in the different time intervals highlighted in yellow are the biggest changes. So the biggest change took place between 1970 and 2001, where about 696 square kilometres of forest was lost. And the second biggest change took place 2005 to 2016. Again, I think that's an overestimate.

And in this case, interestingly enough, the biggest total change of linear features took place, is estimated to have taken place 1930 to 1970, followed by 1970 to 2001.

In this table we look at the actual change in land cover per year, which relates to what I was talking about, in that figure relates to the slope of the line. And in this case, the highest rate of change per year was 24.9 square kilometres per year 2005, 2016. Again, I think that's an overestimate. But we can be more confident about the change between 1970 and 2001 of an average change of 22.5 square kilometres. And that segment, you can see on the screen to the right where the slope between 1970 and 2001 is quite steep.

Now, in terms of average increase of linear -- of area of linear features per year, we have this anomalous increase 2001 to 2005 of 5.3 square kilometres per year, which seems rather high, where I think the satellite images between 2001 and 2005 estimated greater detail in linear features that included more rural subdivisions and driveways, et cetera. But nevertheless, we can see also that in comparison to the other changes, the increase 1970 to 2001 was the second highest increase. The increases here, by the way, in the far column are averaged out over all the years.

And again here we have, for those who

prefer to think of length of linear features, here they are in length. And again, the biggest change was 1970 to 2001, about 1,800 linear, kilometres of linear features. The greatest per cent increase was 1930 to 1970. But again, we have the anomalous figure here comparing the two satellite images for Manitoba Centre for Remote Sensing, where we have a very large annual increase of linear features, length of linear features of 210 linear features per year. So some of these calculations are starting to indicate the limits of the data.

Now, we can begin to see, visualize some of these changes in actual maps. And here we compare the changes between 1930 and 1970. So what's going on here is that we have -- we overlay the two maps of forest cover between the two and calculate where, between the two, there's been forest loss and forest gain. And then we calculate net forest loss. So between 1930 and 1970, we can see that in this northwest portion, there's been a substantial loss of forest, namely these big areas just southeast of Winnipeg, but also here. However, what comparing these two maps is also telling us is that these maps may have

also accuracy limitations. Because in the 1930 map, it shows this portion going diagonally here as wetland. But the 1970 map shows it as forest.

Now, we don't know whether that is a mapping problem, or whether in those 40 years, through natural succession, that wetland became covered in trees. Wetlands over time change -- or whether drainage took place in that area, we don't know, or I don't know. Some of you may know based on your better knowledge of the area or may have better ideas.

In any case, when we start to compare these maps, we start to see some patterns, we also start to see limitations.

On the right-hand side, however, we can be more confident about changes in linear feature. So in this map, I simply overlaid the original, the 1930 linear features in black, and then added the 1970 linear features in red. And you can see there was an increase of 42.9 square kilometres, or 54 per cent in area, and 1,496 linear kilometres, or 55.9 per cent.

Now, again, we can be fairly confident about the total increases but, again, due to the mapping accuracy limitations you can see,

especially in this northwestern corner, the linear features don't overlap exactly.

And then we go through the sequence for the other periods. Here in 1970 to 2001, we have net forest cover loss of 696 square kilometres estimated, or 16 per cent. And what appears to be happening is that there's further forest conversion in this band here, to the south and southeast.

The change in forest gain seems to be south of this wetland here primarily. Where in 1970 it was considered non-forest, now it's considered forest, according to the 2001 data, which again may be an accuracy issue, or it may be natural success, we don't know. But you can also see forest loss in some of these lands that are a small agricultural belt over here, and some further loss around Piney.

Again, on the right side map, you can see the continuing increase in linear features, where it's quite substantial in this time period, 1970 to 2001, where area of linear features increase by 42.1 square kilometres or 34 per cent, and increased length of 1,800 or so linear features, or 45.2 per cent.

Here's where we compare the two satellite based land cover maps from Manitoba Centre for Remote Sensing. There is only a net forest cover loss of 29.2 square kilometres between the two images. However, this is where we realize that some things are strange about these two datasets, because within this four-year period we had forest gain of about 318 square kilometres, and forest loss of 348, which results in this net 240 to -- 29.2. So in this map you can see that forest gain in the light green. So it strikes me unlikely that there could be that much forest gain in such a short period, and it speaks to some of the limitations of these datasets. I'll speak to that later. We requested the methodology reports from the Manitoba Centre for Remote Sensing and they said that none were available.

As well on the map to the right, you can see here we're comparing change in linear features, and you can see the substantial increase in linear features, within a short four-year period, of 21.3 square kilometres or 12.9 per cent, or increased length of 841.4 linear kilometres or 13.9 per cent, in this short period. And there are some increases, or more likely

places where the satellite detected the existing transmission corridor going southeast through the forest there. And you can see the new lines that have been detected in red. But in the northwest portion of the map, for some reason, the 2005 data seemed to have many more rural driveways and subdivisions added. So that's an artifact of these data.

Here we compared 2005 to 2016, which is a substantial forest loss of 273.3 square kilometres, or 7.5 per cent. And I think this is an overestimate based on the difficulties we had with the classification. And again, you can see in the legend there was actually substantial forest gain in this period of 11 years, 390.9 square kilometres. So that seems a lot.

However, we can be more confident about the increase in linear features, which haven't increased substantially, it's more of a detection issue. You can see in the top centre some of that line was more visible extending towards Winnipeg, but then disappears as it goes into the agricultural area. So you can't see it at 30 metre pixel resolutions. There was only 3.9 square kilometres of linear feature area increase,

and 129.5 length of linear features, or only 1.9 per cent.

And the final comparison that I have is, if we compare circa 1930 to 2016, and we have net forest cover loss estimated at 1,200 square kilometres, or 26.8 per cent, which is probably an overestimate, I think, as I say in the conclusions, we feel more confident going back to 2001. But just to look at the general patterns, you can see in this northeast section is where the greatest conversion has been. Some around here in this agricultural pocket, and here. It still has this issue where, 1930, this belt was considered wetland, now it's considered forest. Similarly here and here.

I feel more confident about the increase in linear features during this period, though, where we had an increase of area of 110.2 square kilometres, or 138.6 per cent, and increased length of linear features of 4,354.8 linear kilometres, or 162.6 per cent.

So in terms of discussion and conclusion, our study has a lot of limitations, as I have been pointing out. Number 1, the horizontal positional accuracy of the topographic maps is not known.

Horizontal positional accuracy -- does a geographic feature shown on the map, is it actually located in the place where the map says it's located? So according to Natural Resources Canada, data from this vintage may have a horizontal location, it may be out between 125 and 250 metres. So that speaks to the actual boundaries of the forest, or it may speak to the actual location of the linear features.

And number 2, some errors may have been introduced during the actual scanning of the map. Probably not by the scanners, since they were big, high resolution scanners, but the paper maps themselves over the years may shrink and crinkle.

In terms of number 3, geo-referencing itself introduces some errors. That's when you connect, put the map image into geographic space. But for most of the maps, we had so many control points that what's called a route mean square error, which is -- again, whether or not you have warped the map through your geo-referencing is near zero for most of the maps except one in Kenora, which had a root-mean-square error of 7.8 metres. But then again, for such a large area this is acceptable.

Number 4, as I have mentioned several times, the accuracy of the forest cover delineation and linear feature location in circa 1930 and 1970 is not known, and especially in relation to those wetlands.

Number 5, wetlands are shown as point data only, so we couldn't digitize them as polygons in 1930 and 1970. It would have been interesting to see how the wetlands have changed.

Number 6, the estimated linear area of the linear features is likely conservative, since only major linear features were included and it was assumed the average right-of-way is 30 metres.

The topographic maps from different dates in 1930 and 1970 were combined. So the land cover data may not represent an exact snapshot in time. So that's why I refer to circa 1930, circa 1970. We used the data that we know.

And number 8, we don't know the horizontal positional accuracy of the land cover data from 2001, 2005. And again, even though we requested it from Manitoba Centre for Remote Sensing, they said it was not available.

Number 9, according to the meta-data file, we don't know how Manitoba Centre for Remote

Sensing actually classified their land cover. Normally this is done by actually going out into the field and taking ground truth samples. So you go out into a coniferous forest and you say, this is coniferous forest, this is deciduous forest, this is agriculture, et cetera, and then you compare that to the satellite image and you come up with an accuracy assessment.

And again in number 10, it's unlikely that there would have been forest cover gain of 318.8 square kilometres in the four-year period between 2001 and '05.

And 11, as mentioned before, there was a substantial increase in area of linear features and length of linear features in the four-year period. And it seems that they were simply identifying linear features in more detail in this period.

Number 12, the two Landsat 8 satellite images are geometrically corrected so we know that they are within 6.6 and 5.8 metres in terms of their horizontal positional accuracy.

However, we think that in number 13, the actual accuracy of the land cover classification of the Landsat 8 samples is low, because we had a

problem with the samples, and it may have been because the samples were taken from the 2005 Manitoba Centre for Remote Sensing data. And those data also appear to have problems.

Finally, to be consistent with the definition of woodland in 1970 Canada Land Inventory, all forest cover calculations included forestry cut blocks and forest fire burn areas.

So having gone through this endless list of problems, looking on the bright side of life, I do feel confident that it's reasonable to conclude, within the route planning area, that forest cover area has likely been reduced by over one-fifth, while the area of linear features has likely increased by more than double. And we can be more confident in the time interval 1930 to 2001. So that's the takeaway.

Finally, some of the following research could be conducted. Number 1, we could continue to digitize the remaining linear features on the 1930 and 1970 maps, and apply appropriate right-of-way buffers according to linear feature type. This is a very time consuming task, to manually trace all those old trails and lightly sort of -- especially in 1930, a lot of the roads

were one way, lightly travelled roads to isolated farmsteads and so forth.

These data in number 2 can be compared to the most detailed, what's called CanVec data, which is digital from -- the most recent is 2000, this is from Natural Resources Canada. And you can separate out the linear features according to type based on those data.

You can also, number 3, as available use even more detailed 1:50,000 topographic maps. There are about 12 1:50,000 maps in the route planning area. You can also use larger scale maps such as forest resource inventory maps and so forth, to analyze forest cover and linear features within the route planning area.

Number 4, instead of trying to do a supervised classification, you can use a new forest index algorithm to identify forest cover, which is a fairly complicated formula that's been recently developed.

