MANITOBA PUBLIC UTILITIES BOARD

re:

MANITOBA HYDRO

2023/24 and 2024/25

GENERAL RATE APPLICATION

Hearing

Before Board Panel:

Robert Gabor, KC - Board Chairperson

Marilyn Kapitany - Board Vice Chair

Carol Bellringer - Board Member

Hamath Sy - Board Member

George Bass, KC - Board Member

HELD AT:

Public Utilities Board

400, 330 Portage Avenue

Winnipeg, Manitoba

May 23rd, 2023

Pages 1137 to 1377

APPEARANCES

Bob Peters	)Board Counsel
Sven Hombach	)
Brent Czarnecki	)Manitoba Hydro
Odette Fernandes (np)	)
Deanna Hiebert (np)	)
Gwen Muirhead	)
Byron Williams	)Consumers Coalition
Chris Klassen	)
Antoine Hacault	)MIPUG
Melissa Beaumont	)
Carly Fox (np)	)Assembly of
Emily Guglielmin	)Manitoba Chiefs
Markus Buchart	) MKO
Thomas Reimer (np)	) GSS and GSM
Robert Walichnowski (np)	) customer classes
William Haight	) Daymark Energy
Bradley McClelland	) Advisors

Table of Contents

	Page No.
List of Exhibits	1140
List of Undertakings	1141
ASSET MANAGEMENT & CAPITAL PANEL:	
HAL TURNER, Affirmed	
JIM PAWLUK, Affirmed	
KRISTA HALAYKO, Affirmed	
ALASTAIR FOGG, Affirmed	
CYRIL PATTERSON, Affirmed	
TANIS BRAKO, Affirmed	
SARAH VINE, Affirmed	
Examination-in-chief by Mr. Brent Czarnecki	1151
Cross-examination by Mr. Bob Peters	1213
Cross-examination by Ms. Emily Guglielmin	1342
Certificate of Transcript	1377

LIST OF EXHIBITS

EXHIBIT NO.	DESCRIPTION	PAGE NO.
MH-32	Panel qualifications and CVs from this morning which they filed	1276
MH-33	Asset management direct evidence presentation from Manitoba Hydro	1277
MH-34	AMCL Sarah Vine's maturity assessment summary presentation	1277
MH-35	Response to Undertakings 3, 5, 6, 7, and 8	1277
PUB-24	2017/'18, '18/'19 GRA	1340

LIST OF UNDERTAKINGS

NO.	DESCRIPTION	PAGE NO.
9	Manitoba Hydro to advise whether Keystone Pipeline compressor stations can be fueled by natural gas as well as electricity	1218
10	For Manitoba Hydro to explain negative valued projects being in C23	1271
11	Manitoba Hydro to provide a time line of when they anticipate the existing assets to fail and when the new assets will come on.	1319
12	Manitoba Hydro to confirm the amount, debt guarantee fee and the water rental fee particularly the debt guarantee more broadly or on an overall basis versus on an asset basis.	1320
13	Manitoba Hydro to provide a list of communities they're partnered with.	1346
14	Manitoba Hydro to provide a list of supported languages.	1352

LIST OF UNDERTAKINGS (CONT'D)

NO.	DESCRIPTION	PAGE NO.
15	Is Manitoba Hydro representing the median family income in Manitoba where we know 50 percent of families earned less than sixty thousand (60,000) and 50 percent earned more than sixty thousand (60,000)	1370

--- Upon commencing att 9:03 a.m.

THE CHAIRPERSON: Good morning, everyone. I hope you all had a very nice long weekend.

Mr. Peters, would you like to give us the overview?

MR. BOB PETERS: Yes, thank you. Good morning. Good morning, all. Today, Manitoba Hydro will be presenting their Asset Management and Capital Panel, as we've called it. Those introductions will -- - will follow.

And I hope included in those introductions is my former colleague, Ms. Muirhead, introducing herself, or someone will introduce her, but I welcome here to the hearing room. She's -- she's assisting Mr. Czarnecki.

After the panel provides their evidence to the Board by way of slide presentation, I will start the questioning and expect to be all of the morning.

We'll then get into the afternoon when the Interveners will, amongst themselves, determine their order. Their times have been allotted based on previous requests, and we see this panel going into tomorrow, at least in the morning.

And in terms of what happens after that, we're just still trying to finalize, and we know that there will be evidence from Midgard that follows. And whether it's tomorrow or Thursday, that'll be determined presumably later today, after they arrive in Winnipeg.

So, Mr. Chair, without further ado, I'll ask you to turn it over to Mr. Czarnecki and Ms. Muirhead, and they can indicate how they'd like to proceed.

I will indicate that all of the witnesses before you, with the exception perhaps of Mr. Turner, will need to be sworn on the public record. Thank you.

THE CHAIRPERSON: Thank you.

Mr. Czarnecki...?

MR. BRENT CZARNECKI: Good morning, Mr. Chairman and Panel members, ladies and gentlemen.

Thanks for the reminder, Mr. Peters. First order of business, directly sitting behind me is Gwen Muirhead who's a colleague at the Manitoba Hydro law division. And what may have been Fillmore's loss is our incredible gain.

Mr. Chair, because of the amount of people we have sitted (sic) before you, what I would

propose is the witnesses that will be testifying today just introduce themselves first and have a brief description of their role as to what they're going to be testifying to for the Panel. And then we could have them sworn in.

And then I would introduce the rest of the back row so we can sort out who's who in front of you. And I'll say I'm very impressed the Tuesday morning after May long weekend we do have full attendance with us here from Manitoba Hydro.

So with that, if -- with your indulgence, I would start to my immediate left and let Mr. Fogg introduce himself, and we'll carry on down the path.

THE CHAIRPERSON: Yes. Thank you.

MR. ALASTAIR FOGG: Morning, everyone. My name is Alastair Fogg. I'm a professional accountant and professional engineer, and I'm the corporate controller at Manitoba Hydro.

My role in this panel will be in relation to the capital expenditure forecast and budgeting processes around capital. Thank you.

MR. HAL TURNER: Good morning. My name is Hal Turner. I'm vice-president of asset planning and delivery and a member of Manitoba Hydro's

executive team. I had the pleasure of being here last week, so two (2) weeks in a row for me, which is great.

I'm a mechanical engineer registered with Engineers of Manitoba. I started at Manitoba Hydro in 1995 and lead the asset planning and delivery business unit. And within asset planning and delivery, we're responsible for integrated planning, asset management, project management, engineering and construction for our generation, transmission, distribution, and natural gas assets.

MR. JIM PAWLUK: Morning. My name is Jim Pawluk. I am the director of asset management. I'm a registered professional engineer in the Province of Manitoba and have a degree in mechanical engineering. I also have a certificate in asset management from the Institute of Asset Management.

I've been at Manitoba Hydro for nine (9) years. I will be, from this panel, responsible for some of the asset management topics and also projects. Thank you.

MS. KRISTA HALAYKO: Good morning. My name's Krista Halayko. I'm currently the manager of the Asset Management, Strategy, and Planning Department of Manitoba Hydro. I am a registered

professional engineer in the Province of Manitoba.

I have bachelor's and master's degrees in engineering, civil engineering, and I have a certificate from the Institute of Asset Management. I'm also Manitoba Hydro's representative on the CEATI, Asset Management Interest Group, which is an international group of over -- over forty (40) utilities, for the collaboration and sharing of best practices.

I'm also a board member at the Institute of Asset Management North America's Women and Asset Management Board. This is my first time testifying at a General Rate Application hearing.

I've been with Manitoba Hydro for twenty-five (25) years and led the Corporation's dam safety group prior to coming to asset management. I will be presenting today on asset management.

MS. SARAH VINE: Hi. My name is Sarah Vine. I'm the director of asset management for AMCL Canada. I've been working in asset management for over thirty (30) years.

My -- I have an MBA, a master's degree in engineering. In the UK, I'm a chartered engineer and a chartered water environmental manager. I'm a registered asset management professional and a fellow

of the Institute of Asset Management. And I lead the assessment team within North America.

I've spent many years doing rate case applications and -- and verification in other jurisdictions where we -- we act as an independent assessor of rate filings rather than on the testifying front, so this is a slightly -- slightly different way around of doing things for me.

(BRIEF PAUSE)

MR. CYRIL PATTERSON: Good morning. My name is Cyril Patterson. I am the director for distribution operations and maintenance for all of rural Manitoba.

My team primarily deals with the customers on a daily basis. We're the outage and emergency responders. We do all of the frontline services, line locating, maintenance on the distribution, both electric and gas grids. And we also do all of the permitting for inspections.

We're a very busy team. And I'm here today to provide evidence to the state of the current distribution assets. Thank you.

MS. TANIS BRAKO: Good morning,

everyone. My name's Tanis Brako. I'm director of energy service advice and product development. I've been with the Company for almost seventeen (17) holding a variety of roles throughout the Corporation.

My participation in this Panel is to bring forward information related to our customers, specifically customer research, bill affordability, and customer service.

(BRIEF PAUSE)

MR. BRENT CZARNECKI: Thank you. Mr. Chair, those are all the witnesses. So, if I could have them sworn in by Ms. McMillin at this time, that would be appreciated.

(BRIEF PAUSE)

THE CHAIRPERSON: We're going to do a group swear-in. Just...

MANITOBA HYDRO ASSET MANAGEMENT & CAPITAL PANEL:

SARAH VINE, Affirmed

KRISTA HALAYKO, Affirmed

JIM PAWLUK, Affirmed
ALASTAIR FOGG, Affirmed
CYRIL PATTERSON, Affirmed
TANIS BRAKO, Affirmed
SARAH VINE, Affirmed

MR. BRENT CZARNECKI: And lastly, Mr. Chair, I will refer to my cheat sheet and introduce the back row, the support --

THE CHAIRPERSON: Certainly.

MR. BRENT CZARNECKI: -- support folks.

THE CHAIRPERSON: Thank you.

MR. BRENT CZARNECKI: So, starting from the far left is Mr. Jordan Sylvester. And he is the section head of asset management strategy. Beside him is Christoff (phonetic) Mazur. And he is the manager Asset Information and Risk Management Department manager.

Beside Christoff is Aaron D'lot. And he's section head asset investment planning. Beside Aaron is Coralee Crowe and she is Business Solutions Department manager.

Beside Ms. Brako is Sandra Amorim Dew and she's the manager of financial advisory services.

And beside Ms. Muirhead is Colleen Galbraith and she is the Manager of Customer Energy Services. And beside Ms. Galbraith is Ms. Meg Kendall and she is Manager, Customer Data, Analytics, and Research.

THE CHAIRPERSON: So we can say they're from pillar to pillar.

MR. BRENT CZARNECKI: Perhaps for the first time, Mr. Chair, we -- we can use that reference.

One last item of housekeeping, we did file some undertakings this morning and the CVs for the witnesses and the direct presentations that are in -- in front of you.

I'd intend to mark them as exhibits after the break, once I've had an opportunity to compare notes with the PUB.

THE CHAIRPERSON: That's fine. Thank you, Mr. Czarnecki.

MR. BRENT CZARNECKI: So with that, we're ready to proceed with our direct testimony.

THE CHAIRPERSON: Please proceed.

EXAMINATION-IN-CHIEF BY MR. BRENT CZARNECKI:

MR. HAL TURNER: Good morning. Before I speak to some of the topics that this panel is going

to speak to, I just would like to take a moment for recognition.

So in our leadership meetings at -- in Asset Planning and Delivery, we start every meeting with recognition. And it's an opportunity to recognize some of our co-workers for the great things that they do.

And so, I was here last week and I was watching Ms. Schubert. And she is unbelievable. And she reminded me of Wayne Gretsky. And so they're a famous quote. You know, Wayne Gretsky was talking to his dad, Walter, and he said, Dad, do you have any advice? And he said, Son, go where the puck is going to be; not where the puck is.

And Ms. Schubert somehow gets documents up before counsel even references them. So Ms. Schubert, you are the Wayne Gretsky of what you do. So thank you.

Manitoba Hydro is an asset intensive organization. We have over $29 billion in assets. Our electricity is generated in sixteen (16) hydroelectric stations and one (1) thermal generating station. Most of the electricity, roughly 4,000 megawatts, is generated in northern Manitoba far from where the largest loads are in southern Manitoba.