You can do further analysis in number 5, convert linear features to lines and calculate what's called a fragmentation index for both forested and non-forested areas to analyze size, shape, distribution of forest patches using

landscape ecology metrics. So instead of looking at the whole route planning area, focus on the forest, basically assess the health of the forest and changes to it, based on how much the forest has been broken up into smaller pieces.

And number 6, analyze changes in forest cut blocks, forest fire burn areas, regrowth within the forested area using Landsat satellite based land cover starting from 1972 to present. That's a substantial undertaking.

So number 1, you can actually estimate the most recent cut blocks and forest fires. I mentioned just looking at the raw satellite image, you can see substantial changes to the forest in the last, since 2001. But you can also take the satellite images as far back as 1972. And that archive again exists on the Internet and you can look at changes from, not using satellite images, not just these old topographic maps.

And that's it. Thank you for your attention, and I look forward to your questions. Also, I'm hard of hearing and wear a hearing aid, so make sure you speak loud into the mic. And maybe if the audio guys can turn up the volume a bit. Thank you.

THE CHAIRMAN: Thank you, Mr. Cizek, for a very interesting presentation. We'll take a very short 10 minute break, and then we'll be back for questions at 11:05. Thanks.

(Proceedings recessed at 10:55 a.m. and reconvened at 11:07 a.m.)

THE CHAIRMAN: All right. We'll get started here with questioning. And a couple of things I just wanted to say, the first is as requested by the speaker, could you come up and use the mic, so that he can clearly understand any questions. The second thing, we're going to do it a little bit differently here. Normally, and as you know I have sort of been a stickler about this, we're not having questioning from people, from groups who have a similar point of view on an issue as another group. But because this is so technical, if there are any technical questions that participants have, we'll be fine with those. Thanks.

All right. My understanding is, well, we'll start with Hydro. Does Hydro have any questions?

MR. BEDFORD: No.

THE CHAIRMAN: No, thank you. I am

advised, Mr. Toyne, that you had a question or two?

MR. TOYNE: Yes.

THE CHAIRMAN: If you can come up to the mic, that would be great.

MR. TOYNE: Kevin Toyne for the Coalition.

Sir, would you be kind enough to pull up your map number 11? I've just got one or two questions for clarification about it.

MR. CIZEK: Okay.

MR. TOYNE: All right. And I just wanted to make sure that I got this right. So there's an area in the middle of the map -- yes, that area there. You had referred to that as an area that had recently, or previously been clear-cut. Did I get that right?

MR. CIZEK: Yes.

MR. TOYNE: All right. Just so it's clear for everybody who is looking at this, where this is in relation to other areas that we have talked about in the hearing, my understanding is that that clear-cut area would be south of what's known as the Pocock Lake Ecological Reserve and east of the Watson Davidson Management Area. Is that a correct statement?

MR. CIZEK: I don't know. I haven't overlaid any of those features on this map.

MR. TOYNE: Is there any way we can do that to confirm that particular piece of information?

MR. CIZEK: Not immediately. I'm not familiar with those designations.

MR. TOYNE: Is there any way to take the information that you have got on map 11, and I apologize, I have got a philosophy and a law degree, I'm not technical at all, but somehow overlay the information as to where certain communities are so that we can confirm where that clear-cut area is in relation to say, the very large map at the back of the room?

MR. CIZEK: Yes, that could be done within an hour, but it couldn't be done immediately.

MR. TOYNE: All right. Mr. Chair, would you like me to keep asking questions for an hour, or should I --

THE CHAIRMAN: No, I think we could take that as an undertaking. Now, there may be -- that's subject to any arrangement between --

MR. TOYNE: Of course. I didn't realize that this would be something that would be potentially time consuming or difficult to do. I

hoped it would be relatively straightforward.

MR. CIZEK: Well, I can show you that area using Google Earth, if you wish. I don't have those data sources available on my computer right away.

MR. TOYNE: Is it possible to pull up Google Earth on your laptop, on the screen, and show us that area with the Google Earth information about where different communities are?

MR. CIZEK: Absolutely.

MR. TOYNE: Is that maybe a quicker way to do it, Mr. Chair?

THE CHAIRMAN: That's a good idea. We can try it. Yesterday Wi-Fi was a bit difficult, but why don't you try?

MR. CIZEK: It's very easy for me to do what you ask, but it's not something that I was asked to do. So I'd have to find all those data sources.

MR. TOYNE: I understand, sir, that Manitoba Hydro's map with respect to the final preferred route might also be a viable option, if we're having trouble pulling it up on this map.

MR. CIZEK: Okay. Here's that very large clear-cut.

MR. TOYNE: All right. Can you pull the resolution out a little bit so we can see where the -- all right. So that clear-cut area is to the immediate north and northeast of the Town of Sandilands?

And sir, just so it's clear, that's the area that's the clear-cut reference you made on your map number 11?

MR. CIZEK: There -- it's more evident on that image.

MR. TOYNE: All right. And sir, if I suggested to you that that north/south road on the western edge of that clear-cut area travels along the immediate eastern boundary of the Watson Davidson Wildlife Management Area, would you know anything about that, given that you are from B.C.?

MR. CIZEK: The wildlife management area?

MR. TOYNE: Yes.

MR. CIZEK: I know of a wildlife management area. I haven't mapped it, I haven't compared it to my data.

MR. TOYNE: All right. Well, Mr. Chair, I think with the confirmation that that clear-cut area is immediately to the north of Sandilands, that that's sufficient clarification, at least for

the Coalition's purposes. I don't know about others.

THE CHAIRMAN: Okay. Certainly I had the same, similar question, so I believe that gives us enough accuracy for our purposes. If someone else feels differently, then we can see what could be done about that.

MR. TOYNE: Thank you very much for the clarification, sir.

THE CHAIRMAN: Okay. We had a request from one of the panelists, if you could move the map, if you could drag it over slightly -- the west or the east?

MR. NEPINAK: To the east. Thank you.

THE CHAIRMAN: Thank you for that.

Thank you, Mr. Toyne, for your questions. Anyone else with questions? Mr. Beddome, were you signaling something?

MR. BEDDOME: No, I wasn't. I was going to come up if there was going to be an undertaking, but I think you resolved that.

THE CHAIRMAN: Yes, we have. Thanks.

Any questions from the panel?

I have two questions, Mr. Cizek. One is, you used information from circa 1930, 1970, 2001.

Did you just choose those years, and it may have been in here and I missed it, or was there no update of the same type of information in those intervening years? I think the first period was 40 years and the second period 30.

MR. CIZEK: I used the data that was readily available. So the website prepared by the University of Manitoba has those maps from 1930 available. I assume there would be other maps of that scale from the 1950s, but they would have to be located, scanned, and further digitized. So again, every time you do one of these, it's time consuming in terms of finding it in a library, getting somebody to scan it, and so forth. The 1970 date was determined by the availability of the Canada Land Inventory data, which was considered at the time to be the most accurate data. And the 2001, 2005 dates were determined by the availability of those land cover classifications on the Manitoba Lands Initiative website.

Other data that could have been used, which I mentioned, would have been the CanVec data, which is the Natural Resources Canada topographic mapping standard, and that data goes to, is around

the year 2000. It also includes Landsat based land cover data called the Earth Observation for Sustainable Development, which covers all of Canada. It would have been interesting to compare those data with the Manitoba Centre for Remote Sensing data.

And I also assume there would be 1:50,000 scale sheets probably starting in the 1950s that could have been used. But again, all of these datasets require locating in various map libraries, and often they are not actually in the library, they're in warehouses owned by the libraries, because the libraries themselves can't afford to store these things.

So, again, these things are very time consuming. Thank you.

THE CHAIRMAN: Okay. That's a very good explanation of why those years were chosen. Okay. That's good.

The second question, I just wanted to be sure I clearly understood the changes in forest cover. If I understood you right, the methods you used may have over -- now, I want to be sure I get this in the right order -- may have overestimated the gain in forest cover, because there was

increases as well as decreases. The net was a decrease but may have overestimated those gains from '70 to 2001, and may have underestimated the same gains in 2001 to 2016.

Now, I may, even in my describing it, not have exactly explained what I was thinking, but if you could go over those two periods and explain which way the overestimate went?

MR. CIZEK: I'll try. I'll just try to summarize my understanding of these data. I think the period 1930 to 1970 has an unusual amount of forest gain in the central wetland part of the map. But I think the amount of forest loss in the northwestern area of the route planning area is so substantial that we can be confident that a lot of forest was lost in that period.

In the time interval 1970 to 2001, I feel confident that those data are accurate, or more accurate.

In the time interval 2001 to 2005, there's very little change, but there is 300 some odd square kilometres of forest gain in only four years, and at the same time, slightly more forest loss. So I guess you could -- the forest loss would be reasonable, but the forest gain in those

four years seems a lot. So that questions the accuracy of those data. And again, the Manitoba Centre for Remote Sensing was not able to provide any detailed methodology or accuracy assessment.

In 2001 to 2005, there's also a substantial increase in linear features, simply because, I think, even though they were using the same satellite, the same resolution, they just mapped those roads with more detail. So I think that overestimates the number of roads.

In the period 2005 to 2016, I don't feel confident about being able to -- I think I overestimated the amount of forest loss. And that may be because I used data from 2005 as my training samples, and those data may not be accurate to begin with.

So, in conclusion, as I said before, I think with all the limitations of the data, we can be most confident about the period 1930 to 2001. And I think we can be most confident seeing the forest loss in the northwest portion of the study area, of the route planning area that is, and also little patches of lands that have been converted to agriculture in the southeastern portion of the route planning area around Piney and north of

Piney, there seems to have been conversion to agriculture there.

And finally, I also think that there has been, in the period 2005 to 2016, even though this was outside my scope of work, based on images like that, that you see on Google Earth, there have been substantial clear-cutting and forest fires within the forested area.

So I hope that helps.

THE CHAIRMAN: Yeah, it certainly makes it very clear for me. Thanks.

We have one more question from the panel, Mr. Gillies.

MR. GILLIES: *** Ian Gillies here.

I wondered if you could talk a little bit about wetlands and bog areas? Because when you look at that 1930 map, which only kind of drew in the wetlands area, it's kind of remarkable how much of the area that covers. And I think if you look at these lands in the sort of eastern prairies, and you look at forest, agriculture and wetlands, the one thing that has been pretty steady and true is that there's been a lot of drainage.

Can you talk about how the wetlands and bog

areas in the analysis that you did may have affected the calculations of forest cover versus agriculture?

MR. CIZEK: When I set out on this project, I hoped that I would have been able to include wetlands in the land cover, but unfortunately in the old maps -- let me go back and show it as an example. The wetlands are mapped as point data. So there would have been accuracy issues with the -- so if you can see in these old maps, there's a number of things going on which are interesting, but I think beyond the scope of the work I was able to do.

This is a well-known wetland, from what I understand. And so the way it's marked on this map is through a series of symbols showing, if you've used topographic maps, showing kind of emergent marsh-like vegetation.

And so you could, in principle, somehow delineate this as a wetland. It wouldn't be very accurate. It would probably have to be done manually. I can't think of a way it could be extracted automatically using software. You see the green forest on this map, I was able to, using -- because that has a distinct colour

polygon area, I was able to extract all that automatically using the software. So it wasn't that time consuming. But the roads, because they are kind of a jumble, I had to do manually. These wetlands I would also have to, probably have to do manually, so that's time consuming. There's also an accuracy issue of what is the boundary of the wetland itself. So you are making some assumptions there.

You also have, not only these areas -- this is the 1930 map shown as wetlands, but you also have forested wetlands. So this is south of Sandilands. I don't know all the villages. Anyway, so you can see these bands of forested wetlands. So that's another, adds another level of complication.

So it certainly would be interesting. What's the other thing that you can be doing? Because these data have wetlands, so those are, those could be extracted fairly easily, this Canada Land Inventory. The yellow is wetland, I'm fairly sure. Yeah -- oh no, that's grazing. What's considered wetland here? The light blue is wetland. And then the 2001 data also has, the light blue is wetland there. So some comparisons

could be made. I know that in this southern part of the route planning area, there's been extensive dyking and so forth, so I assume that there have been changes like that. I hope that helps.

MR. GILLIES: Yes. It's too bad we couldn't follow that sequence of land farm change over time too. I think it would have shed some light on the land dynamics in the study area. But it's not there, so move on.

THE CHAIRMAN: Okay. Thank you, panel, for the questions, and thank you, Mr. Cizek, for your presentation and your responses.

And for all of you then, we'll be adjourning now for the rest of the morning and the afternoon. We will be reconvening at 7:00 o'clock in La Broquerie, and again, as I mentioned earlier, Saturday morning and afternoon in La Broquerie. And the purpose of both those sessions is to hear from members of the public, so we hope we'll get a good turnout. You are all welcome, of course, as I said earlier to attend, but there won't be a formal role for participants at the public sessions in La Broquerie. So thank you all and we'll see you either in La Broquerie or Monday morning. Thank you.

MS. JOHNSON: Mr. Chair, we have a few documents to put the record here.

THE CHAIRMAN: My apologies, we have some documents to file.

MS. JOHNSON: MH 067 is the undertaking requested by SCO, the GIS dataset list. SCO 002 is the outline and CVs; SCO 003 is Mr. Cizek's report, and 004 is his presentation. And just a reminder that we are at the Fort Garry next week, not here.

(EXHIBIT MH-67: GIS dataset list)

(EXHIBIT SCO-02: Outline and CVs)

(EXHIBIT SCO-03: Mr. Cizek's report)

(EXHIBIT SCO-04: Mr. Cizek's presentation)

THE CHAIRMAN: Yes, thanks for that reminder too.

So as I said, we'll see you either in La Broquerie or at the Fort Garry Monday morning. Thanks. Just a reminder, you will have to take all your belongings with you today because we will be losing this room shortly. Thanks.

(Recessed at 11:34 a.m.)

Upon commencing at 7:00 p.m.
La Broquerie, Manitoba

THE CHAIRMAN: Well, welcome, everybody, to the hearing. And I wonder if you could take your seats, and we will start in half So.

Welcome to the continuation of the hearings into the Manitoba-Minnesota Transmission Project. We are the Clean Environment Commission. My name is Serge Scrafield, and I'm the Chair of the Commission and also Chair of this panel.

And I'm going to ask the other panelists to introduce themselves, starting with my right and your left.

MR. NEPINAK: Reg Nepinak.

MR. GILLIES: Ian Gillies.

MS. STREICH: Laurie Streich.

THE CHAIRMAN: Thank you.

Also here with us is the secretary to the Commission, Cathy Johnson, just sitting down here on my left. Next to her is our legal advisor, Mike Green. We also have our writer, Bob Armstrong, there. And the fellow at the door is Alex Menjivar, and I hope I'm pronouncing that right.

If you would like to speak this evening -- and by the way, we welcome and encourage anyone and everyone to speak -- if you could just register with Alex, so that we have a list of who spoke afterwards, so we can make sure we relate what was said to the right person. That's the main reason.

So, the reason we are here is back in December of 2015, the Minister asked the Clean Environment Commission to hold public hearings into this project, the Manitoba-Minnesota Transmission Project. And those terms of reference were further amended on February 15th of this year. So we have terms of reference that we are following.

We are to review Manitoba Hydro's environmental impact statement, a very large document which they did on this project and which we are in the process of reviewing.

The Minister also asked us to hold public hearings and then to prepare and file a report for her consideration, which of course is what we will do, and we have 90 days to do that after the hearings are over.

We've been meeting for about -- it has been

12 sessions so far, so over two and a half weeks in Winnipeg, and then we are here this evening and again all day Saturday. So people who can't be here tonight, or if you know of other people who would like to speak to us, we are here all day on Saturday as well.

The Minister asked us specifically to recommend whether an environmental licence should be issued to Manitoba Hydro. And I want to stress, we make recommendations; the Minister makes the decision. So we are to recommend whether a licence should be issued, and if so, what conditions should be attached to that licence.

So those are the two main things we'll have to do. But in getting there, the Minister asked us to hold public hearings, so this of course forms part of the public hearing.

And we did feel it was very important to hear people outside of Winnipeg. Now, Winnipeg is also part of the project area, because I think you are aware that the project -- proposed transmission line goes around the city first, and then winds its way southeast towards Minnesota. So, nevertheless, for this part of the area, it

was thought by us to -- also very important to hear the public who lives in this area, so that's what we are here to do this evening and Saturday.

The Minister, I just want to stress, expects us to listen very carefully to the views of the public and all the participants and intervenors that we have in this process, and then to consider all of that in making our recommendations. So that of course is what we will do.

For those of you here this evening, or people you know -- other members of the family, whatever -- who don't feel comfortable doing an oral statement, you can also do written statements. And they can be submitted through our website, they can be emailed to us, or they can be handed to people here this evening, particularly Cathy here.

And those will carry -- or on Saturday. Those will carry the same weight as an oral presentation; we will consider them in the same way and give them just as much attention. So that's another way of making your views known to us.

I should also mention that any written

submission, just like any verbal presentation tonight, gets -- becomes part of our record; we will have a formal record that will have as part of it everything we heard in Winnipeg, in La Broquerie, whether we heard it verbally or whether it was submitted to us in writing.

And of course, to wade through that is is quite a task; of course we've already had a lot of submissions and documents. Nevertheless, everything will be there, and you are free to look at that on line. All of that gets posted eventually -- not all of it right away, but eventually all of it posted on our website.

One thing I wanted to mention for this evening -- and I should have introduced as well -- we also have a person to my right, here, who is doing the transcribing this evening, so everything said tonight by us and by any member of the public does get transcribed, and those transcriptions also appear on our website, usually fairly soon after we hear them. So within a couple of days, you will be able to find the record -- the verbatim record of what was said here tonight.

When you come up to speak, I would ask that you use the microphones, which are -- I believe it

is the ones at this table here in front of us. And that's for two reasons: so it can be heard in the whole room, and secondly so that we can be sure that we have clearly what you have said recorded.

That is all I have to say, except to add that we look forward very much to hearing your views, and to considering them as we try and reach our recommendations over the course of the summer on the project. So thank you.

Cathy, are there any administrative matters we have to mention?

MS. JOHNSON: Everyone gets sworn in as well.

THE CHAIRMAN: Yes. I should mention, we will be swearing people in, and Cathy will look after that. When you sit down -- you don't have to go over there -- it is more of an affirmation, I guess, is a better way to say it.

Okay. So we are ready to start. And we have an order of people? Okay. Good. I will catch up to the program, I guess.

So we are going to start with Anni Markmann. And I hope I pronounced that correctly.

(Anni Markmann sworn)

MS. MARKMANN: My name is Anni Markmann.

The proposed preferred route is within one mile of our home. We live on Road 48 North; the number is 40057, in the RM of Tache.

During the second round, the preferred route was to be on our property -- actually on all three of our properties, as we own three 80-acre parcels of land -- and the transmission line would have been on all three of them. I have heard that there are about 170 homes in the RM of Tache that will be within one mile of the transmission line.

During Round 1, I had no idea that there was a planned Manitoba-Minnesota transmission line. I was not aware of any open house, or that any meetings were going on. I'm an avid reader of the Winnipeg Free Press, and a regular reader and contributor to the Dawson Trail Dispatch, a local monthly paper. If there had been any notices in there, I think I would have seen them. So I don't think that Hydro did a very good job during Round 1 of inviting those of us who may have been affected to let us know that this route was going to be happening.

During the beginning of Round 2 was the first I heard of an open house in Lorette, April

or May of 2014, now three years ago. I attended out of curiosity when I saw the notice.

When I looked at the map of the proposed route, it was a Google map on a computer, on a computer screen. I asked the representative there to zoom in to where my home is.

I was shocked. The line was going right on the east side of our property. The rep there measured the distance from the line to my house. It was less than 800 metres. I was stunned. Why did I not get a formal invitation from Hydro to attend this formal meeting? Now, I just saw an ad in the paper.

I would like to read a letter that I wrote to the editor of Dawson Trail Dispatch for the June 2014 edition.

"In the past two months, some of us homeowners in southeastern Manitoba have found out that the new Manitoba-Minnesota Transmission Project is going right on our properties, the RMs of Springfield, Tache, Ste. Anne, La Broquerie, and further south.

"I'm so excited. I look forward to having some majestic items on our property. My siblings may have mountains, but I will have towers and

transmission lines. I look forward to inviting them out to see these new sights.