The HVDC system transmits this power from the north to the south.

We have over 11,000 kilometres of transmission lines and 75,000 kilometres of distribution lines. And there are over 1 million wood poles installed in Manitoba.

As we discussed last week, in addition to providing sufficient energy for Manitobans, in most years our system has excess electricity, which we export to neighbouring markets. These exports provide significant revenue which help keep -- which helps keep electricity rates low. Sorry, next slide, please.

Many of these assets are reaching a point in their life cycle where they need to be replaced or refurbished. The impacts of this can be seen in the performance of the generation transmission, HVDC, and distribution systems.

We are experiencing a decline in the availability of our generating in HVDC assets, increased customer outages, and increase outage duration.

Our customers have told us that reliability is important to them. You heard from some of our customers last week regarding the impact of

outages that -- have on them and that they are noticing a decline in reliability.

We have also through -- sorry -- we have also heard through our research that customers want a balance between low rates and continued or improving reliability.

I would like to draw the Board's attention to tab 7, Appendix 5, of our Application. We performed an analysis on the population of our assets and determined that we need to increase our annual capital sustainment investment by over $200 million a year.

We are not proposing to increase it in one (1) year; rather, we are proposing to increase it gradually until approximately 2032, to smooth the rate impact of the increased capital spending.

This increase is necessary and prudent. Without this increase investment, our ability to provide our customers with the safe and reliable electricity they expect will be impaired.

The under investment and resulting higher rate of asset failure can be seen the amount of reactive maintenance our staff are performing. This high amount of reactive maintenance is negatively impacting our ability to perform preventative

maintenance, which will eventually lead to more asset failures.

To reverse this trend, we need to increase the sustainment investment in our assets.

For the majority of our assets, it is most effective to replace or refurbish them proactively versus operating them until they fail. Proactive replacement minimizes outage costs, impacts the customers, and the risk of increase cost and safety environmental impacts due to collateral damage from a failure.

You will hear about our progress in maturing our asset management system. The changes in our business model and how we are organized has significantly improved our ability to improve the asset management system.

We will speak to our short- and long-term planning processes. We will provide you with a high level review of the Capital Expenditure Plan and compare it to CEF16.

Lastly, we will touch on bill affordability and some of the ways that we are interacting and serving our customers.

This concludes my opening comments. I will now pass the mic over to Mr. Pawluk. Thank you.

MR. JIM PAWLUK: Thank you, Mr. Turner. My name is Jim Pawluk and I will be taking on the next portion of our presentation.

Manitoba Hydro is an assets intensive organization and has approximately $29 billion in book value for our assets.

The replacement cost is many times that. To provide some context, this equates to a range of approximately two (2) million assets that we are managing.

The assets are located throughout the Province of Manitoba and there is a mix of assets that include relatively simple assets, like streetlights, to complex control systems.

In order to meet the needs of our customers, it is imperative that Manitoba Hydro's assets are available to provide the energy needs of Manitoba.

Today, some of Manitoba Hydro's assets are over a hundred (100) years old and they are still providing value to our customers. Next slide, please.

As mentioned, some of Manitoba Hydro assets are over a hundred (100) years old. The performance of Manitoba Hydro systems are declining and the age of some of our assets are contributing to

this decline.

Increasing investments in Manitoba Hydro's assets is required to maintain the service and reliability that customers have come to expect and help avoid costly outages in the future.

In the graphic on this slide, within the area that is circled, there has been over 3,700 kilometers of underground cable installed and still in use today.

At the current intervention of -- for this asset, some of these cables will fail and possibly impact customer reliability. The data indicates that more investments are required for underground cables to balance reliability risks with cost and performance.

This is one example. But there are many other assets that were installed in this same area and are still in use that require further investments as well to sustain our systems' reliability and availability. Next slide, please.

As Mr. Turner mentioned, Manitoba Hydro's assets are located throughout our province. I want to bring your attention to the fact that 75 percent of Manitoba's generated electricity is in northern Manitoba and delivered to major customer

centers in southern Manitoba and transmission systems linked to Saskatchewan, Ontario and the United States via the high voltage direct current system made up of Bipoles I, II, and III.

Bipole I and II's performance has been declining and investments are required to deliver the energy that is required to service the domestic demand, which would support reliability, and export markets, which would support revenue to help keep rates low.

The system needs a combination of the Bipoles to be available in order to deliver the northern generation to the southern part of Manitoba.

One Bipole on its own can only deliver about two thousand (2,000) megawatts, stranding approximately two thousand two hundred (2,200) megawatts of generation. If only one Bipole is available during high energy demand, this could lead to some customers not having power. Next slide, please.

This slide just shows a couple examples of failures that we are seeing in our assets due to age. On the first slide on the left, is a picture of a transmission line KH-38. It's a hundred and thirty-eight (138) kilovolt line from Kelsey to Oxford House.

This structure has a crack that requires repairs. This is an example where corrective maintenance is required on an aging asset, as opposed to just doing planned maintenance.

On the picture to the right is an example of a pole fire that happened in Winnipeg. It's another example of an asset that required corrective maintenance. This is the type of work that takes resources away from planned maintenance, as the repair cannot wait. Next slide, please.

The slide that's in front of us right now shows the ten (10) year trend of the hydraulic weighted availability of our hydraulic generating units.

Overall availability is declining and forced outages are increasing on our generating system. This is attributed to assets reaching the end of their economic life.

The weighted availability factors in the capacity of each specific unit, except larger units have more influence on these factors than smaller units.

What we are seeing, year over year, is a decrease in availability of our aging assets and need more and longer outages, to perform reactive

maintenance, complete capital investments, or both.

The one exception is between 2020 and 2021. Manitoba Hydro cancelled planned maintenance during COVID, which increased the hydraulic availability over that time. This may result in decreased availability in future years, as we try to catch up on this deferred work.

Furthermore, it can happen that, during a planned outage, we discover that condition of our assets is worse than expected or we find issues, outside of the maintenance work that must be addressed before we can turn an asset to service.

For example, during a planned work on Limestone Unit 10, it was discovered that the generator rotor poles were in such poor condition that the unit could not safely be returned to service. Addressing this issue extended the outage and availability of this unit by four (4) additional months. These type of occurrences are on the rise and one of the primary drivers is the age of our assets. Slide, please.

This slide shows the trends for the last 16 years of bipole availability. The availability of Bipole 1 and, particularly, Bipole 2, has declined in recent years. This is attributed to

assets -- asset age reaching the end of their economic life.

The three (3) bipoles provide the means to transmit generation from the lower Nelson stations to southern Manitoba.

Since 2018, nine (9) forced outages occurred on Bipole II that were caused by asset deterioration. The forced outages ranged from days to several months. Some instances had serious safely concerns for site staff.

In August 2022, an HVDC pole was forced out of service due to inadvertent closing of a switch that occurred as a result of tear -- deteriorated cable insulation, leading to a short circuit.

Equipment in Bipole I and II is older technology and combined with the complexity and lead times for component replacement, our modernization of these assets could take years. If there is a catastrophic failure of the bipoles, it would take years to either replace the capacity with generation in southern Manitoba or replace major HVDC components.

For example, there was a failure on a high-speed switch that has taken two (2) years to have the switch delivered, so it can be installed. This is just one of many assets in the high-voltage direct-

current system. Slide, please.

There has been a significant increase in outages caused by equipment failure. Just to clarify, an outage refers to a piece of equipment being temporary (sic) out of service and causes one or more customer interruptions in this case.

Equipment failures have doubled in the last 12 years and this is only failures that cause customer interruptions. There have been many more equipment failures that did not cause customer interruptions that are not included here but are required for the operation of the system.

Manitoba Hydro estimates that due to equipment failure that an additional 5,000 customer interruptions have occurred year over year between the years 2012 and 2022.

These 5,000 customer interruptions equate to approximately four hours of interruption duration per customer. Manitoba Hydro considers this increase to be of material impact. Next slide, please.

For customer reliability trends, I just want to ident -- identify a couple of the acronyms. So, you will see there is SAIDI and SAIFI.

So, SAIDI stands for System Average

Interruption Duration and it equals the sum of all customer interruption durations divided by the total number of customers served.

For SAIFI, which stands for System Average Interruption Frequency Index, it's the total number of customer interruptions divided by the total number of customers served.

Customer interruptions refer to a customer that is not receiving service due to an outage. So, when a pole transformer fails, and four (4) customers are impacted, there would be one equipment outage that caused four (4) customer interruptions. The lower these numbers are, the better the reliability. The slide shows a trend over the past 14 years, with a five-year running average use per data points. Overall, the trend is indicating the decline in the performance for our customers. Next slide, please.

The graph on this slide provides detail on the accumulated distribution reactive work order notifications created versus the completed work orders between 2015 and 2023. It is hard to make out, but the 'X' axis is broken down into yearly quarters. The bottom green and blue bars represent the notifications created and completed within each quarter.

The trend shows a growing gap with our ability to manage the reactive work load, and this is being driven by the age of our assets. The backlog of work is estimated to be 385,000 hours. The work is broken down and prioritized all the way -- sorry, the work is prioritized between critical work and low work, and they have different response times required. Next slide, please.

During the hearing last week, TransCanada pipeline presented this graph and it demonstrates the pain some of our customers are feeling. As a result of declining reliability when compared to other providers on the Keystone System. This is an example of how declining performance of aging assets are impacting our customers.

This completes my portion of direct evidence. I would like now to turn it over to Ms. Brako.

MS. TANIS BRAKO: Thank you, Mr. Pawluk. So, the balance between low predictable rate increases and ensuring system reliability is not just a Manitoba Hydro priority, it is also something we hear from our customers direct -- directly, as we just heard Mr. Pawluk speak to relative to our customer Trans -- TransCanada Energy.

We're com -- committed to continuously engaging with and learning from our customers. This is foundational to Strategy 2040 and how we will continue to meet our customer needs in the evolving energy landscape.

Through these engagements and research, we are hearing that customers are asking for a balanced approach. For both the 2019 Customer Value Perception Study and the 2022 Lager (phonetic) Reputation Study, we are hearing that low rates are important while balancing the need for maintaining or improving reliability.

These survey findings are further validated through written submission provided directly from MIPUG, shown here on this slide, as well as from our industrial customers, Canadian Kraft Paper, Gerdau, TransCanada Energy, ChemTrade, and Maple Leaf foods and their presentations of how outages can negatively impact their operations.

I'll also share that when my team has conversations with new proponents looking to locate in Manitoba, that our reliability is a factor in their decision-making.

What we are also learning from our existing customers is that reliability matters to

their operations and they are telling us that it has declined compared to other jurisdictions for which they operate.

This is an important factor we must consider in this application relative to attracting and retaining business in Manitoba to support economic development in our province.

So, Ms. Vice-Chair Kapitany, you asked us a question in an earlier policy panel relative to how information was presented to customers in the trade-off questions about reliability and rates. So, I'm going to address that question here right now.

So, the specific survey questions and instructions for the two (2) residential customer surveys, again, the customer values and perception study and the Lager Reputation Study, have been shared in Information Requests from the Coalition.

In both studies, no dollar values or reliability sta -- statistics were offered as background. Instead, general terms about lower rate, decreased reliability, and reliability of products and services were used.

Based on these findings, we have indications of how customers want us to proceed, with balance. This is further validated by commentary from

our commercial and industrial customers.

As you can appreciate, reviewing this application, Manitoba Hydro's business is complex. And to ask customers to understand these complexities becomes quite challenging in survey questions.

Further, asking customers to solely trade off rates and reliability doesn't consider other important aspects such as customer service or environmental stu -- stewardship that, of course, is important to our customers.

So, we hope this helps further clarify that the existing research completed and some of the complexity of expanding the approach to be specific to dollar amounts or reliability metrics. So, over to you, Ms. Halayko.

MS. KRISTA HALAYKO: Thank you, Ms. Brako. Asset Management is a planning function that uses processes, people, and technology to find an appropriate balance of cost performance and risk. As cost is always desirable -- low cost is always desirable, this can be stated as balancing performance and risk at the lowest life-cycle cost, or more simply, maximizing value.

The relationship between performance and cost, or rather the tradeoff between the two (2)

is more straightforward to conceptualize. But, it misses the critical consideration of risk, which can include risks to the environment and safety of the public, and safety of our employees. Next slide, please.