And my family from Winnipeg will be impressed. We don't just have wild animals and peace and quiet and natural areas. Look at these majestic towers -- and within 800 feet of our home. Fantastic.

And hearing the motorized trespassers going past will be a welcome change from the boring birds and frogs that we hear all summer. And watching the ATVs and dirt bikes buzzing by will be way more interesting than the deer, bear, coyote, and other wild critters that walk through our natural area.

And we don't need weather experts any more. The lines are wet; it must be raining. The lines are white; must be snowing. Oh, the lines are moving; it must be windy.

And we will have more policing in the area, too, since we will have more trespassers, vandalism, theft, illegal hunting, and illegal dumping, et cetera. And those spruce trees that we have been planting by hand over the past 20 years, we didn't want them there anyways, so now they will just get all chopped down.

Oh, good news -- our property taxes will go down, too, since our property assessments will likely go down too. And we can buy other properties nearby, because they will be much cheaper, because no one will want to buy them. We can snap them up cheap and rent them out. Renters won't mind these massive structures near their homes.

I'm so glad Hydro decided to go on our private property instead of the uninhabited Crown land further to the east. Did they really think that would have been an option? What were they thinking? And all this for the good of Manitobans.

My tongue firmly in my cheek, in the RM of Tache.

So those of you who live in Winnipeg, maybe you don't understand why we would be so upset. But if you've ever been to a cottage in the wilderness, with peace and quiet, maybe you can imagine having your own pristine and wild area ruined by the sight of overhead power lines.

I attended most of the meetings and open houses that Hydro offered, and local meetings organized by local landowners. When I asked Hydro

representatives why the transmission line had to go through private property, and not on Crown land that is very nearby, I was informed that all considerations were given, and that this was the best route, based on Hydro's parameters. Basically, I was not given a good reason why.

At one of the meetings held in Ste. Anne that was specifically for affected landowners, I expressed concerns about what happens to our property once the transmission line is there. Our land is less likely to be able to be subdivided. Our land will be less valuable to resell, because it will be less desirable.

A big concern to me was trespassing. I asked a representative at one of our meetings what Hydro would do to ensure that there was no trespassing on our land if the Hydro line was there. The answer I got was, "Well, how do you prevent trespassers now?"

I answered, "Well, it is solid bush and trees; no one can get through right now. Once it is open, I expect trespassers on ATVs, snowmobilers, and others, and there would be no way to prevent them from going through unless Hydro was prepared to erect a fence."

But they would not guarantee that this would be, because they need access. Once trespassers have access, there is more of a fire risk, and also a safety risk, and of course noise created by these off-road machines.

I asked about herbicides that may be used to keep the area clear, and how that might affect our groundwater and wellwater. I was assured that Hydro would be careful with the herbicides.

With Round 3 and the current preferred route, the transmission line, although it is not on my property, it is still within one mile of our home.

And I have complete empathy for my neighbours. I know how those current landowners feel.

When the preferred route during Round 2 was on our property, I was outraged. My understanding is that Hydro's routing decision was based on three perspectives: Human environment -- which is, my understanding, on private property or near homes; natural environment, and I believe that would affect all possible routes, both the Crown land to the east of us, and also our own private land is also a natural environment.

And the third was a technical environment. My perspective of this is they are looking for easy access for maintenance and repair, and to minimize risk of being too close to other existing lines, and reliability.

When I asked why the transmission line cannot go on the Crown land about ten kilometres to the east of the current preferred route, one reason I was told was that it would be too close to the existing transmission line. I believe it is called the 602 line. There was a perceived risk of being too close together in case of a weather event.

I asked, "How far apart do these need to be to minimize the risk?"

I don't recall getting a specific answer. I was just told that of course the farther apart the better, naturally.

I suggested that I thought hydro companies learned from the ice storm in Quebec, and that the lines would be constructed so that the lines would release from the towers rather than bringing the towers down.

I suspect another reason the preferred route to build on private land is it would be much

easier to maintain, since the lines would always be close to existing roads. Perhaps this issue was given much more weight than the effect to the landowners.

Hydro made it clear in all their material that they took feedback into account when they decided on the preferred route. I guess our collective "Not on our private property; go to the Crown land" meant nothing to them. They either were not listening or had already made up their mind, and were pretending that they were listening to our feedback.

Just three to four hours ago, I received an email from Hydro regarding the project. It includes a new video of how the project will look. It is a computerized aerial shot of the proposed route.

It looks wonderful, and the music is awesome. The line is going through lots of bushy and treed areas. The line looks positively benign. If you do not know the area, or how close the lines are to homes, you would be impressed with the video.

I was sick to my stomach, because it showed absolutely none of the homes that it will be close

to. In their video of the proposed route, you cannot see a house at all.

I would like to see Hydro do some proposed pictures and videos of what my neighbours will see from their homes. Let's get a look at what the private landowners will see. If Hydro is so clever, they should be able to do this. They should be required to show the affected landowners what it will look like from their living-room picture windows and decks. Again, think of how you would feel if you were at a cabin at the lake or in the woods, and now, off your back deck, you see a massive Hydro transmission line.

This is not why we moved to where we are today. So please, let us keep our little piece of nature natural.

Thank you.

THE CHAIRMAN: Thank you very much for obviously something that you've given a lot of thought to, and a very good presentation.

We don't ask questions of the public in terms of anything you said. Just for clarification, if anyone has something they didn't understand, are you okay with that?

MS. MARKMANN: Absolutely.

THE CHAIRMAN: Any panelists have anything -- no.

I have just one question, because I heard the number a couple of times: Did you say 800 -- was that feet?

MS. MARKMANN: Yes.

THE CHAIRMAN: Did I get that right?

MS. MARKMANN: Yes. Initially it was 800 feet, the distance from the line to my home.

THE CHAIRMAN: Okay. Good. I just wanted to make sure I got that it was feet; I didn't know what dimension. Thank you very much.

All right, the next speaker is Andreas Fehr.

Mr. Fehr.

(Andreas Fehr sworn)

MR. FEHR: I'm here today to express my disappointment about Manitoba Hydro's choice of the routing for the Manitoba-Minnesota Transmission Project. Like many residents in the area, it still doesn't make sense to me why they chose this route.

Manitoba Hydro held several information meetings to inform the public, as well as to hear concerns from local residents about the MMTP.

However, when asked, they were not able to explain all of their choices and decisions.

The more easterly alternative that they had considered at one point is a lot more beneficial. I like the area we moved into right here in La Broquerie. I view it as a special place, kind of a small transition zone from the vast open prairie fields to the west to the endless forest to the east. There is lots of bush, shrubs, rivers, streams, and shelterbelts amidst agricultural land, which provides habitat for different kind of species that are probably less common to the east and west.

Putting a major Hydro line through this small area makes everything more crowded and less appealing for wildlife and humans.

Our agricultural land is in the category for severe risk for wind erosion. This Hydro line would take out miles of shelterbelts. This would expose our fields to greater wind erosion, which in turn reduces the yield of our crops. The shelterbelts also act as a corridor connection to the many different wildlife habitats.

The Manitoba-Minnesota Transmission Project would also hinder farmers to efficiently work

their fields. For example, with drag hose manuring, aerial spraying, and working in general with large equipment, because it causes more overlap of fertilizer and chemicals around towers.

I wonder what is the greater chance? Having a transmission line come down by a tornado or by an accident, like just recently happened with one of Bipole lines up north, by a farmer operating machinery. Isn't it smarter to get a large transmission line out of a busy area if at all possible? Going more easterly with the Manitoba-Minnesota Transmission Project would sure greatly reduce the liability risk for farmers.

The 200-feet towers of the MMTP are not just a nuisance for property owners directly affected by the line; it is also an eyesore for large and small communities that are within close proximity of the line, and live here because of the beautiful landscape.

Furthermore, I have concerns about electromagnetic fields, noise, and especially stray voltage. I dealt with Manitoba Hydro just recently about stray voltage in our dairy barn, and it was not very encouraging to see their knowledge about the topic.

I talked to a private company from Quebec that specializes in stray voltage. They told me that power companies throughout Canada still use outdated techniques that were developed in the '80s.

Building the Manitoba-Minnesota Transmission Project more towards the east would greatly reduce the stress on humans and livestock. I think there should be greater emphasis on the people that are directly affected by the project every day, than lobby groups that are just occasionally in the affected area.

THE CHAIRMAN: Thank you for also a very thoughtful presentation.

Does the panel have any questions for clarification?

MS. STREICH: I have a question, actually. I was following along on your paper, and I noticed that you left out the word "wildlife" when you were talking about building the project more to the east. Was that intentional, or ... ?

MR. FEHR: Where?

MS. STREICH: In the last paragraph: "Reduce the stress on humans, wildlife, and livestock."

MR. FEHR: No, that was not intentional.

MS. STREICH: Okay.

MR. FEHR: But there are different species that live there, and if they build it more towards the east, it kind of affects the different species of wildlife. But it is a bigger area, like, the area in La Broquerie, it is kind of -- it is not the open prairies and it is not all bush; it is a small strip of land that is kind of open.

MR. GILLIES: I have a question. Ian Gillies, on the panel.

On the issue of shelterbelts, your comment was that the Hydro line would take out miles of shelterbelts. Do you have more detailed information on that aspect?

MR. FEHR: Well, I'm going from my property, they go, like -- they probably take out, like, a mile of shelterbelt on my -- on our property, depending on how you look at it. Because they kind of don't go straight in the centre; they go on a diagonal, and they meet in the centre, half a mile down our property.

But I have -- I have a soil map here that shows -- like, the red, that's the area for soil erosion; that's the Municipality of La Broquerie.

So that's the most severe soils that you can have for wind erosion.

MR. GILLIES: Is that a map that you can leave with us, or give us a reference on?

MR. FEHR: Sure.

MR. GILLIES: Okay. You can leave it with Cathy. Thank you.

THE CHAIRMAN: All right. Well, thank you very much for the presentation, and for answering the questions.

MR. FEHR: Okay.

THE CHAIRMAN: All right. Our next speaker is Albert Wolfe.

(Albert Wolfe sworn)

MR. WOLFE: Okay.

THE CHAIRMAN: I seem to have difficulty turning mine on and off too.

MR. WOLFE: Good evening, members of the Clean Environment Commission, ladies and gentlemen. Thank you for this opportunity to speak to you about why I think putting the Manitoba-Minnesota Transmission Project line on this preferred route is a bad decision.