As Mr. Turner and Mr. Pawluk noted, our assets are aging and require intervention to avoid degradation in system performance, and also to meet customer expectations.

Our current challenge of a wave of aging assets and limited resources is not unique in the industry. It requires us to become more coordinated and rigorous in our processes so that we can get the maximum value for every dollar spent, and this is asset management.

Still, with millions of individual assets all over the province, this is no small feat. Decisions must be made by -- while being mindful of our constraints which include available funds, skilled resources, and the number of outages that we can take.

Obtaining maximum value is the goal. Our method for understanding the value of investments, our Corporate Value Framework, will be discussed in a subsequent slide.

At a high level, assigning value to a

given asset investment requires us to understand the risk and risk trends that affect that asset or asset system.

As an example, several of our hydraulic generating stations were built in close succession approximately sixty (60) years ago now. The generators are starting to show some signs of end of life, like cracking and degraded test results.

So we ask ourselves: What are the impacts of failure? Which impacts do we most want to avoid? When do we act to renew these assets? Which units do we prioritize? And does it make sense to renew the supporting infrastructure at the same time?

An asset management system aims to collect the appropriate risk and constraint inputs in order to make these optimal decisions. Next slide, please.

We have been making good decisions about our assets in Manitoba Hydro for several decades, and this has given us the good reliability and low rates we have become accustomed to. We recognize, though, that we still have work to do.

While continuing to manage our assets -- excuse me -- over the past years, we have also focussed on building a strong foundation for an

enterprise asset management system at Manitoba Hydro.

This foundation building that we've undertaken has included creating an asset management policy, refinement of our Corporate Value Framework, creation of a Strategic Asset Management Plan, creation of a risk management -- asset risk management framework, refining our long-term planning process, and creating an organization that -- organizational model that was restructured around an Asset Management Functional Model.

As we went about our asset management foundation building, it became evident that the progression was limited, with separate asset management groups embedded within the operating units of transmission, distribution, and generation.

By harmonizing the asset management functions in one (1) division, all critical asset management staff are now together and organized by asset management subject area. This allows for consistency, avoids duplication of our efforts, and allows for building a single centre of expertise.

Within the Centre of Expertise, Manitoba Hydro has assembled a team of asset management professionals and has committed to formally training them in the discipline of asset management.

All key members of the team hold either an Institute of Asset Management certificate or diploma or both.

Team members were chosen for their expertise, and some are subject matter experts on specific asset classes. Some are experts in maintenance engineering, project management, accounting, and risk.

Members of the division are accepted industry experts as well who have authored best practice documents for industry groups.

At the end of this presentation, you will hear Ms. Sarah Vine to my left present on the findings of her maturity assessment that her company, AMCL, undertook in 2022. Next slide, please.

It's important to understand the life cycle of an asset class when we're making decisions. In this graph, the blue line is the annualized replacement cost, so for every year you own an asset, this value goes down.

If you own something for ten (10) years and it costs ten thousand dollars ($10,000), then your annualized cost is a thousand dollars ($1,000) per year.

Many would think that if you keep an asset for the longest possible amount of time, until

asset failure, this would be the minimum cost of ownership. Then it would appear that you had gotten the most value out of your asset.

However, there's other costs that we have to keep an eye on beyond just replacement capital costs. The yellow line represents operations and maintenance costs which increase with the age of the asset.

The green line represents risks that can occur in the event of an asset failure, and these could be safety, environmental, or even financial like the inability to generate power. And these risk costs can grow rapidly as an asset ages.

The red line represents total cost which is the sum of the annualized capital cost, risk cost, and operations and maintenance costs. And it's this total cost that we use when we're making decisions on timing of asset interventions.

As time goes on and you are past the optimum intervention time, the risks and operations and maintenance costs go up considerably.

In the example of a wood pole, letting them fail and responding to fix them when they fail is not optimum. This strategy would mean that there would be an outage every time a pole failed, and this

represents a risk to reliability. There's also a risk of a safety incident or environmental incident at this time.

In addition, mobilizing crews several times to repair poles is much less efficient than planning the replacement of a whole line.

Whole-life cost models like the ones shown in this slide allow risk-based decision making, and while it may appear that we're leaving life on the table by replacing an asset before it actually breaks down, actually this is often the most prudent. Next slide, please.

I'll now use an example of a car in a whole-life cost model. In our example, when we go to purchase a car, we would ask ourselves questions like Are we using this to get ourselves to work every day, or is it to tow our boat on the weekend, or is it both?

How important is reliability? Do we need the car every single day for our job? And how important is safety? Maybe a teenager will be driving this car to get to school. Is fuel mileage important because we'll be driving a lot? And of course a budget always plays a critical role.

The next phase of our car's life after

we purchase it is operation and maintenance. During this phase we'll have recurring costs like gas or electricity to operate the car, oil changes and other maintenance to keep it in a state where it can perform its function. Maintenance really is the management of degradation.

At some point we'll need to decide on the future of our car. That decision will be informed by the data we've been collecting like the age, the mileage, and the condition of key components, but also our personal risk -- risk threshold.

If our need hasn't changed, then we'll probably start considering whether the best choice is for us to go ahead with a major repair or if it's time to replace the car.

It's much easier on us if we make these considerations ahead of time and proactively before the car fails. A car that's outright failed and no longer runs means that we need now to make reactive decisions, and that might have some serious impacts.

The failure of the car might be a safety incident. We might have to live without a car till it can be repaired or replaced. And in today's climate, if we need a car urgently, it may cost more and we might have to buy what's available and might

not quite meet our needs. It's better to be proactive and plan. Next slide, please.

Our Grand Rapids Unit 4 Project is a real-life example of what we just considered in the car analogy, and how proactive investment is the preferred.

At Grand Rapids Unit 4, we have observed cracking on all turbine blades. It's hard to see from the photo here, but the cracks are in the steel that is almost 8 inches thick.

We're taking costly outages every two (2) to three (3) years to repair these cracks, and if this is allowed to progress further, part of the blade could fall out -- fall off, and this would be a catastrophic failure.

The planning of this investment is important, and we want to be proactive. The outage length, even for a proactive replacement, is almost twelve (12) months, and since this is a large unit, the total lost revenue of not having this unit generating electricity is $20 million.

If the runner has a significant crack or a catastrophic failure in service and we have to shut it off until it can be fixed, the outage will be much longer, and we'll have to order a replacement

component and hire a contractor in the meantime.

The outage will be $30 to $60 million, which is an additional $10 to $30 million. And not only that, but in a run-to-fail situation, there could be an oil spill directly into the river as the hub of this turbine holds 7,500 litres of oil. And there could also be costly collateral damage to other components. Next slide, please.

At Manitoba Hydro, we use the Corporate Value Framework to understand and quantify the value of potential investments. It allows us to determine and compare the value of investments, determine when we execute an investment, and we can also assess alternative approaches to a single need.

There are twenty-six (26) unique value measures in our value framework. The Corporate Value Framework is aligned with our corporate objectives and captures and calibrates both quantitative benefits like increased revenue and qualitative benefits like safety to a common scale.

Corporate value framework is the best -- - is best practised in asset-intensive industries and is used by BC Hydro, OPG, Hydro Quebec, Hydro One, and TBA, to name a few.

The soft -- Copperleaf software that we

use is a sophisticated algorithm because we have over nine hundred (900) active projects in the system now.

For the Grand Rapids Unit, for example, there are five (5) different value measures that apply: loss generation risk is used to represent the impact of unavailability of the generating unit; financial risk captures the potential damage to adjacent components if there's a catastrophic failure; generation revenue -- this is a benefit, and it's the reduction in the planned outage durations for those one (1) to two (2) year welding repairs we're currently undertaking; O&M financial benefits are the savings due to not needing to do the repairs, the actual manpower or person power; and environmental risk is the potential of an oil spill into the river if it fails catastrophically.

There were other alternatives also analyzed and scored with the CVF -- Corporate Value Framework -- and a do-nothing alternative is always evaluated as the base option. But in this case, it's too much risk.

The Corporate Value Framework and portfolio optimization in Copperleaf software allows us to choose the best alternative, its start date within our known constraints to maximize the value

from our capital dollars. Next slide, please.

Manitoba Hydro applies the principles of asset management in both our short and long-term planning and decision making. Manitoba Hydro has a well defined short-term planning process that includes the use of our value framework and the Copperleaf asset investment planning software, as I discussed in the previous slide.

These decisions are specific and are used to populate our capital plan with specific capital investments to address identified needs, and this is within the three (3) to five (5) year time horizon.

Our long-term planning processes look at the whole population of an asset class, so, for example, all generators at all generating stations rather than just one (1) unit. And it looks at whether current intervention rates are adequate as a whole.

Looking out twenty (20) years and beyond allows us to determine funding requirements and, also, the need for skill -- things like skilled resources.

In the analysis for our long-term asset sustainment spending projections presented in this

application, we used an age-based analysis. An example is shown on the table on the right of the slide. It's a circuit breaker asset class.

And, as you can see, the asset populations are quite large. And age provides us with an estimate accurate enough for this long-term plan. Variances in the observed asset life that are shorter or longer than the economic life for an individual asset will balance out amongst this large population.

It's important to note that as a specific asset approaches its economic life, which is that minimum dip on the life cycle graph, the red line that I showed you, a condition assessment is done on that specific asset to determine if it truly needs replacing.

So, to follow the car analogy, when you purchase a car, you know that it'll probably last you about ten (10) years. You might choose to save up money over that time to fund the eventual replacement of your car. That's long-term planning.

But when the car is eight (8) or nine (9) years old, you will probably evaluate your current needs and whether the condition of your car actually dictates that it needs replacement. And you'll make a decision at that time. And that's the short-term

planning piece.

Based on our current intervention rates, the age of several of our asset groups would need to extend significantly beyond their economic life in order to maintain a functioning electric system.

For the underground cables, wood poles, and generators, the projected life based on intervention rates is two (2) to four (4) times their economic life, so, therefore, operation of these assets is really unsustainable at our current rates.

Here we see the example of underground cables. At our current replacement rate, we would only get around to replacing the cables every hundred and sixty (160) years even though their expected life is thirty (30) to forty (40) years.

Another example is wood poles. Wood poles are being replaced at a rate that would allow us to replace each pole approximately every two hundred (200) years. Wood poles have an economic life of about seventy (70) years.

And while the current rate may have been appropriate for the preceding decades up to now when the population of poles was relatively young, we've now entered the replacement cycle where many of

our poles were installed for the first time close to seventy (70) years ago.

Cyril Patterson will now speak to his experience of these examples in the field.

MR. CYRIL PATTERSON: So, I'd like to speak and put some emphasis on some of these key points in the presentation here today from both a distribution and a customer impact perspective.

You saw evidence statistically where our outage causes are increasing over time due to equipment failures, as well as our SAIDI and SAIFI numbers continue to grow.

SAIDI and SAIFI are lagging indicators, which means it's worse today than it was yesterday. And what we're seeing with equipment failures is a increased duration exponentially that continues to impact other activities within our business.

Equipment outages are very complex. They're high risk. They take many more resources, both in staff and equipment, to mitigate. And so, those staff that respond to outages and emergencies are the same staff that also provide other services to our customers, like line locating, electrical inspections, plan maintenance. They also do service extensions and capacity increases. The skill set is

the same across the staff population.

And so, when those staff are out having to restore unplanned outages due to equipment failure that are longer in duration, more complex, require greater resources, they're not available to do those other planned services to our customers which compounds.

That will continue to compound into the future where customers won't just see degrading reliability, they're going to see degrading service levels in other aspects of our business. Line locate wait times will increase. Planned maintenance will be shelved and deferred. It'll take longer to get a service extension because staff aren't available to do that work. It'll either be cancelled or deferred as a result of staff having to respond to more and more outages as a result of equipment failure.

The other thing we're seeing with some of our aging infrastructure when the -- the two (2) major impacts to having a degrading infrastructure that's aged is availability of supply for the parts we need to be able to repair some of that infrastructure.

Some of our infrastructure, as already referred to, is approaching seventy (70) to eighty (80) years old. And, in particular, with some of our

legacy conductors, we're not able to source replacement parts any longer from some manufacturers to be able to mitigate some of these outages. And we're having to become very creative in the way that we mitigate these outages.

And so, that also causes extensions to the duration of the outages and the complexity of how we mitigate these outages.

As we go forward into time and this continues to compound, customers will see not only a decline in the reliability, but overall, a decline in their service levels. Thank you.

(BRIEF PAUSE)

MR. ALASTAIR FOGG: What I'd like to talk about now is the Capital Expenditure Plan, or what we would refer to as C23, which our plan for the -- in the '22/'23 year, and it's included in our application.

There's approximately $18 billion in total capital expenditures included over the twenty (20) year forecast with over 90 percent of those expenditures in the business operations capital, or BOC, category.

There are additionally $1.6 billion near the end of the forecast period which we've called major capital, and that relates right now to the potential for new resources for capacity and energy requirements in the future, which you see in the green in the graph, but the majority of spending, again, is the blue bars, which is our business operations capital.

As has already been discussed, capital expenditures are anticipated to increase over the forecast scenario, and that's primarily as a result of an increasing need for expenditures to sustain existing assets and maintain system reliability.

Manitoba Hydro's legislatively mandated by the Manitoba Hydro Act to provide reliable service, and these investment are required to allow Manitoba Hydro to satisfy this mandate.

All of these capital expenditures that form part of the C23 plan are rigorously planned, reviewed, and tested. Next slide, please.

THE CHAIRPERSON: Sorry, Mr. Fogg, can I just ask you a question on the last frame?

MR. ALASTAIR FOGG: Oh, certainly.

THE CHAIRPERSON: Okay.

MR. ALASTAIR FOGG: Yes.

THE CHAIRPERSON: And I believe you gave the explanation, but I'm -- I've only had one (1) cup of coffee.

Is the green planned major capital or is it the amount you're going to need for major capital because the business operations capital is inadequate?

MR. ALASTAIR FOGG: The green would be related to, essentially, what we were talking about in the previous panel, around proxy resource to meet supply and demand --

THE CHAIRPERSON: Okay.

MR. ALASTAIR FOGG: -- increases not so much from the business operations capital perspective.

THE CHAIRPERSON: Okay. Thank you.

CONTINUED BY MR. BRENT CZARNECKI:

MR. ALASTAIR FOGG: This next slide shows in further detail our business operations capita, or -- or BOC, spending. What we particularly wanted to highlight is that sustainment of Manitoba Hydro's existing assets remains a primary focus of BOC spending.

And as Mr. Turner spoke about in the

opening -- his opening statements, over the forecast period, there's a need to increase spending in that sustainment category.

The sustainment category represents approximately 58 percent of total BOC expenditures in the current fiscal -- or in the fiscal year that we just completed, '22/'23. But sustainment makes up an increasing portion of total BOC expenditures over the forecast period such that by 2032, sustainment represents 64 percent of total projected BOC expenditures.

BOC expenditures are increased in C23 compared to CEF16 as a result of the aging assets and reliability concerns that we've discussed this morning. And these increased expenditures are required to address sustainment, as well as capacity and growth requirements.

The prioritization or ranking of these BOC expenditures occurs our generation transmission and distribution assets. And corporate facilities and IT investments are also considered in overall BOC expenditures.

Now, there's a fair amount of information on this slide, but we thought it was worthwhile to just show a comparison of the current

C23 expenditures, which you see in -- under the amended financial forecast scenario versus the capital expenditures that were presented in the 2017/18 General Rate Application proceeding, which are related to the CEF16 forecast in the table that's represented by the MH Exhibit 93 scenario.

One thing to note is that we've adjusted for the Gillam Redevelopment Expansion Project and the Grand Rapids Fish Hatchery Project, as those are previously included as major capital projects. But in the C23 plan, are part of business operations capital expenditures.

What is important to see and highlight is if we look at actuals starting in 2019/20 into some of the forecast period, BOC spending year over year is lower in the amended forecast, C23, compared to the CEF16 up to the '26/'27 time frame and over a slightly longer period on a cumulative basis until 2030/31.

It's at the point later in the forecast when we start to include those additional asset sustainment requirements that we've talked about this morning that C23 has higher spending as compared to CEF16. Next slide.

Ms. Halayko, on slide 21, talked about short-term versus long-term planning. What we're

providing here is a comparison of that short-term versus long-term planning between the C23 forecast, which is the table on the bottom, and the CEF16 forecast, which is the table on the top.

What I want to first highlight is that the capital planning model applied in the development of C23 is the same approach applied previously on our capital expenditure forecasts, including CEF16.

What I mean -- capital planning model, what I'm talking about is the process we go through to estimate our capital expenditures and consider both the short-term projects that are specific projects estimated today, versus the longer term planning perspective around investments that we may have to make.

For both C23 and CEF16, projects that are in execution today, titled 'Executing Projects' in both tables, as well as ongoing programs make up the majority of spending in the first three (3) to five (5) years of both forecasts.

These are specific projects that are approved or -- or anticipated to be approved and are being executed today.

Programs -- just for further detail -- are recurring work that are either repetitive, high

volume, or low cost asset replacements or refurbishments.

Programs that are recurring work better either -- and these -- sorry. And these examples include replacement of wood poles, street lighting replacements, and other similar work.

In both CEF16 and C23, the later years of the forecast -- and in particular, the second decade of the forecast -- between the ten (10) and twenty (20) year time frames, are made up of programs and higher level investment targets that are represented by either an item titled 'Planning Investments' or 'Portfolio Adjustments'.

It's not possible to have specific projects planned out twenty (20) years in the future, but the spending in that case is based on asset population, asset health, and future risks as we described earlier.

And just to reiterate, both CEF16 and C23 have been developed in this fashion and have a mix of the specific projects in the early years, and then planned investment levels in the future years of the forecast.

In terms of making these investments, Manitoba Hydro seeks to make business operation

capital investments primarily using cash from operations or internally generated funds. This has been a long-standing financial objective for Manitoba Hydro.

BOC investments are considered to be recurring and part of core operations, and the ability to self-fund them is a sign that Manitoba Hydro is self-supporting or, in other words, that Manitoba Hydro can support its own core operations.

The graph on the slide shows Manitoba Hydro's self-financing ratio and either an increase or a decrease in net debt. A self-financing ratio of 100 percent or greater means that Manitoba Hydro can fund its system investments from cash from operations.

If the self-finance situation was below 100 percent, then debt is required.

In previous proceedings, we've also talked about the capital coverage ratio. That is another measure of being able to fund ongoing system investments from internally generated funds.

The proposed 2 percent rate path ensures that those BOC investments are primarily made from cash from operations. Next slide.

I'd like to turn it over to Ms. Brako for this slide. Thank you.

MS. TANIS BRAKO: Thanks, Mr. Fogg. Manitoba Hydro recognizes some of our customers are struggling with their ability to pay. This is why we offer a holistic approach through bundling of programs, as well as referrals, depending on the needs of our customers.

We know that we must continue to learn and understand from our customers as their energy needs evolve. So we are continuously evaluating these programs to ensure they continue to meet the needs of our customers.

So there's a lot of information on this slide, but I'm going to highlight three (3) programs: Flexible Payment Arrangements, Customer Arrears Assistance Plan, and Neighbours Helping Neighbours.

Flexible Payment Arrangements are offered to customers who are looking for an option to help with paying their bills. We provide between a hundred thousand (100,000) to a hundred-and-fifty-thousand (150,000) flexible payment arrangements every year.

There are many ways we can structure a flexible payment arrangement, but the main goal is to remove the barriers for our customers in their ability to pay their utility bill.

For some of our customers, they might get paid just once per month and would prefer their utility bill to be paid coinciding with that date. So we will accommodate that need with this program.

The Customer Arrears Assistance Plan, or CAAP, was developed in 2018, borne out of the bill affordability working group collaboration with various stakeholders and Interveners who are present today.

CAAP is an interest free repayment plan open to all residential customers in arrears who receive a monthly bill. The amortization period is up to three (3) years and, in some exceptional cases, can be up to five (5) years.

Arrears are billed back to the customer monthly, along with a sign-up for the monthly equal payment plan for current bills.

This arrangement provides the customer with pre-determined monthly bills, making budgeting easier and helps them pay down their arrears along with paying current charges with the goal of becoming current at the end of their plan.

CAAP has between fifteen hundred (1,500) to two thousand (2,000) new participants, with interest free loans, every year.

Neighbours Helping Neighbours, in

partnership with the Salvation Army, takes a holistic approach to help a customer with their struggles. Neighbours Helping Neighbours provides a one-time grant of up to four hundred dollars ($400) that is applied to the customer's energy bill, as well as access to social support referrals through the Salvation Army.

The program also automatically completes an application for Efficiency Manitoba's Energy Assistance Program.

Since its inception in 2004, the program has provided almost ten thousand (10,000) grants to customers with a value of over $3 million. And has referred almost twenty thousand (20,000) customers to various social support programs.

Recognizing through our customer surveys and that customer arrears have increased since the pandemic, we know customers are struggling more today to pay their energy bills. As a result, Manitoba Hydro is already actively working to expand the Neighbours Helping Neighbours program.

Our customer engagement centre employees speak with many of our customers on a daily basis. And at times we can identify opportunities where we can do more, such as waiving security

deposits for low income customers or removing late payment charges for seniors.

Other times, we hear from vulnerable customers who need more support than Manitoba Hydro can offer. Our team handles these situations with care and will take the time to learn about their situation which sometimes leads to the discovery of the need for further social supports.

In these cases, the engagement centre staff will provide contact information for a number of agencies that can offer resources and support.

Example of agencies are Harvest Manitoba, Rent Relief Fund, New Journey Housing, and Crisis Lines, among many others.

We heard, through the public presentations, that paying security deposits can be a burden, particularly for newcomers. Manitoba Hydro assesses our customers' unique situations and we will waive deposits for low income customers, and Indigenous customers on reserve, and others on a case-by-case basis.

It is evident that some of the presenters may not be aware of these resources we have in place, so we will be reaching out to these organizations to ensure that they are aware of how we

can support. Next slide, please.

So we are seeing an increase in digital transactions from our customers in Manitoba. From five-hundred-thousand (500,000) transactions in 2019 to over 2 million in 2022.

This reflects that our customers' needs are evolving and self-serving on digital channels is increasingly becoming the preferred method for our customers to interact with Manitoba Hydro.

Working in tandem with traditional channels, digital technologies can increase convenience for customers and enable process improvements and efficiencies for Manitoba Hydro.

The efficiencies can allow our customer engagement staff to spend more time with customers who are seeking those live agent support.

In addition to our customer engagement center, portals and website, there are a number of other ways that customers can engage with us.

Recently, Manitoba Hydro recognized the need to have an in-service customer support service in Winnipeg. In March 2023, a customer help desk was erected at 360 Portage Avenue to help customers with the various inquiries.

It is open Monday to Friday from 8:30

a.m. to 3:30 p.m. and, to date, we have helped over nine hundred (900) people.

We have seen many newcomers assisted at this desk, that typically have a language barrier where on-line, self-service options aren't ideal. And for those with language barriers, we also have an employee linguist program, where Manitoba Hydro employees volunteer to identify that they speak a language, other than French or English, and -- for which our customer facing employees can call upon for translation support. We have thirty-five (35) different languages that we can serve through this program.

In addition to this location in Winnipeg, all of our rural customer-service centers are now re-opened to our customers after being closed through the pandemic.

Manitoba Hydro has a dedicated First Nations account team, with a dedicated phone number for these customers. This team can support customers with resolving issues such as arrears, payment arrangements and pro-active disconnection notifications.

Through this channel we will offer financial programs, such as the ones I spoke about

earlier, CAAP and Neighbors Helping Neighbors.

Our commercial and industrial customers are supported via dedicated account management teams. Our ten (10) largest industrial customers are supported by four (4) key account officers and our large commercial customers, where there are approximately two hundred and fifty (250) customers, are supported by twelve (12) major account representatives.

These employees support their customers with complex billing issues, reliability concerns, outage support, both unplanned and planned, expansion project coordination, customer satisfaction related issues, contract management and negotiations.

So, as you can see, there's many options for Manitoba Hydro to hear from our customers. And we -- what we do hear from them, consistently, is that our service levels aren't as good as they used to be. Our reliability is declining and we are not meeting their needs.