Having a dairy, crop and hog farm a mile south of La Broquerie, and having the transmission

line running through two of my fields, I suggest that four miles east of the present route would site the line out of agricultural land and through a much less densely populated area.

The agricultural land in the eastern part of the RM of La Broquerie is only about five miles wide. A transmission line going from Winnipeg to Duluth, through an area with a restricted amount of agricultural land, especially on the Canadian side, seems inconsiderate at the least. The line could instead travel through non-agricultural and sparsely populated area if it was positioned slightly to the east.

Example: The RM of Reynolds has no objection to placing the line there, and there are already two such power lines sited there already.

One portion of my farm that is on the existing preferred route is already intersected by the 210 Highway, a railway track, and there are drainage ditches in the field. To put the line here would make working the field much more awkward and time-consuming. Having to twist and turn around transmission towers will increase fuel consumption, lower our rate of acres per hour, and increase soil compaction. With the potential of

having three towers in this field, I do not relish the thought of having to work around these for the rest of my farming career.

Who knows the value of crops which will be grown in the future, when in just the last 20 years, we have gone from growing a crop of barley, gross valuing at $240 an acre, to corn, gross valuing at 720 an acre. If the same sort of increase continues, present compensation will be long forgotten in the future, as it will have been meaningless.

Being involved in livestock farming, biosecurity is a major concern. If you have seen the map of the preferred route through La Broquerie -- I think it is 15-300-03 in the submission Manitoba Hydro made to the CEC -- I enclose a copy in the printout. This here.

You will notice that the area has a very high density of livestock operations. I've shown this map to Dan Mazer, president of Keystone Agri Producers, and his comment was, "It is like putting a high-voltage power line through Winnipeg, in human terms," but in La Broquerie it is livestock density.

All these farmers spread manure on their

lands. Manure can be a medium for spreading disease, as mud and dust both stick to equipment and can fall off again at any time. The potential for spreading of disease by equipment used in constructing power lines is enormous. Also the spreading of noxious weeds is a factor to be considered seriously.

When a hog barn has been diagnosed with the P.E.D. virus, as an example, livestock trucks will avoid traveling on the road that passes the yard site. How much more likely is construction equipment, moving from field to field with manure spread in them, likely to spread disease? Much more likely, I would suggest. Also, bear in mind, disease can have an incubation time, and time can elapse before lab results are known. Equipment could be spreading disease without even knowing it exists.

Biosecurity is essential. I know Manitoba Hydro has said it will hire third-party biosecurity monitors to observe the work and document compliance. This has been severely lacking in the construction of other transmission lines. It needs to be enforced, or just move the line a little to the east.

Another concern is soil erosion. The proposed route will take out a shelterbelt that is between my field and my neighbour's. This shelterbelt is there for a reason: to help stop soil blowing in the wind. In the past, there were government grants to establish shelterbelts in the area. Now Manitoba Hydro wants to take one out, to facilitate the transmission line to Minnesota. I do not like the thought of having my topsoil blowing away in the wind.

I've read an article about wildlife biologist Greg Wagner, from Alberta, where he was finding the carcasses of large birds under power lines. This proposed power line parallels a stream where great blue herons frequent, and fields where sandhill cranes can be regularly seen.

The village of La Broquerie is one of the most rapidly growing communities in Manitoba. With the proposed transmission line being sited less than three-quarters of a mile from where we are this evening, future development of the village, which is primarily taking place to the east, will reduce the available residential land dramatically.

Two weeks ago, my family and I visited friends who purchased a cottage near Lac du Bonnet. While he was showing us around the area, he mentioned, as we passed a transmission tower, that one of the reasons he bought where he did was that he could not see a transmission tower from his cottage.

I have lived in La Broquerie for 20 years, and I do not want to look out my living-room window and see transmission towers and lines, just like most people here don't.

Stray voltage has been a problem in some areas, with high-voltage AC transmission lines. A dairy farmer made a presentation to a Bipole III hearing, where he was concerned about the transmission line being close to his farm; he had had issues previously with a high-voltage AC line. Manitoba Hydro assured him that Bipole III, being a DC line, did not pose the same threat.

This transmission line is a high-voltage AC line, coming within a quarter-mile of my dairy barn and hog barn. I am worried, as the assurance the farmer in Central Manitoba got was that DC is less of a threat than an AC line. So I assume there is a higher threat of stray voltage from an

AC line. Livestock are very sensitive to stray voltage.

A few weeks ago I received a letter from Manitoba Hydro with an offer to buy an easement over my land for this project. I find it strange that Manitoba Hydro is offering to pay half now, on signing, and I keep the money even if the line moves.

Remember, they don't have a licence for this project yet. They must be desperate, or confident of receiving one. I hope they do not take the Clean Environment Commission's granting of a licence for granted -- as you clarified that earlier on -- as a rubber stamp.

You have a job to do. If they are desperate and want to say, "We already have the majority of landowners signed up", then there is no point in recommending moving the line. With a huge area of sparsely populated non-agricultural land to the east of here already, with two power lines running through it, the precedent has been set, in my mind: Go east.

Thank you.

THE CHAIRMAN: Thank you for the very informative presentation.

And does the panel have any questions?

Mr. Gillies.

MR. GILLIES: Ian Gillies.

Can you tell me a little bit more about your shelterbelt? I don't want to seem like I'm harping on shelterbelts, but at full maturity, how high is your shelterbelt?

MR. WOLFE: I would say 40 to 50 feet.

MR. GILLIES: What kind of trees or shrubs --

MR. WOLFE: Deciduous trees.

The area that I have particularly in mind is on a high ridge, and it is between my field and my neighbour's. And Manitoba Hydro proposed putting a line right down over that, and my understanding is that all trees will come out.

MR. GILLIES: Thank you.

MR. NEPINAK: First of all, thank you for your submission here today. Reg Nepinak, with the panel.

You talk about soil compaction. I've had many careers in my life; farming wasn't one of them. What is soil compaction?

MR. WOLFE: It is where you generally have been driving over a piece of land; maybe it has

been a little wet, and you will compact the soil, and then it doesn't have enough air or water in it for plants to grow properly.

MR. NEPINAK: Okay.

MR. WOLFE: And it needs to be deep-tilled or something to get it out.

Primarily it will happen in -- where it is a little wetter, and twisting and turning -- if you travel over the land once, you're probably okay; do it three times, well, then, you might have an issue.

MR. NEPINAK: All right. Thank you.

THE CHAIRMAN: Thank you very much for a good presentation.

All right. Just before I announce the next presenter, we have had a couple more people added to the list. That's great; don't hesitate to leave your name at the back if you would like to speak.

We will now move on to Scott Blonski. So take it away.

(Scott Blonski sworn)

MR. BLONSKI: If you will give me a minute, I have to pull up the slides. Could I also request -- because the slides will not be

very clear with all of the overhead lights on, is there a way to dim the lights near the screen?

While I'm trying to pull this up, I'm going to do my obligation for some considerations here.

The slides that I do present were mostly obtained from Google Earth, or directly photographed by myself. The photographs are included. And all those other sources, of course, I do not have rights to them, but all of the material that I do present myself, I am reserving my copyright rights. No photographs, unless I authorize them beforehand. If you want to ask to retain the slides -- and of course I'm submitting to the Clean Environment Commission a copy, and that's all right, but any other uses for these photographs and my -- my content here, I'm reserving those rights.

MS. JOHNSON: Mr. Blonski, can I get clarification: Do you or don't you want them posted on the website?

MR. BLONSKI: Oh, no, that's acceptable to me. I understand what the Clean Environment Commission intends to do. What I'm talking about is photographs or any other -- like, basically, misuse of the slides. That's what I'm worried

about.

MS. JOHNSON: Okay. Thank you.

MR. BLONSKI: And the title of my presentation, as you can see, is "Manitoba-Minnesota Transmission Project. I'm not convinced." The subtitle, the EIS and Routing Methodology of Manitoba Hydro, I point out that in my world, I believe -- strongly believe -- that trust is an earned commodity.

So, I will introduce myself. Hello to the CEC, members of the Board, and the audience. My name is Scott Blonski, and I am a rural resident of the RM of Tache. My home is approximately 400 metres away from the preferred final route. I thought that, you know, I have to include these facts to basically address who I am.

Now, my education. I guess I have got a lot of wallpaper at home, but the most applicable one to what I'm going to be talking about today is I did actually obtain a bachelor of science, civil engineering, at the U of M, four-year program.

And I have since then worn many hats in my my career. I have done industrial, mechanical, structural, municipal engineering, a lot of surveying, and I'm very familiar with basically

every place in Manitoba, over the many years that I did consulting work, and mostly field work, and the startup of projects, et cetera. So, I've seen a lot of this province.

Also on top of that, my family history, in the area of the MMTP study area, roots from pre-World War I. The earliest that I can trace it back at this point is about 1905. For example, my step-grandfather built the church in Woodridge, Manitoba, and that church was established in 1905, so I'm kind of extrapolating to say that he must have been there before then.

The familiarity based on this, and such close family ties with the geography, wildlife, land, and uses in 100-plus years of recent history in the Manitoba-Minnesota Transmission Project planning area.

So I will start with where it began for me with the Manitoba-Minnesota Transmission Project. That would be in Round 2.

Now, I would like to point out at this time, because it is not indicated on the slides, that for many people on the final preferred route, they didn't even get a Round 4. I can point out specific individuals that bought property late in

the process, and the line was not scheduled to or not planned to go there, and then the final route adjustments, all of a sudden, it is there. They had no consultation.

The first hint of troubles for me, again, Round 2, the public engagement. And when I was -- received basically a map in the mail, with a small letter defining -- very loosely and very vaguely -- what the alternate routes in Round 2 were going to be. One of my concerns was, as far as I could delineate from the very coarse map, was that it looked like it was going right over the roof of the house I had just purchased.

So I was fairly upset about that, but I remained optimistically open-minded, until I actually attended one of the Round 2 public engagement open houses, the one in Ste. Anne, in the spring of 2014.

There, I had some questions. Why not the most eastern routes? Why not the routes that were indicated in the Round 1 that I was overlooked?

The answer there was -- there was varied answers there. It was the wilderness areas, which I doubted right from the very beginning, concerning how much wilderness or what kind of

wilderness there actually is.

There is also the issue of Crown lands, and basically I heard many versions of why those most easterly routes were -- would be -- were less preferable to Manitoba Hydro.

It also included the border crossing, location of -- the final determination of the location of the border crossing. And I asked that question, and the Hydro representative that was answering my questions, at my table, gave me a different answer than the answer I heard to the same question, exactly -- pretty much exactly the same question, being asked by another concerned citizen at the table next to me.

Two different answers, two completely different answers for the same question, immediately raised my suspicions.

Another question I asked: "Why are you not willing to parallel the existing big, ugly M602F? Manitoba Hydro, you've already obtained an ugly scar across the Manitoba geography. Why don't you share that right-of-way with the new line?"

I was told that -- for reliability purposes, and mostly it was the threat of the possibility of damaging both lines with a tornado.

I wondered about that one too.

Why through so many homes? I was told Manitoba Hydro did the best they could; it was a top priority to avoid homes, and they did the best they could.

Well, the next slide, I'm going to question how well of a job they did.

This is actually one of the Manitoba Hydro poster boards, as far as I know. I was actually sent this; this is a photograph of the poster board in one of the open houses. And this is Manitoba Hydro's information.

And you can see, 8, 9, 10, 11, 12, 13 are mapping areas of the final preferred route. The yellow dots represent Hydro's mapping of homes, buildings, residences.

As you can see from the map, I don't think they could have done a worse job of avoiding homes.

If you look slightly to the east, that's the right of this screen, that is my suggestion for following the 602, the existing 602, which is the dotted line that you see running basically in the middle of nowhere, which is a fairly adequate description of that territory, because that is

Crown lands. And out there, as you can see, very few homes would have to be affected.

And what we are proposing, what we wanted and what we suggested, was basically just a little bit to the left of that existing line -- or parallel it completely, which I know is out of the question now, at this point. But you can see the differences.

So, something about this story is a little fishy.

These concerns and these doubts that I had after this information session, after the open house, I decided it is time to investigate and debunk for myself, Hydro making numerous claims that conflict with logic and common sense and each other.

My personal pick to illustrate why I had serious doubts: Hydro's claim, property values will not be reduced by the presence of a high-voltage transmission line. In front of me, I have one of the early information brochures that says exactly that.

So, you decide: Which would you pay more to build your dream home on, if you had a choice?

Would it be this? This is an example of

the crossing of the existing 602F. And by the way, I would like to point out the width of the right-of-way of the existing 602F: It is not 80 metres.

This is your alternate. Which would you pay more for? Which would you be more willing to build your home on?

Again, this, or this?

I think it is pretty clear how the Manitoba-Minnesota transmission line will affect property values. Not that I'm arguing about that point; I'm merely taking it into consideration. This is cause for raised concern and suspicion.

So, honestly now, Manitoba Hydro, in a public meeting, reps and the Sundown Coalition met, and again, we were told: Research proves that the proximity of a high-voltage overhead transmission line won't affect property values.

So I asked one of the Hydro representatives "Which is more valuable?"

And I basically presented the same scenario. You have one parcel of land right next to the other. Everything is identical, except the one on the left has the high-voltage transmission lines cutting a swath through the forest, and the

one on the right does not.

Which one is more valuable? Which one will command a higher price? Looking away, he stammers and replies, "I am not an expert in real estate."

The next slide I think is just a pictorial of how I felt.

Now, how about all those -- excuse me; how about all those terrible tornadoes, the reason why the line had to be separated and could not be parallelled?

My dad's family's legacy is 100-plus years old. I've heard many stories throughout the years of homesteading in the Woodridge and Sandilands area. These stories included racing 60-mile wildfires while in their vehicles, down gravel roads, trying to outrun the fire. Bitter cold. Poverty. The Prohibition -- the Prohibition years. The Great Depression. The isolation of living in that area. Four seasons of cutting pulpwood; 14 brothers, all out there cutting pulpwood, loading it onto the CN Rail and shipping it away. Train wrecks. Ice storms. Thunderstorms. Hail. Wind. But I don't remember a single tornado story -- and no snow-nados either. If you want to ask me about that one

after the presentation, I'm open to that.

So I myself did some quick DIY research. 40-plus confirmed tornadoes in Southern Manitoba, based on Environment Canada historical records back to the 1920s. This is the best I could do; I don't have a massive budget.

Of those, only three confirmed, and one reported, were east of PTH 12, Provincial Trunk Highway 12. Of the three confirmed, two were F0 -- that's the weakest category of tornado there is on the Fujita scale -- and one F2, which is not a significant storm.

Two of the three confirmed, plus the one reported: Guess where they were? Answer: In the La Broquerie area, right on the final preferred route. Are they really avoiding the tornadoes?

But the harsh reality of the situation is: I can't take on Goliath alone. So I joined with the Tache Coalition, basically a group of my neighbours at first, and it kept expanding, and later expanded to facilitate the concerns of the entire MMTP route. Basically, if you had something to say about the route, and if you had something to say about the project, you are welcome. Time to get some plausible answers and a

reasonable -- which would be a reasonable explanation, you would think.

So, I have some connections. I know some people. I asked professionals that I trust some key questions.

Now, I'm no stranger to civil engineering project management. EIS, I have done a couple myself. Cost estimates and stakeholder management, I teach a course -- or I taught a course in that a few years ago. I know of methods, standard operating procedures, expropriation, Crown Corporations, monopolies, and well intentions and reigning power of the Manitoba Hydro Act.

But I was unprepared for the insider answers I heard when I asked these questions. So, please tell me, why through such densely populated rural residential area? It is because it is the path of least resistance, not necessarily the best one.

Why is Hydro jumping the gun, actively investigating, surveying and screening forward -- and you know why I'm using that term -- this new route, before they have listened to our concerns and opinions, and even before they have announced

a final plan or obtained licences and authority to actually build this?

The people I talked to answered, "They made up their mind, and they made their decision long before you got that letter in the mail."

This is a really disturbing one, and I say this without -- well, I have to be careful about this one, because I guaranteed the person that answered this question that they remain anonymous.

Why not on unpopulated Crown land?

Now, the person I'm asking this question for would probably be a name familiar to most of the CEC, Manitoba Sustainable Development, and I will describe what he did prior to retirement. He was one of the top officers in another branch of government that is closely aligned with the CEC and Manitoba Sustainable Development, and he was the go-to guy for real property matters dealing with this part of the government.

And this was his direct answer to that question: Because the executives at Manitoba Hydro know that if they do that, they will be in litigation for the next 25 years dealing with Aboriginal Treaty Land Entitlement issues, and other such groups, like the Metis Federation, in

court proceedings, and they just don't want to do that. They are not willing to actually go through that process. This is much easier; they can simply expropriate private landowners.

I say that because those are the words I heard. Hydro claims transparency; well, this raises more doubts. So let's get together with Hydro; let's have some talk.

Routing selection process meeting was requested by the Tache Coalition; I was involved in that. We met on September 10, 2014, at the Manitoba Hydro Taylor Avenue offices, and it was representatives of the Coalition, and we met with key Hydro reps.

The reps that I recall, specifically, let X equal (redacted) and Y equal (redacted), in my little formula.

I asked the question of why eastern routes, from Round 1, were suddenly and staunchly eliminated, with no plausible explanation.

This is not verbatim, but the answer that I got, it reflected a moment of lapse and a glitter of truth, but we quickly returned to standard operating procedure.

The response by X -- not transcript

verbatim, again, but close enough -- "We had to look at them, but we knew we would never go there."

This was witnessed by six Coalition members sitting at the table. I thought to myself, "Aha. Next question: Please explain what you meant, 'We knew we would never go there.'"

Response -- this is just a matter of maybe less than a minute later -- "I never said that."

And I will include that somehow the fire alarm in the building went off, and we had to evacuate.

Okay. Let's talk about something else. We've heard many assurances from Hydro about our concerns with trespassing. One of our biggest concerns is trespassing. Manitoba Hydro wants MMTP ROW easements on private land.

I will instruct you -- or inform you of this: As a youth, the common assumption that I took was power line ROWs were public property. They must be. This was not uncommon. Snowmobiles, dirt bikes, trikes, quads, hunters -- basically everybody I knew in the recreational vehicle hobby, and hunters, shared this misconception.

And why wouldn't they? Look at how inviting this is: Let's get on and ride. Okay?

Let's talk about the assured fence. Hydro has assured us, and now the CEC, of a fence and a locked gate. Mitigation.

I have traveled over a million kilometres on the highways and back roads of Manitoba, for work and recreation, been to just about every town, village, corner, nook and cranny, the exception being Churchill. The only fences and gates that I recall were installed and posted by property owners, and notably when livestock was present.

Let's take a look. Fence, gate. I do see a lot of ATV tracks. These are four local examples in the area immediately surrounding Winnipeg.

Here are some more. Most of these were taken off Google Earth, Street View images. Again, I'm not seeing too many fences.

There is also a couple of shots here of 230 kilovolt lines, and also the 500 kilovolt existing M602F, which is on the bottom right corner.

So what am I looking for here? Is it a locked fence? Is it the abominable snowgate?

Well, I don't think so. Maybe these only come out at night; maybe they are nocturnal mitigations. Maybe they can only been seen with Hydro adaptive management vision.

But let's take a look at the fine print on the assured gate. Let's ask Hydro about the fence terms and conditions, because we did.

Who pays for it? Well, if no well-constructed and maintained fence already exists, the property owner must pay to erect his own fence.

Who maintains it? That would be the property owner.

Who -- does Hydro install "No Trespassing" signs? No.

Can a property owner erect his own fence? Not without Hydro's permission and consent, because Hydro needs access to the right-of-way.

What if no fence was necessary before the construction of the power line? The property owner still pays.

And what I'm referring to is what somebody else has -- one of our other speakers alluded to, was if it is bush, we don't need a fence. When you cut the bush down and put a trail there, we

need a fence.

But wait: I would be a hypocrite if I didn't include some of the examples that I did find where it looks like such mitigation actually had been done.

Note -- and it is my policy that selective omission of facts is equal to deception.

So here are some pictures that I took on my video and photographic tour to find where these fences were. And it looks like I found some. But you have to look closely.

This is an example. There is no fence on either side of the post. It is not going to be very effective, for that reason.

But there is another reason why this one would not be effective: There is no gate.