And we take their comments to heart. As we continue to operate aging assets and observe the downward trend of our reliability indicators, with declining reliability performance, along with service level declines in our Customer Engagement Center,

service connection processes in emergency response times, we see that an order to honour our customers' request for balance, we must take action now.

Our reliability in responsiveness cannot continue to decline and still meet our customers' needs.

Thank you for your time and this concludes our direct evidence presentation.

THE CHAIRPERSON: Thank you. Do you have a question?

BOARD MEMBER SY: Thank you very much. I just wanted some clarification.

Page 8, the 'Y' axis is not labeled. What exactly is it?

MR. JIM PAWLUK: The 'Y' axis is in time, so it's years.

BOARD MEMBER SY: Years.

MR. JIM PAWLUK: Yeah. Oh, the 'Y' axis, sorry, that's percentage. Sorry. The 'Y' axis is percentage.

BOARD MEMBER SY: Oh, that was -- okay.

THE CHAIRPERSON: Ms. Kapitany...?

VICE-CHAIR KAPITANY: So, I have a couple questions. One is on slide 12 and I believe

that, I can't remember, I think it was maybe you, Mr. Pawluk, presenting where you talked about TransCanada Energy and that -- what they had said about reliability.

But, my recollection is that, they also said that they wanted Manitoba Hydro to prioritize reliability, not necessarily that they were wanting to see increase in budget in those areas.

Can you comment on that?

MR. JIM PAWLUK: No, I -- I can't comment on what they meant by that. I mean we do prioritize what we do with reliability and it's a factor that we make when we're making investments. So, it's one of the considerations, so I -- I can't talk about what they were actually referring to.

VICE-CHAIR KAPITANY: Okay. Thanks. And for Ms. Brako, thank you for the clarification on the survey questions. And I know it's difficult to get the right information in there so that people can make informed choices.

But, I understand that you also have bill affordability in your portfolio. So, I wondered, do you know if there were any of the lower ratepayer categories that were -- that were part of the survey? We heard from a number of them on May 16th, when there

were the public presentations about how people just can't afford to increase -- the increase in rates.

So I wondered, to what extent, those customers would have been included in the survey results?

MS. TANIS BRAKO: Yeah. Thank you. So in terms of the population that's part of our Customer Research Surveys, it does represent the population of Manitoba. I'd have to, you know, take a look at what exactly those percentages would be, relative to low income, but we do ask the question of household income. And, I could get that information to you but, absolutely, it does represent, you know, Manitobans as a whole and all of our customers.

VICE-CHAIR KAPITANY: Okay. I'd be interested to know how many of the lower rate -- lower income ratepayers were included.

And then my last question was, you had said that, in terms of customer service, that rural service centers have re-opened. Can you tell me how many of those rural service centers there are in your system?

UNIDENTIFIED SPEAKER: Yeah, so that's my accountability. There are sixteen (16) rural Customer Service Centers spread across the province.

In addition, southern oak (phonetic) communities also have district offices open at this time as well.

VICE-CHAIR KAPITANY: Thank you.

THE CHAIRPERSON: Sorry. I'll -- I have a question for Ms. Brako.

Ms. Brako, at one point you said, "reliability in Manitoba has declined in relation to other jurisdictions," I believe.

Can you indicate which jurisdictions?

MS. TANIS BRAKO: So, that was in reference to what we saw from the presentation from TransCanada Energy, specifically.

But we also hear that through, especially our customers that operate in other jurisdictions in the United States, for example, or in British Columbia. Some of our, for example, ChemTrade would -- would operate in -- in British Columbia, as an example, so we do hear that from our large industrials.

THE CHAIRPERSON: Okay.

MS. TANIS BRAKO: M-hm.

THE CHAIRPERSON: But -- but the jurisdictions you're primarily -- so, you're talking BC --

MS. TANIS BRAKO: Yeah.

THE CHAIRPERSON: -- and the US.

MS. TANIS BRAKO: Correct.

THE CHAIRPERSON: Is BC the only jurisdiction in Canada where you perceived they have superior service in relation to business operations capital or improving the -- improving the assets?

MS. TANIS BRAKO: That's where I would have a specific example, yes. It's not often that we would compare, you know, industrial reliability in Manitoba to other jurisdictions, it's typically speaking about their experience is here, but certainly that is explained to us on a regular basis.

THE CHAIRPERSON: Sorry, is this more anecdotal --

MS. TANIS BRAKO: Yes, if the anecdotal --

THE CHAIRPERSON: -- comments that -- it's not an examination --

MS. TANIS BRAKO: No.

THE CHAIRPERSON: -- for example with what Quebec Hydro does or BC Hydro does --

MS. TANIS BRAKO: That's correct.

THE CHAIRPERSON: -- it's anecdotal customers. Okay. Thank you.

Mr. Peters, did you want to start now

or --

MR. BOB PETERS: I'm just going to turn to my friend Mr. Czarnecki, because Ms. Vine, I think, had indicated that she too wanted to make a short presentation. So, I'll turn it over to Mr. Czarnecki to see if I have that right.

CONTINUED BY MR. BRENT CZARNECKI:

MR. BRENT CZARNECKI: You -- you do, Mr. Peters. Thank you.

MS. SARAH VINE: Hello, Sarah Vine, from AMCL. We undertook the maturity assessment in 2022, and that was following on from a -- a previous assessment undertaken by the UMS in 2016.

Since 2016, the -- Manitoba Hydro has been -- been through a significant organizational restructuring to centralize its asset -- its asset management functions.

And one of the things that we -- we wanted to -- to look at is get some insight into what the organization looked like. Now, where the good practice was and whether there was consistency across the organization.

So, the full scope of our engagement included forming complainants. It was to assess

maturity against the thirty-nine (39) subjects defined by the Global Forum for Maintenance and Asset Management. To assess the progress against the 2016 assessment recommendations. Assess the expected maturity score on completion of the existing asset management objectives and provide some recommendations for further improvement.

And the -- the assessment structure was split into two (2) main phases. So the enterprise level is all the central functions of the organization, including those asset management functions that were brought into the one group. So, I -- I -- I think of those as the corporate functions now.

The energy stream leveling assessments were specifically focused on the life cycle delivery activities. This is because the -- this is where I expect to see differences in practices and approaches to managing assets. And that's okay. I would not expect to see exactly the same approach to electric generation li -- reliability, compared to electric distribution. They're -- they're very different asset types and that's where we expect to see different practices, but what we are looking for is consistency. If you go on to the next slide.

So, from a maturity perspective, we use the Institute of Asset Management Maturity Scale, which progresses through from innocent, aware, developing, competent, optimizing, and excellent, where a score of 3 is roughly in -- consistent with ISO's 55,000 certification.

There -- there's -- they are two (2) slightly different models, which I'm -- I'm happy to answer questions on, if -- if people need to under -- to help to understand the difference between the 39 subjects and ISO 55,000.

The -- but what we're looking for is -- is consistency. The most important principle in both is -- is line of sight and alignment. So, is everything that we're doing from a decision-making -- from an asset intervention's life cycle management aligned with corporate objectives. Actually, go on to the next slide, please.

So, for -- for those of you that are familiar with the six-box model from the Institute of Asset Management, the 39 subjects are rolled up into six main groups.

The -- the -- the tool that we use to do this assessment contains 284 specific criteria for each of the subject areas. So, each subject area is

tested from a -- a capability perspective, you know, is it -- is it good practice, and an integration perspective, is it connected to the other -- other areas of the business. So, one of the things I frequently say is people doing really good stuff in complete isolation to other bits of the business.

So, that integration question is really important and you can see the -- the arrows in the diagram here. We're looking for -- for that alignment and consistency throughout the business.

So, the scores of 2.13, 2.05, 2.09 are -- are barely consistent with -- with industry and, then, we've -- we've got some -- some of the -- the lower scoring areas, which I'll -- I'll discuss on the next couple of slides.

So, again, I -- I appreciate that I'm used to looking at these things, but not everybody else is. So, that enterprise and support -- support functions, as a reminder, that's the centralized asset management team and functions, all of the business overhead, the fleet and the -- the organization and direction, asset information.

The energy streams very much focussed on the life cycle activities. The only areas where -- where we looked outside of that is risk and review and

asset management decision-making and we only looked at one or two aspects. Again, we're looking for that alignment and consistency.

So, the -- the overall company average weighted score is based on the number of criterias assessed for each of the subject areas. So, it's not a numeric average. It's based on whether we asked 284 questions or, for example, in life cycle delivery activities, just the ones related to those subject areas.

So, that gives us a -- a -- a good understanding of where the strengths and weaknesses are across the -- the entire business and, also, where -- where there is good practice that we can transfer from other bits of the business.

So, in -- in terms of recommendations, when I looked at the objectives -- the existing objectives, they're all sound. They're still relevant. My concern is -- is the amount of effort required to -- to implement what is actually substantial business change.

So, my first -- my first new recommendation was to develop a detailed Business Improvement Plan with a coordinated set of activities that account for the interdependence of the sum

objectives.

So, an example of that is, let's say developing the asset information strategy, you need to understand what information you need to understand risk, to make good decisions, and to develop your asset strategies.

So, you can't tackle these things in isolation, it needs to be -- they need to be tackled as a joint exercise. But by developing a plan, then we can appropriately resource and -- and sketch out the time scale that -- that's appropriate for delivering that plan.

The second one is to continue to resource and deliver the Change Management Program that -- that was defined in Phase I, II, and III, The Terms of Reference for Asset Management Objective Number 6.

Again, it's -- it's a transformational change for an organization. You're changing the way you make decisions. You're changing the way that you -- you interact with each departments -- each of the departments and -- and you're trying to make sure that every -- everyone is pointing in the same direction and heading in the same direction. And that -- that takes a lot of care and it's also a very different way

of thinking for a lot of people.

The Terms of Reference for the Asset Management Objective Number 7, which is to maintain historic levels of asset performance, needs to include the systems processes in place to be able to monitor cost risk and performance.

So, as Krista mentioned earlier, that balance of cost risk and performance is the -- the art of asset management. What I look for is consistency and stability. If you can get your cost risk and performance stable, it's a very careful balancing act.

It's not -- not achieved by many, but -- but that's the -- that's the aim. What we're -- where I get concerned is where I see sort of people reducing costs without considering the future risk that that's -- that that's incurring.

So, I've -- I've had to work with a number of organizations that have -- have let that get out of control. In the UK we have something called Special Measures, where an -- an organization has -- is deteriorating and getting worse.

They get, unfortunately get someone like me dumped into try and -- try and sort that out and bring things back to stable. And when you're already reactive because your risk is so high, it's

very hard to get that -- that flipped back in -- under control.

So, it's a very careful balancing act, and really important that we -- we monitor those things and -- and address early warning signs of that coming out of balance.

I think that is -- the -- and finally the -- the expected maturity on completion of the sum objectives. I know there was some concern over the -- the maturity improvement since the 2016 assessment, so I'm going to address that first.

Since this assessment, I have done two (2) other formal assessment in comparable large organizations and one (1) informal assessment. And during the -- the COVID pandemic, and -- and the amount of homework people have been doing, everyone's progression has been slower than we have previously seen.

It's very difficult to implement changes in the way people are working, and changes in -- in the way they're doing business and making decisions on top of the -- the change that was already happening, of working remotely and working out of the office, because asset management is all about people and -- and processes. It's quite hard to do when

you're not -- when you're not with.

And certainly getting people to think differently when you're not there to -- to help them and guide them, that -- that seems to be a -- a consistent theme at the moment.

The expected maturity on completion of sum objectives, again, is a -- just an assessment based on how the objectives have been defined and what's in there.

And I think that's my last slide.

(BRIEF PAUSE)

THE CHAIRPERSON: Thank you, Ms. Vine. Mr. Peters, did you want to start now, or did you want to take the morning break now? I'm -- my colleague has announced we're talking the break.

MR. BOB PETERS: Coffee awaits, thank you.

THE CHAIRPERSON: So, we'll be -- if that's okay with you, we'll take the morning break for fifteen (15) minutes and we'll be back at 10:40. Thank you.

--- Upon recessing at 10:26 a.m.

--- Upon resuming at 10:46 a.m.

THE CHAIRPERSON: Mr. Peters...?

MR. BOB PETERS: Yes. Thank you. Good morning. Good morning, ladies and gentlemen, those present in the hearing room and those also on the live stream.

Mr. Chair, if you'd indulge me, I'd like to just take care of a housekeeping matter. I'd like to welcome to the Board's hearing room summer students from Fillmore Riley seated behind me: Avril Brown (phonetic), Kyder Wilfer (phonetic), and Mario Albertisi (phonetic).

I was a little bit cautious as to whether I should put their names on the record because Mr. Czarnecki had great glee in rubbing salt in the wound, letting us know that Ms. Muirhead moved from Fillmore Riley over to Manitoba Hydro's law department, but I'll just remind Mr. Czarnecki this is not a recruitment opportunity.

But I do welcome them here. They -- they're going to join us for a while this morning and perhaps report back as to whether Sven and I are actually working. So thank you.

CROSS-EXAMINATION BY MR. BOB PETERS:

MR. BOB PETERS: And with that, Mr. Turner, you've reminded your colleagues on this panel that none of my questions are designed to elicit on the public record information that Manitoba Hydro deems to be confidential? Oh, I'm sorry.

MR. ANTOINE HACAULT: I don't want to be outdone by you. We also have a summer student here who's working with me, and her name is Robyn Otto (phonetic) and she's in the back row. Thank you.

THE CHAIRPERSON: I would advise everybody be very careful because Mr. Czarnecki's casting a view.

MR. BOB PETERS: All right. Thank you.

CONTINUED BY MR. BOB PETERS:

MR. BOB PETERS: So, Mr. Turner, you were here last week, correct? You said that?

MR. HAL TURNER: That's correct.

MR. BOB PETERS: And have you reminded your panel mates that none of my questions are designed to elicit confidential information on the public record -- onto the public record?

MR. HAL TURNER: I have not, but our

counsel has, in addition to speaking about how great it is to be a lawyer at Manitoba Hydro.

MR. BOB PETERS: Well, finally he's doing his job. Okay. Mr. Turner, and -- and all Manitoba Hydro witnesses, on a serious level, my questions are directed to Manitoba Hydro, and even if I use an individual's name, the questions can be responded to by anybody on the witness panel.

And I do recognize the valuable contribution that those who are not on the microphone are providing, and so please make sure that this Board gets the best evidence from Manitoba Hydro.

Mr. Turner, that's acceptable?

MR. HAL TURNER: Very much so.

MR. BOB PETERS: And, Mr. Pawluk, you had some discussion this morning with the vice-chair and also the chair, and it -- it was centred on TC Energy, correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And Keystone Pipeline is only one (1) of multiple TC Energy pipelines in Manitoba.

Would that be correct?

MR. JIM PAWLUK: I don't have any knowledge on that, so I can't answer that question.

MR. BOB PETERS: Mr. Patterson, do you know that TC Energy has other pipelines in Manitoba?

MR. CYRIL PATTERSON: Yeah. I'm only aware of the one (1) pipeline --

MR. BOB PETERS: Okay.

MR. CYRIL PATTERSON: -- oil pipeline, yeah.

MR. JIM PAWLUK: We -- Mr. Peters, can we take that under -- as a takeaway and get back to you?

MR. BOB PETERS: No, it's -- it's fine. I'm -- I don't need an undertaking on that at this point in time. Maybe Ms. Gretsky -- I mean Ms. Schubert could put up the TC Energy slide deck from -- from last week.

What you do know, Mr. Pawluk, is that the -- the Keystone Pipeline transmits oil and not natural gas, correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And on slide 2 of what was provided last week, there was an indication that there are six (6) pump stations in the Province of Manitoba that are served by electricity, correct?

MR. JIM PAWLUK: I was not at the presentation, so I'll just assume that's correct.

MR. BOB PETERS: All right. And if you take it subject to check, as you did, Mr. Pawluk, if you come -- if you find something different and you want to correct the record, I invite you to do that through your counsel.

Would that be acceptable?

MR. JIM PAWLUK: Yes.

MR. BOB PETERS: And so...

(BRIEF PAUSE)

MR. BOB PETERS: Mr. Pawluk -- sorry, you -- you're not aware as to whether TC Energy owns TransCanada Pipelines that have infrastructure in Manitoba?

MR. JIM PAWLUK: I am not aware.

MR. BOB PETERS: All right. Is anybody on the panel aware as to whether TC Energy has other pipelines in Manitoba that are served at their compressor stations with fuel being natural gas rather than electricity?

MS. TANIS BRAKO: Yes, I'm aware that TransCanada Energy does own other pipelines that cross through Manitoba, and they're natural gas pipelines, so they do have multiple natural gas pipelines that

pass through Manitoba.

MR. BOB PETERS: And -- and not so much what's included in them, Ms. Brako, but they are -- they have compressor stations as well, those other pipelines?

MS. TANIS BRAKO: Correct.

MR. BOB PETERS: And the fuel to operate those other compressor stations or pump stations would be natural gas rather than electricity?

MS. TANIS BRAKO: They have the ability to operate off electricity or natural gas.

MR. BOB PETERS: You're just not sure what they use at this point in time?

MS. TANIS BRAKO: It depends. It depends on actual financial considerations by the company. So depending on what they require at that point in time, they will run natural gas versus electricity.

MR. BOB PETERS: And, Ms. Brako, do you know whether the --

MR. HAL TURNER: Mr. Peters, sorry to interrupt. We do know that it's not just a financial consideration. They also have climate goals and things of that nature in their company, so they may be choosing to run on electricity because it's greener

than using their own natural gas.

MR. BOB PETERS: Thank you, Mr. Turner.

Ms. Brako, are you aware as to whether or not the Keystone Pipeline compressor stations can operate on natural gas as opposed to electricity?

(BRIEF PAUSE)

MS. TANIS BRAKO: We're going to verify that to double-check.

MR. BOB PETERS: So you'll take that as an undertaking --

MS. TANIS BRAKO: Yes.

MR. BOB PETERS: -- and get back to report whether or not --

MS. TANIS BRAKO: Yes.

MR. BOB PETERS: -- the Keystone Pipeline compressor stations can be fueled by natural gas as well as from electricity?

MS. TANIS BRAKO: Correct.

MR. BOB PETERS: Thank you.

--- UNDERTAKING NO. 9: Manitoba Hydro to advise whether Keystone Pipeline

compressor stations can be fueled by natural gas as well as electricity

CONTINUED BY MR. BOB PETERS:

MR. BOB PETERS: On slide 4 that TransCanada shared with the Board when they presented last Tuesday, a week ago, they provided those same acronyms that this panel mentioned: System Average Interruption Duration Index, that's the SAIDI, and the System Average Interruption Frequency Index, and that's the SAIFI.

Have I got that right?

MR. JIM PAWLUK: You do.

MR. BOB PETERS: Does Manitoba Hydro agree with the accuracy of the performance indicators that were presented to the Board by TC Energy?

MR. HAL TURNER: We do not have the particular stats for TC that they've displayed here, so we can't verify them. That's their numbers.

MR. BOB PETERS: You don't keep stats by customers or by large industrial customers?

(BRIEF PAUSE)

MR. JIM PAWLUK: I'm sorry, those numbers are our numbers.

MR. BOB PETERS: Thank you. We look to the chart that's being displayed, and we see that the data source is from Manitoba Hydro's filing, correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: All right. Now, are these the same -- they -- they give us the IEEE number, and they stress the five (5) minute interruptions. Do you see that?

MR. JIM PAWLUK: I do.

MR. BOB PETERS: Is that the same metrics that is used by Manitoba Hydro when you presented to this Board in your filing the SAIDI and SAIFI information?

(BRIEF PAUSE)

MR. JIM PAWLUK: In our statistics, we use one (1) minute interruption, not five (5) minutes.

MR. BOB PETERS: On page 5 of TransCanada's slide presentation is the Manitoba Hydro report card that was also included in Manitoba Hydro's slides from this morning, correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: Does Manitoba Hydro take issue with what's being presented or does Manitoba Hydro accept that it is accurate?

(BRIEF PAUSE)

MS. TANIS BRAKO: So, this evidence that TransCanada Energy submitted is the first time that Manitoba Hydro has seen this information. So, we certainly see this as insightful. And we are interested in having further discussions with our customer to better understand how they pulled this information.

MR. BOB PETERS: Thank you, Ms. Brako. It's not news to Manitoba Hydro, is it, that outages can affect businesses negatively?

MS. TANIS BRAKO: No, that's not new news.

MR. BOB PETERS: And other than the accuracy of the numbers or the scale and the presentation, Manitoba Hydro isn't able to comment as to whether or not Manitoba Hydro's performance is the worst of the other suppliers to the Keystone system?

MS. TANIS BRAKO: Correct. We've not

done that analysis.

MR. BOB PETERS: Does Manitoba Hydro know precisely why this customer's experiencing service interruptions?

(BRIEF PAUSE)

MR. JIM PAWLUK: We do not have that information at this time.

MR. BOB PETERS: Mr. Pawluk, would you -- would Manitoba Hydro have known since at least -- and I'm looking at the slide -- since 2020 that this customer is experiencing a significant duration and frequency of outages?

(BRIEF PAUSE)

MS. TANIS BRAKO: We haven't been made aware of these outages since 2020.

MR. BOB PETERS: So, Manitoba Hydro, Ms. Brako, would not know whether these outages are related to equipment failure or to weather?

MS. TANIS BRAKO: Correct. Not at this time. We'd have to undertake additional analysis to determine that.

MR. BOB PETERS: And you've indicated to the Board that's something you plan to do with this particular customer?

MS. TANIS BRAKO: We certainly want to better understand what their experience is and then determine next steps thereafter.

MR. BOB PETERS: And is it just this one (1) customer or do you do it for all of your large industrial customers?

MS. TANIS BRAKO: We have regular conversations with our large industrial customers to understand what their experience is relative to all of their operations and how Manitoba Hydro impacts them.

MR. BOB PETERS: All right. Thank you. I'd like to turn to Board counsels' book of documents which has been marked as PUB Exhibit 19-3 -- 19-3. And this will be the book of documents that I will refer to repeatedly in my questions.

And starting on page 5, I just want to put for the Board the -- the focus on this -- on this Panel. Let's stay with this chart on the top of the page, please.

This top chart defines what's called major capital as distinct from business operations capital. Have I got that right?

MR. HAL TURNER: Yes, Mr. Peters, you have that right.

MR. BOB PETERS: And major capital, the definition has changed over the years. Is that also correct, Mr. Turner?

(BRIEF PAUSE)

MR. ALASTAIR FOGG: Mr. Peters, I can probably answer that for Mr. Turner but, yes, it has -- - has evolved over the years.

MR. BOB PETERS: And I saw in one of the slides that Manitoba Hydro was presenting today that it may have changed again since the last General Rate Application before the Board.

Is -- have I got that right?

MR. ALASTAIR FOGG: I think what we presented in this slide is to note that two (2) projects, in particular, had been previously identified as major capital, that was a Grand -- there was a Grand Rapids -- sorry, the fishery at Grand Rapids, and the Gillam redevelopment project.

MR. BOB PETERS: Right. If we could, Ms. Schubert, Manitoba Hydro's slide deck, slide 26, will help the Board understand that comment from Mr.

Fogg.

And I'm looking, Mr. Fogg, in the top right-hand side. The Gillam redevelopment project used to be a major capital project, but now it's called a business operations project?

MR. ALASTAIR FOGG: That's correct. And -- and just for additional context, the definition of 'major capital project' within the -- the forecast that you have in front of you today, we've aligned that with the definition of a major facility, as outlined in the Act, and the changes that were presented to that under Bill 36, which speaks to the size of a generation station both in terms of its megawatt and dollar value, as well as transmission lines to define what we consider major.

MR. BOB PETERS: All right. That -- that's helpful, Mr. Fogg. What you're telling the Board, if we go back, please, to page 5 of Board counsels' book of documents, that to be a major capital, you have to check off the criteria established in the new legislation that's in the amended Manitoba Hydro Act both as to dollar value and, also, megawatt capacity?

MR. ALASTAIR FOGG: That's correct. In the case of a generating asset, it would be

megawatts and dollar value. In the case of a transmission asset, it would be the kilovolts that it -- of the transmission line and the dollar value.

THE CHAIRPERSON: All right. And so, is it correct that everything that doesn't fit the legislation by definition falls into the business operations capital category now?