This one is another example. This is pretty close to where I live, actually. There is a fence; it is down. Right? So -- and it looks like it was run over, to be quite honest, with a heavy piece of equipment. Not a quad; not an ATV.

This one is near my home, and the fence has been down -- it has been down ever since I can remember. And this is not Hydro's crews' use here, in that ATV trail; that is local ATV riders

going up and down here like it is a superhighway.

Again, there is what looks to be a fence and a gate. But there is no gate, and there is no sign that a gate has existed for a very long time.

I don't think in this a gate or a fence is an effective deterrent. Do you?

This is an example of something much better. But who did it? It is intact and well maintained. There is a fence, gate, signs. But I would wager the property owner did this at his own expense and effort. Sure, Manitoba Hydro was included in the information loop, but I will tell you this: Despite all these measures, there was no lock, double or single, on that fence gate.

By the way, again, I see a 50-metre right-of-way; not 80. And this is guy-supported towers, which, according to Manitoba Hydro now, should have a 100-metre-wide right-of-way.

How about that Manitoba-Minnesota Transmission Project virtual tour that we all saw? It was presented -- I do believe it was prepared the Sunday night before the start of the hearings.

I noticed a blatant omission, as others have. What is suddenly omitted from the video after the final preferred route turns south from

the Vivian Transmission Corridor? The answer, of course, would be our homes. No buildings. No indication of anything other than trees. You must be using Hydro vision. No houses. No buildings. Nothing but a few empty dirt roads, a virtually unpopulated territory.

But there is one exception. We live there.

This is my own map, taken from Google Earth. I did this in 2015, when I was asked the question, "How many homes are there close to the final preferred route?"

The final preferred route here being the dark blue line. The pink was actually an alternative; that was one of my layers.

The red lines represent one kilometre away from the centre of the final preferred route, not the right-of-way. And all the little yellow place markers that you see were the homes that I counted from the image, but also drove and verified in my vehicle.

In 2015, in Tache alone -- which is not a large area, and not a lot of linear distance for the Manitoba-Minnesota transmission line; perhaps six miles -- I counted at the time 168 houses within that one kilometre. There is even more

now.

Let's talk about Hydro selection in photographing. Hydro vision portrays this empty farmland. It was one of the photographs you were shown during the virtual tour.

Turn and face 180 degrees: This is what you are going to see. The driveway on the ride, nearly under -- which will be nearly under the final preferred route conductors, basically what you are looking at is me facing directly where a tower placement could possibly go, right on the centre line of the right-of-way.

That driveway first crosses a pastoral creek, just before arriving here. This is someone's home, and it is a very nice home, and the people here take great pride in what they've done.

How about the golf course in La Broquerie? Hydro vision, approximate rendering of a tower hardly noticeable, off in the distance, as you can see by the blue oval highlight.

Here is a reality check. That would be one of the golf course's flag to hole, and that would be how close the tower would be at that location. And the scale is fairly close.

Let's discuss something else. I've heard many claims of the intactness of the Crown lands that we should be avoiding, because Manitoba Hydro says we have to do this; we have to keep those lands intact.

You heard already this morning, which was somewhat of a surprise to me, but somebody else discussed how intact this line is, in reference to some of the activities already in this area.

And this is nearly immediately adjacent of the eastern side of the wildlife management area, the Watson P. Davidson Wildlife Management Area. I'm standing on top of what's known as Piney Ridge, in the left photograph. You can see all the way to the horizon. It is not terribly high; it is maybe 75 feet above the surrounding plain. And it is a rather scenic spot; you can see for a long way.

One of the reasons why you can see for a long way, this is what you alluded to when you said there was approximately a 35-kilometre cleared clear-cut zone in this area. And I'm standing not even in the middle; I'm not even at the middle of it yet at this point. I'm still basically biased to the side that I'm looking at.

So you don't see the extent of it, and it goes to the horizon.

Is it intact? And by the way, these operations have existed, like I said, since my family was there in 1905, or earlier.

Is it continuing? Is it still a traditional fact? Yes, it is. Here is an example along the PR 210, from Woodridge, and along the road, you can see examples that forestry continues to be allowed in this area. As a matter of fact, it is one of the region's economic strong points, and even today, if you look, there is still licences being granted in select areas that have either been reforested or have enough existing standing trees to make it economically viable to continue logging processes in these areas. It is ongoing, and I don't think it is going to stop any time soon. So what are we preserving here?

Intactness of the Crown lands. Again, this is a photo, Google Earth. Not pristine, not protected from development.

This is the same clear-cut area. It begins -- even past this point, you can see there has been cutting and clearing in this area, too, and that's actually in the Watson P. Davidson

Wildlife Management Area. And I would like to specify: It is not a reserve. It is a wildlife management area. There is a difference.

And this clear-cut area expands past this point, and some of this area has been reforested already, so the clear-cutting extent actually went much farther than this.

So you can see -- this is the town of Sandilands. We are talking several -- well, it is a large area. It looks -- literally, it looks like its own environment.

I would also like to point out in this area, town sites and trails continue to expand, and as they expand they eat up forest. Sandilands and Woodridge, respectively, have doubled and more than quadrupled in size in the last 25 years. There is signs all over for new residential two-acre -- and thereabout, same area -- size lots being sold where there is right now parts of trees that were not part of the town 25 years ago.

The town is expanding. It is eating the forest. I don't think that is going to stop any time soon, whether the MMTP is there or not.

This is in Woodridge/Sandilands. It is not on any proposed route for MMTP, but it is just an

example; these are not pristine protected lands.

New areas of intactness in forest continue to be developed into residential building lots, like I said. And I will tell you this: From my drive through the area yesterday, more off-road vehicle tracks are present than any wildlife tracks.

This area is known as the off-road vehicle and snowmobile central of Manitoba. It's a recreational area. Everybody knows it as being this.

Let's take a look at some more intactness. Let's look at the intact precision forest that we have out there.

These wilderness trees seem to appreciate linear geometry. Nice straight roads, well-defined straight -- square edges, and they are even consistent in height. Hmm. I don't think nature put those there.

Let's take another look at the factors of intactness of the Crown lands. This is up near my neck of the woods. It is actually -- what you see here is in the -- on the left area of the photograph is the Manitoba-Minnesota preferred route, final route. The cyan line, that one, is

the existing 402F, running through the -- basically through Crown land.

And what you see here -- I will highlight the area that is affected.

This little square that I'm trying to draw with this pointer is existing resource mining. It is gravel and sand pits. And it actually goes further than what this image indicates, because a lot of the areas that were previously mined out are now covered with vegetation, and appear green on this image.

But at one time, not that long ago, this was also a gravel pit right there.

How do I know this? I went there yesterday. I took photographs. And these are not the only examples.

Just out of range of this photo, about where this would be, there is another huge gravel mining operation. Similar, there is an abandoned, even larger, gravel pit area known as Reynolds Ponds, in that area. The only thing is, there is new mines opening up, using the existing roads to access that area, just a little bit further to the east. It is not undisturbed, pristine land.

I don't think that will ever stop.

This is -- picture is taken, like I said, yesterday. I will give you where these locations were.

This is on the previous slide, the large area that I put a square on. This is just one pit location. There are perhaps maybe a dozen, maybe 18 pits in that area, individual little sites like this.

This is right next to the Watson P. Davidson Wildlife Management Area. This is an extent of this pit continuing, maybe, one mile further to the east of where I took this photograph.

There are some other current uses of intactness of Crown lands. Again, this is photos I took yesterday evening. It would be a good place if you, let's say, had a stolen vehicle you want to dispose of.

This is Fire Road 13. It is about one-half mile south of Dawson Trail, and perhaps three-quarters of a mile south of the Trans-Canada Highway. And this is a recent one, because it was still emanating heat when I took this photograph.

Now let's take a look at this one. Intact wilderness area of the Crown lands. Over here, I

would like to point out, this would be a good location to actually witness or watch the species known as the spotted flower print mattress in its natural grazing habitat.

Look at the little guy. Isn't he cute?

Let's take a look at another issue that I have. What about the EPRI-GTC routing methodology that we've heard so much about? Who makes the rules? Who decides what is important? Who assigns the numbers?

We've heard these answers. Hydro is pulling all the springs. EPRI-GTC is calibrated to Hydro's desires, will, and whim. Anyone who knows, as I do, about the proper processes of numerical decision-making systems will agree with this statement that I make now: EPRI-GTC is equipped with power steering. It easily goes any direction the driver chooses.

I could, and gladly would, continue pointing out the things that I found wrong with this proposal. That's not the -- this is only a few of the samples, but time does not permit, so I ask you: What do you believe? Who do you trust? Will the deception stop? Will you stop it?

The CEC's decisions will not only decide

the outcome of these hearings. The decision made by the CEC will determine if there is a place for me in Manitoba. Is there hope? Is there optimism? Is there opportunity? Faith in government, justice, equality, fair treatment, transparency and honesty?

My son is 15. I made him a recent promise: I would stick around until he was at least 18; he could decide for himself at that point. But the last few weeks have forced me into a new perspective. If I continue to witness a runaway, out of control, all-powerful entity abusing its control over two-thirds of Manitoba's economy, with demonstrated negligence and mismanagement, can I endure the future? I'm not convinced.

Thank you.

THE CHAIRMAN: Thank you very much for that presentation, and I do want to note that it certainly appears like you did an awful lot of work to prepare it. So thank you.

MR. BLONSKI: Thank you.

THE CHAIRMAN: A very thorough job.

Questions from the panel?

MR. GILLIES: Ian Gillies on the panel.

I would just like to ask a little bit about

that cut block that you showed east of the WMA. Is that -- we were talking about this this afternoon. Was that originally a burn area that was then salvage-cut? Or is that a pure logging operation that's cut that area away?

MR. BLONSKI: There are signs of both. Along the northern edge, it looks like it was a burn; in the central parts, it definitely shows -- indicates signs that actually it was a large clear-cut.

MR. GILLIES: Thank you.

THE CHAIRMAN: Okay. Well, thanks very much again for a very thorough presentation.

MR. BLONSKI: Thank you.

THE CHAIRMAN: All right. Our next presenter is Peter DeJong. And after you are seated, Cathy will ask you to affirm, and then we will get going.

For those who didn't hear the hockey game -- I assume that's the Pittsburgh/Ottawa game -- zero-zero. And what period, do you know? Do you know what period?

MR. DE JONG: I don't want to go into details.

THE CHAIRMAN: Okay. I think I will turn

it to Cathy here.

(Peter De Jong affirmed)

MR. DE JONG: Thank you. I wish you all welcome in coming out to La Broquerie.

First, a question for Reg. Do you have family living here? Because we have a lot of Nepinaks around here. I don't want to be a conflict of interest.

Anyway, I want to -- I'm a dairy farmer, and I'm just north here of town. And so many dairy farmers in this area, on the proposed route, we milk cows, that's my dairy farm, and I'm one of the largest dairy farmers in Manitoba. We have about 2,200 head of cattle. And as any other dairy farmer, we deliver quality milk, and that's what we like to do, and make a living.

And most important is our cows. We do anything for our cows. We work 24/7, seven days a week. When this all started, about three, four years ago, we thought, you know, it must be not true, going straight through La Broquerie, close to the French school, you know, affect a lot of people; why don't it go along the 606 and the route through the Crown lands?

Another guy who stand up right away up, you

know, with a sign, an invite for the older, wiser people to come forward, and they did. But now, tonight, I feel that I have to speak also on behalf of my cattle. First of all, they cannot speak; they can only complain.

As Theodore Roosevelt says, complaining is not working on a solution. So I try to work on a solution here.

I recent got an article from Minnesota, Wisconsin, a dairy article from a newspaper that I have a -- I'm a member on, and they face the same problems on the other side of the border with this power line, the dairy farmers.

And what the dairy farmer want is get relocated, is because the stray voltage of his cattle. Stray voltage of the cattle can have the same impact as on a human. The constant high voltage -- and I'm not an expert; the other speaker, I think he did a great job to explain the whole thing.

But if you permit it, I read a small portion of this article, and after my presentation, I will give the whole article.

The farmer says -- and the Nelson family farm ranch, first was somatic cell, that's just

quality milk, 2016, an average of 93,000. And that, I can tell you, 93,000 is in Manitoba one of the top -- top herds. So this is one of the top herds. Best quality of milk.

They have a rolling herd average of 26,000 pounds, and 3.9 butterfat, and 3.2 protein. Now, I won't go into the details, but if you are doing (inaudible) milk, that means you take the rest of the butterfat out. But most cows give 3.9 butterfat.

With over 500,000 volts -- that's the new line they propose here too -- the new line, magnetic field is expected to be five times greater than the current line. So we have another line close by, same as our farm, we have the same line close by.

Making stray voltage the centre of Mr. Lee's concern. That's the farmer.

I've had two consultants and a veterinarian come out to the farm since the line has come through. All of them agreed that the dry cow barn and the parlor will be too close to the line, and stray voltage will be a problem.

According to the Wisconsin law, if a transmission line is at least 100 kilowatts --

kilovolts, sorry -- and more than one mile long, then transmission owner offer the land zoned or used for agriculture purpose must be one of the two forms; a lump sum or an annual payment for for taking the easements for one year.

The landowner chooses which compensation to accept. So he accepted the compensation. Then he goes on that, Mr. Lee -- he bought -- he sold the farm to the Hydro company, because of the stray voltage concern. So he moved away.

Now, coming back to our line here in La Broquerie, my neighbour -- I think they have about 300 cows; I have another neighbour now probably with young stock, another 500 head. Mr. Wolfe and Mr. Fehr, altogether, I think we are talking about 4,000 head of animals.

Now this is just pure animal cruelty, if you go ahead with a line. Because we cannot bring our cows to Selkirk and have an interview -- you know, "How are you feeling today?"

But the quality of milk will be affected, and our milk will not be picked up any more. Because we have supply management, we have to standard our milk quality. A milk quality in Manitoba is one of the strictest in Canada. And

that is good, because you want to deliver quality milk. But if we go in a higher somatic cell, because the cows are stressed, and if they're standing on the floor, they're constantly doing like this -- it means there is stray voltage.

There was a study done before, and that somatic cell goes up, and then we can not ship our milk any more. So basically you are bankrupt. You know, bankrupt is not a shame, but I feel sorry for my animals; they come first. Bankrupt, I always said, this is being heard, terrorists are not born, terrorists are made.

So if you have angry beavers here, are they terrorists? You know, that's what I say. People are very nice around here, very common, very nice people; they always help everybody. But this coming on the life hood of local people -- we employ 40 people in La Broquerie and Marchand. We're one of the second-largest producers. Beside the dairy, I also own the water plant in Marchand, that gives the best water in the world; for eight years straight, eight years straight, we have the best water in the world. And going with a Hydro line straight through it, I don't know what effect it has on the dry lands, but this -- I talk about,

why you don't move over six miles?

And it is really, really sad to see that people don't understand that we care about our animals and environment. And our farm, Enterprise Louis Balcaen, that's the farm name, and Leaford Holsteins, that's also the farm name. Our Enterprise Lous Balcaen, the farm is over 80 years here, so it is a long-established farm. I took over the farm from Mr. Balcaen 18 years ago.

And we really enjoy La Broquerie. La Broquerie is also -- maybe the history in town, we were the first Metis hockey team, 45 years ago, win the Provincial A's. We are a very proud town and I hope your commission consider to move to the Crown land, especially for the health of all of the people in La Broquerie, school children -- it goes very close to the French school -- and all animals affected.

Thank you very much, and I'm open for questions.

THE CHAIRMAN: Thank you for your presentation, and also for getting us to know your business and the dairy business a little better than we do. Thank you.

All right. Any questions from the panel?

MR. GILLIES: Ian Gillies here.

We've heard in previous testimony about EMF and stray voltage, but in a general, high-level way, aggregation of many, many studies, but not specifically about the effect of stray voltage on cattle or dairy operations. Do you have specific information on the connection between high voltage or stray voltage and dairy operations?

MR. DE JONG: Good question. There is many studies done, even by Manitoba Hydro and myself. In Kleefeld, there was a farm where they moved over the Hydro line, away from the dairy barn. After four, five years testing, the Hydro decided to move away the Hydro line from close to the barn to a half-mile away. And that's just done by Manitoba Hydro itself.

And there is many other studies done in the U.S. But I don't have a degree in agriculture, honestly, Ian, and -- but I know the studies are done, and they all confirm that stray voltage has a direct impact on the quality of milk and the behaviour of the animal. And also abortions, more abortions, more -- you know. So abortion is cows get pregnant and something creates something that they will abort, and as a cow abort, that means

that you have no -- as a farmer, no income.

It is also animal cruelty, and I think here in Manitoba there is strict laws on animal cruelty. If you know your animals are hurt or stressed, there is a law that you maybe can be fined.

So I don't know how far it can go, but it can go pretty far in Manitoba. And it is good that we take care of our animals.

MR. GILLIES: Just so I get the actual reference, did you mention the town of Kleefeld?

MR. DE JONG: Yes. It was a farm on Blatz Road, actually three farms, and one farm they moved the Hydro pole.

MR. GILLIES: Thank you very much.

THE CHAIRMAN: Just one more follow-up. And how long ago was this done? Do you know?

MR. DE JONG: I think it was about seven, eight years done. So not that old.

THE CHAIRMAN: Yep. And just one question -- did you have any questions?

MR. DE JONG: Where is the coffee? I don't know where the coffee is.

MR. NEPINAK: I just wanted to know more about the family members you were talking about.

MR. DE JONG: Good hockey players. And mostly the son and the dad are in the penalty box. We are good friends with them.

THE CHAIRMAN: I did play a lot of hockey at one time, and I had the misfortune or good fortune of playing against hockey players from here, so I know what you are talking about.

Just one last question, just a clarification: How far from your farm buildings will this line be?

MR. DE JONG: I own seven miles of land along Duhamel Road, so that's 386. And my family owns three farms, so they're all in a one-mile range, less than one mile to the one-mile range.

THE CHAIRMAN: Okay. Thank you very much for your presentation. It was very educational for us. Thank you.

Yes, you can leave that with Cathy.

MR. DE JONG: Thank you so much.

THE CHAIRMAN: Thank you.

All right. The next speaker -- I hope I'm pronouncing this right -- is Bouchard.

(Hubert Bouchard sworn)

MR. BOUCHARD: I'm not a landowner, so I will speak to something else. First I would like

to commend the four speakers that came forward with excellent presentations, and I do hope that the Commission will take a close look at those. So thank you to the four previous speakers.

I'm not a landowner, as I said, but my son owns the land. We have been camping on that land for 22 years, and I was hoping to get another 20 years at least.

From our campsite, it will be about a quarter-kilometre, we will be seeing that line. All we have to do is turn our chair to the west, and we will see that. And like one of my friends said, they came to the campsite, and they said, in French, (French). So it is a nice place.

And I'm speaking against that line for that reason, along with all of those -- that presented before. So I do not approve of the line. Move it east, I would say.

And the only way I could accept that that line would go through would be if they kill -- that line would kill mosquitoes, wood ticks, and flies.

So thank you very much.

THE CHAIRMAN: Thank you very much for that presentation. You know, some of these late-night

talk shows, I think, could use you. Thank you.

Is there other -- or is there anyone else who would like to make a presentation? We did have a list of six; all six have spoken. Is there anyone else? No? Okay.

I did want to add, just by way of information, as I mentioned earlier, we will be back here not tomorrow, but on Saturday morning, at 9:30 we'll be starting. We will be here all day, until -- I believe it's 4:30. So there will be a break in there around noon, I guess, for lunch, but other than that, we will be here all day.

So we would welcome to hear from any of you who didn't speak this evening, or neighbours or friends who would like to come out, or other people in the area. So we are open to all of that.

And I did want to add that there will also be a short presentation -- I believe at the start of the day, but he will stay for the whole day -- from a fellow by the name of Bill Bailey, who is an EMF expert, electromagnetic field expert. He will be here on Saturday, so if any of you are interested in finding out more about that, there

will be a person here.

All right. So with that, I will call it an evening. I will ask one more time: Anybody else?

Okay. We will call it an evening, and we will be back here Saturday morning. Thank you.

(Adjourned at 8:35 p.m.)

OFFICIAL EXAMINER'S CERTIFICATE

Cecelia Reid and Debra Kot, duly appointed Official Examiners in the Province of Manitoba, do hereby certify the foregoing pages are a true and correct transcript of our Stenotype notes as taken by us at the time and place hereinbefore stated to the best of our skill and ability.

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