MR. ALASTAIR FOGG: Those items that don't meet that major capital definition then fall under the business operations capital, and then would be subdivided into the categories you see around sustainment of an existing asset versus capacity and growth, which may be driven by a number of factors or -- or the business operation support category.

MR. BOB PETERS: All right. Mr. Fogg, what you're telling the Board is, if we look on the screen in front of us, the business operations capital line that's highlighted is made up of three (3) components that are listed underneath, correct?

MR. ALASTAIR FOGG: Those are the primary three (3) components; that's correct. And then there's -- there would be further division of those categories in detail, but those are the primary three (3) components as we divide the business operations capital expenditures.

MR. BOB PETERS: And the names of these three (3) primary categories are supposed to be self-evident in the sense that sustainment sustains what you've got, capacity and growth is to accommodate new customers, and the business operation support supports all of the -- all of the programs that are undergoing.

MR. ALISTAIR FOGG: Yes, that's correct in general as you described. Sustainment would be we have existing assets that require investments to sustain their operations at the expected level of performance.

Capacity and growth may not just be new customers, but it's -- it's growth requirements in the area. And the best example I could provide there is -- - and we've noted it in Appendix 7.7 -- is the Portage Area Capacity Enhancement, where the load requirements in that portion of the province have changed and grown over the years, and we need to invest in serving the customers -- both the existing and new -- who are in that area.

The remaining expenditures, which would include things like fleet, for example, fall under business operations support.

MR. BOB PETERS: I'm not going to

spend a lot of time on it, Mr. Fogg, but that major capital called capacity and growth, which we now know is -- is correlated to the legislation, sees that the expenditures are decreasing over the -- over the test years, correct?

MR. ALISTAIR FOGG: So over the test years, those expenditures are decreasing, yes. And that's related to trailing costs from the existing major capital projects that were recently completed.

MR. BOB PETERS: What you're telling the Board is that Keeyask is complete, Bipole III is complete, the Manitoba Minnesota Transmission Project is complete, as is the Birtle.

So there's just some trailing or -- not -- not meant to be pejorative -- but the clean-up costs have to be taken care of.

MR. ALISTAIR FOGG: It could be trailing. When we talk about trailing costs, typically when a project goes in service, there's still several years of expenditures related to them.

So for example, on a project the size of Keeyask, that would include aspects related to -- we've had a full camp in operations that needs to be decommissioned, and there's other costs similar to that that occur after the in-service date of major

capital projects that do trail that in-service date when the units actually come online.

MR. BOB PETERS: Such as the planting of trees, removing roads, filling in of quarries; those kind of costs is what you're saying?

MR. ALISTAIR FOGG: There are -- there are environmental related costs that are licence requirements. That's one example.

MR. BOB PETERS: Are there any monitoring -- or site monitoring costs that are considered capital spending?

(BRIEF PAUSE)

MR. ALISTAIR FOGG: So Mr. Peters, those -- those environmental monitoring costs, when -- are typically capitalized up to the point that the project goes in service. And after that in-service date of that asset, those environmental monitoring costs become operating costs for Manitoba Hydro.

MR. BOB PETERS: Thank you. And just off the top of my head, if I said, for example, a monitoring cost would be monitoring water and fish, that now is an operating expense for the Corporation, not a capital expense.

MR. ALISTAIR FOGG: At this point in time, such a cost would be operating for Manitoba Hydro versus capital. Correct.

MR. BOB PETERS: All right. If we look to the bottom of page 5 of Board counsels' book of documents, Manitoba Hydro copied it in their presentation this morning, correct?

MR. ALISTAIR FOGG: Yes, that's the same graphic you saw in our presentation this morning.

MR. BOB PETERS: And this shows, in the light green bars, for the year that's now fiscally closed, the 2022/23 year, plus the '23/'24 test year and the '24/'25 test year, as well as slipping into '25/'26. That's just the modest amount of spending relative to business operations capital that's going to take place to take care of the trailing costs from the major capital projects.

MR. ALISTAIR FOGG: Sorry, Mr. Peters. You referenced business operations capital in your -- in your preamble. Those are the costs that are all major capital related, in green, that are trailing costs related to the completion of those major capital projects.

MR. BOB PETERS: All right. I understand you. And I was saying relative to the

business operations capital, which are shown in blue.

MR. ALISTAIR FOGG: In blue, correct.

MR. BOB PETERS: And then, I believe the Vice-Chair asked the question, and I think we see it on this graph, going out to 2035/36, we start seeing major capital expenditures coming back into Manitoba Hydro's capital expenditure forecast, correct?

MR. ALISTAIR FOGG: That's what the graph shows, correct.

MR. BOB PETERS: And is it also correct that that is Manitoba Hydro's expectation that it's going to have to add capacity in -- in those years by building a new generation facility of some kind?

MR. ALISTAIR FOGG: So those major expenditures are based on our forecast for the need for capacity requirements at that point in time, based on supply and demand.

MR. BOB PETERS: And at this point in time, Manitoba Hydro has chosen a natural gas turbine to provide that future capacity, is that correct?

MR. ALISTAIR FOGG: So it is a -- I think what we've termed a proxy resource. And it is natural gas, as assumed at this point in time on the

basis of it being the lowest cost option. But considering the time frame that we're projecting the -- - there would be significantly more work to do to finalize the specific expenditure at that -- as that need approaches.

MR. BOB PETERS: So it's a placeholder that Manitoba Hydro is thinking it has to add some capacity out by 2035/'36. And that's when it's going to start spending money on that capacity resource, whatever it's going to be.

MR. ALISTAIR FOGG: Sorry, Mr. Peters, I missed the first part of your question. I apologize.

MR. BOB PETERS: I was suggesting that, at this point in time, the natural gas turbine is simply a placeholder or proxy, as you called it. But what you're telling the Board is that if that proxy were to come to pass, you have included what you -- what Manitoba Hydro believes to be the cost for that natural gas turbine resource.

MR. ALISTAIR FOGG: Yes. And so, maybe I should clarify.

What we're trying to achieve is to forecast the need for expenditures associated with capacity requirements at that point in time. Because

the natural gas plants are the lowest cost option available to us, that's -- that's the proxy for the costs we've included.

But the important part is to note that we expect a need for resources at that point in time. And as part of our twenty (20) year forecast, we've included expenditures to achieve that.

MR. BOB PETERS: Let's turn to the -- turn to the business operations capital expenditures.

And if we just look at the top part of this page 5, please, Ms. Schubert. We see that all in, that business operations is -- is close to $500 million a year. Correct?

MR. ALISTAIR FOGG: I would -- I would suggest that it's -- it's growing somewhat over time. That's been an approximate average of $500 million a year. Although it's higher in later years of the forecast.

MR. BOB PETERS: And we're getting that approximate $500 million by adding up the sustainment, the capacity and growth, and the business operation support numbers. Right, Mr. Fogg?

MR. ALISTAIR FOGG: You would include all those in your business operations capital average, yes.

MR. BOB PETERS: All right. And you -- you also show that when you go beyond the test years and you go out either into a ten (10) year increment or a twenty (20) year increment, these numbers get pretty large pretty quickly.

MR. ALISTAIR FOGG: What we're showing is, I think is -- is really to the point of what Mr. Turner highlighted in his direct evidence.

Is we -- we've identified a need for increased business operations capital expenditure, particularly in the later part of the twenty (20) year forecast period, due to asset health and replacement requirements.

MR. BOB PETERS: And would it be correct -- if we look at those bars in the chart, figure 3.29 at the bottom of page 5 of Board counsels' book of documents, that while the programs and the projects for business operations capital in the test years are relatively well-known, the further you move out, the more there are placeholders for what that business operations capital will be spent on.

MR. ALISTAIR FOGG: So Mr. Peters, I'll start and maybe my colleagues may want to jump in.

Certainly, in the test years, what

you're seeing is a combination of projects that are already in execution. As many of our projects are multi-year on the capital expenditure. So that would include ongoing investments, as well as known projects that will be started in those years, as well as in the programs.

In future years, because programs are recurring, we -- there's generally an assumption of those programs continuing to be needed. Wood pole replacement, for example, is included in the future years.

In terms of the investments themselves, we look at more of a larger system investment requirement. So what those -- those expenditures would be needed to meet our needs from an asset health and replacement perspective.

MR. BOB PETERS: At this point in time, the specifics of what those programs and expenditures are, going past the test years, are not fully well-known?

MR. HAL TURNER: I would say it's -- Mr. Peters -- Mr. Turner speaking.

It -- it transitions. So there are -- you know, for example, if you were to look at Kettle or Long Spruce, you know, we plan on replacing, I

think, eight (8) staters (phonetic) at Kettle and we've got some refurbishments happening at Long Spruce.

So we would see some projects out eight (8), nine (9), ten (10) years. And there -- there will be -- you know, going out twenty (20) years, it's very difficult to say specifically which assets we'll be investing in.

So that's the long-term planning Ms. Halayko spoke to, where we're projecting the needs of the assets.

MR. BOB PETERS: Thank you. Yeah, I have your point.

While we're looking at this chart, in your career, Mr. Fogg, the business operations capital has grown from probably around three hundred (300) million a year to four hundred (400) hundred million a year, to now close to five hundred (500) million a year, approaching six hundred (600) million.

And then the blue bars are going to get up to a billion dollars a year, out in the future years, correct?

MR. ALASTAIR FOGG: I -- I can't say that I recall exactly what the business operations capital values were previously, but I -- I -- I do

agree they grow over time.

Part of that growth, as we've talked about has, what we believe is a requirement for the increased investment levels. Other growth would be in relation to the actual cost that -- for replacement of assets over time, which -- which has tended to grow with the cost of the materials and inputs that go into them.

MR. BOB PETERS: When we look at the chart, think of the history, Manitoba Hydro's business operations capital has gone from a $200 million per work day to $400 million -- or sorry to -- from $2 million a work day to $4 million per work day out in the '41/'42 time frame. Would that be fair?

MR. ALASTAIR FOGG: Sir, I'm -- I'm not sure how many work days we're assuming as a work day, but -- but I'll -- I'll take your math for that -- and -- and maybe just add on to what I mentioned earlier.

I think part of what we're looking at are expenditures that are partly growing as a result of the costs in inflationary aspects in relation to those assets. So what we would have spent to maintain our assets, ten (10) years ago, is not the same as what we spend today, just on the basis of the cost of

a generator, the cost of copper, steel, et cetera. Those -- there is -- we have seen growth in all of those cost items as inputs for our capital expenditures, over time.

MR. BOB PETERS: Thank you. The number at the top of the page and the other chart, you show the point, I think you were trying to make, Mr. Fogg, that over the twenty (20) year forecast sustainment business operations capital is coming in at around $10 and a half (1/2) billion. Correct?

MR. ALASTAIR FOGG: And that's the twenty (20) year total for sustainment portion of business operations capital. Correct.

MR. BOB PETERS: And if we stay in the twenty (20) year time frame we add up those numbers for sustainment, capacity and growth and business operation support, we're over $16 billion approximately. Correct?

MR. ALASTAIR FOGG: Approximately.

MR. BOB PETERS: That's twice the amount Manitoba Hydro paid for Keeyask.

MR. ALASTAIR FOGG: You know, I'm -- that would be the mathematical calculation. I'm not sure the reference between comparing twenty (20) years of expenditures on the business operation capital

items versus Keeyask, but I agree with your math.

MR. BOB PETERS: Mr. Fogg, this might be more a revenue requirement question. But I'll ask it because you probably are going to surface there as well.

Is the depreciation expense keeping pace with the building operations capital spending?

MR. ALASTAIR FOGG: Well, Mr. Peters, as you know, we're also going to be spending some time later, which I know everybody's excited about, to talk about depreciation expense on its own, so it's a bit of a difficult question to answer because of the difference of depreciation that we've been recording financially versus recovering from rates.

However, I would -- as some of this capital expenditures grow, we'd have to re-look at how those align. I don't have that exact figure over the twenty (20) year forecast in front of me right now.

MR. BOB PETERS: Okay, well let me cut to the chase then, Mr. Fogg.

One of the points you make in your presentation is that Manitoba Hydro wants to pay for this business operations capital out of what it calls internally generated funds. Correct?

MR. ALASTAIR FOGG: Correct.

MR. BOB PETERS: And those internally generated funds are found in your ratepayers' pockets, correct?

MR. ALASTAIR FOGG: It's from the revenue we would -- we would bring in, which is from our ratepayers or from other revenue, like net export revenue.

MR. BOB PETERS: And Manitoba Hydro, does it seek to align its depreciation expense with its business operations capital expense?

Or, is that a mystery that Mr. Tess will have to explain?

MR. ALASTAIR FOGG: Just give me one minute, Mr. Peters.

MR. BOB PETERS: Sorry?

MR. ALASTAIR FOGG: Sorry. Just give me one minute, I just want to pull up something.

MR. BOB PETERS: Thank you.

(BRIEF PAUSE)

MR. ALASTAIR FOGG: So, Mr. Peters, I think if you -- if you were to look at the forecast that we have in Appendix 4.1, there is the pacing between depreciation and amortization is -- is similar

to that of the pacing of the major capital. I can't say that that's our specific target when we go to set a business operations capital budget.

But they are -- there is some alignment between the two (2). Depreciation is obviously how we're recognizing those costs over time. That's an estimate and it's based on the different lives of the assets. There's certain spending requirements that come up in -- in our business operations capital that -- that sometimes are required in advance based on assets, retiring early.

But there is generally an attempt to have some alignment between those two (2) categories.

MR. BOB PETERS: Maybe to drive that point home, if I could ask Ms. Schubert to go back in time to Board Counsels' First Book of Documents, Exhibit 19-1.

And I look at the same document that I think you were taking a minute to look at, Mr. Fogg, so I'd like to make sure that you explain it to the -- to the Panel -- to the Board Panel.

On page 10, we see the operating statement in the twenty (20) year financial forecast. Correct?

MR. ALASTAIR FOGG: And, so what you

see here is -- is starting the 2032/'33 year, but yes, this is the operating statement. That's correct.

MR. BOB PETERS: And if we follow depreciation across the page to about the '39/'40 fiscal year, we see that appreciation and amortization are going to reach a billion dollars.

MR. ALASTAIR FOGG: That is what it shows and that's depreciation of both existing assets. There's amortization of other assets in there that may not -- that may be intangible, in nature, so this is the total depreciation amortization of -- of the electric assets.

But that is what it shows is it grows to over a billion dollars, but near the end of the forecast.

MR. BOB PETERS: All right. If we could go back, please, to what we'll do is -- we'll go to Manitoba Hydro's presentation slide, slide 25. There's a -- a drawing there that I want to come back to you on, Mr. Fogg.

We talked about the numbers and we saw that in Board of Counsels' Book of Documents and you explained that the sustainment portion of business operations capital is -- is -- is the portion that is going to grow significantly over the next twenty (20)

years. Correct?

MR. ALASTAIR FOGG: That's correct. So, same as the portion that's growing, and that's the portion in blue that you see on this graph here that proportionally of over -- of all our business operations capital investments is increasing.

MR. BOB PETERS: All right. Thank you for that. I want to turn to page 6 of Board Counsels' Book of Documents and I think Manitoba Hydro had a similar chart. I'm taking this one from the evidence of Mr. Rainkie.

When the first five (5) years, while he compares on the figure 14 at the bottom of the page, we see the -- the expenses of -- under the MH22 line, represent the business operations capital expenditures that have been filed in this rate case.

Correct, Mr. Fogg?

MR. ALASTAIR FOGG: Yes, MH22 represents what I termed as the '23 in our presentation, which is in our current rate application.

MR. BOB PETERS: And what you call C23, you're saying that for capital expenditure forecast '23? Is that the -- is that what you're trying to --

MR. ALASTAIR FOGG: Capital expenditure plan, capital expenditure forecast -- I'm -- it's the same concept.

MR. BOB PETERS: Okay. I think we're on the same page. If we look to column 4 on the screen in front of us, the first five (5) years show that the business capital expenses are lower, as presented to the Board, in this General Rate Application than they were assumed to be at the 2017/'18 GRA. Correct?

MR. ALASTAIR FOGG: That's correct and, as per our direct evidence presentation, we also showed the years of 2019/'20, 2020/'21, and 2021/'22 as actuals, which were also lower than the CEF 16 forecast.

MR. BOB PETERS: All right. I hear you wanting to see your Slide 26. So, we'll put that before the Board, just so that that last point isn't lost, Mr. Fogg.

What you're showing the Board is in the second from the right column, those numbers in brackets represent how much lower the spending is now on business operations capital than it was at the '17/'18, '18/'19 GRA?

MR. ALASTAIR FOGG: That's correct.

The second column from the right represents that -- the difference in that specific year between the current forecast and the forecast as presented in the '17/'18 GRA and, in brackets, it's showing that it's less in the current forecast.

MR. BOB PETERS: And, mathematically, starting in the test years, it's -- it's probably somewhere between 5 and 15 percent lower? Are you going to accept lawyer's math, subject to check.

MR. ALASTAIR FOGG: Subject to check. Yeah, so I'll trust your math.

MR. BOB PETERS: Well, Ms. Muirhead will teach you otherwise, but would it be correct, Mr. Fogg, that these lower spendings on business operations capital is due to supply chain and labour resource shortages?

MR. JIM PAWLUK: Mr. Peters, that is one of the impacts to some of the less spending in the forecast being lower than 2016.

MR. BOB PETERS: Okay. What's a -- what's another reason, Mr. Pawluk.

MR. JIM PAWLUK: Well, we've been doing more work in asset management and we've been prioritizing what work needs to go when and, also, working on that and the delivery methods of the

projects to prioritize our work and, so, just by using more asset management principles and understanding our asset needs from the bottom up, we've determined that this is the path we need in the near term and, then, as we go to the long term, it increases.

MR. BOB PETERS: Mr. Pawluk, were there any deferred business operations capital projects in those -- in those next five (5) or six (6) years?

MR. JIM PAWLUK: Some of the work that was originally planned to be done has been moved out, yes.

MR. BOB PETERS: When you say "moved out", it's put in at a later point in time or has it been deleted?

MR. JIM PAWLUK: Most of the work would have been moved to a different time -- point in time, so, moved out, not deleted.

MR. BOB PETERS: Moved out on the calendar, in the time-line?

MR. JIM PAWLUK: Yep.

MR. BOB PETERS: All right. I have your point. We'll stay with page 26 of Manitoba Hydro's presentation.

We see -- the Board will see that,

after '27/'28, 2027/2028, still in that second from the right column, business operations capital expenditures are increasing over what was previously forecast by the Company. Correct?

MR. JIM PAWLUK: That's correct. They're increasing in comparison to the CEF 16 forecast of cap -- of business operations capital expenditures.

MR. BOB PETERS: And, Mr. Pawluk, that's a -- that's a half a decade away.

Why is the spending ramping up, at that point in time, compared to the prior spending that was forecast?

MR. JIM PAWLUK: In order for us to ramp up, we need to build the capacity to be able to ramp up. We -- we just can't do it overnight.

So, we've identified that there's the needs of the assets. We also have identified that it takes time to increase to capacity to be able to deliver on the work that's been identified.

Some of that is internal to Manitoba Hydro and it's also external, through supply chains and external resources that are needed to do these projects. So, we -- we -- we got a plan to - to get to that higher number and it can't just happen

instantaneously.

MR. BOB PETERS: So, what you're telling the Board is that, in the next five (5) years, you're going to increase -- or you want to increase your human resources. Correct?

MR. JIM PAWLUK: We want to do -- that may be part of it. We want to improve our capacity to deliver work and that could be one of the aspects we look at.

MR. BOB PETERS: All right. So, you want to imp -- improve your capacity to do the work means you will either hire internally or you will hire contractors. Have I got that right?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: All right. And is there -- and I think in your previous answer you suggested that you also needed to determine what assets you needed.

Did I hear you correctly?

MR. JIM PAWLUK: No, we -- we've given in our evidence in appendix 7.5 some of the intervention rates that we need to increase over time to sustain our assets. So, those type of assets have been identified.

When we look at some of our longer term

investments and longer projects like Mr. Turner brought up in terms of overhauls at Kettle and Long Spruce as two (2) examples, those are assets that we know we need to do work on at this time.

MR. BOB PETERS: All right. Let's turn to comparing the business operations capital spending at the interim GRA in 2021/'22 compared to this GRA. And if we could, we'll turn, please to pages -- we'll start on page 7 of Board Counsels' Book of Documents.

Mr. Turner, your panel would have read Board Order 9/22?

MR. JIM PAWLUK: There's only one (1) answer to that, by the way.

MR. HAL TURNER: Correct.

MR. BOB PETERS: And on page 9 -- sorry, on page 8 of Order 9/22 the Board wanted Manitoba Hydro to demonstrate the savings that are found by showing the updated business operations capital spending compared to what was proposed at the interim.

Do you see that, sir?

(BRIEF PAUSE)

MR. HAL TURNER: Are you still on page 7, Mr. Peters? Have you moved to page 8?

MR. BOB PETERS: Oh, I -- I moved to page 8 without telling Ms. Schubert.

MR. JIM PAWLUK: I see that.

MR. BOB PETERS: And I'm looking down at number 6 directive. You're with me, Mr. Turner?

MR. HAL TURNER: I'm with you.

MR. BOB PETERS: And that interim GRA, Mr. Fogg, was as a result of no government legislated electricity rate increases in 2021/'22, coupled with the drought experience?

MR. ALASTAIR FOGG: Those both contributing factors, yes.

MR. BOB PETERS: And in terms of contributing factors, Mr. Fogg, is it correct that when Manitoba Hydro faces a drought and reduced net export revenues, there are only three (3) general sources of adjustments to Manitoba Hydro's revenue requirement?

One (1) of them is reduced spending by the utility. The second is the use of retained earnings, including taking on more debt, and the third would be coming to the Public Utilities Board for rate relief.

Do you agree with that?

MR. ALASTAIR FOGG: I would generally agree with that, yes. Those would be the three (3) options available and three (3) considerations to take in managing the impact of that kind of situation.

MR. BOB PETERS: Now, in terms of reduced spending by Manitoba Hydro, the Board highlighted opportunities for Manitoba Hydro to reduce its operating and administrative spending, as well as for Hydro to reduce some business operations capital.

You're generally familiar with that?

(BRIEF PAUSE)

MR. ALASTAIR FOGG: Mr. Peters, I think as outlined on the screen, on items 6 and 7, the general reduction in both business operations capital and -- and operating and admin expenses were identified.

MR. BOB PETERS: All right.

(BRIEF PAUSE)

MR. BOB PETERS: On pages 9 to 14 of Board Counsels' Book of Documents is an Information

Request that was posed in writing to Manitoba Hydro. I want to focus on page 11 of the Book of Documents, please, to show the comparison between the business operations spending from the interim GRA compared to the actual spending.

And that's what's found on this chart, Mr. Fogg?

MR. ALASTAIR FOGG: Yes, this chart shows the forecasted spending as -- as presented at the '21/'22 interim and then actual spending in those years.

MR. BOB PETERS: All right. Just so this Board is familiar with it, conveniently highlighted in green is the minus $20 million number.

Do you see that?

MR. ALASTAIR FOGG: I do see the -- the item, the minus 20 million highlighted in green and that would show the actual spending in the '21/'22 fiscal year, which is included as part of the current application compared to the forecasted spending level in that same year.

That was presented at the '21/'22 interim application.

MR. BOB PETERS: Thank you, Mr. Fogg, and then likewise, going down that far right subtotal

column, there are comparisons as to what was presented at the interim rate case to this rate case for various fiscal years correct?

MR. ALASTAIR FOGG: That's correct. It provides that comparison. Maybe just to note, those other years are either forecast or plans versus the one (1) we just talked about. The negative twenty (20) was comparing to an actual expenditure.

MR. BOB PETERS: All right. Thank you for that. On page 14 of Board Counsels' Book of Documents, Mana -- Manitoba Hydro explained some of the variances in the part B answers. And I'm looking at the top of the page.

We're talking here, Mr. Fogg, about the $20 million that you said was an actual reduction compared to what the Board was told at the interim hearing?

MR. ALASTAIR FOGG: That is the variance subscription at the top of the page as describing row 3, which is a $20 million variance that we talked about.

MR. BOB PETERS: And the variance was driven by suspending construction work due to a IBEW strike in 2021? In addition, there were supply chain issues to due COVID and there were external resource

availability that resulted in construction delays, all saving Manitoba Hydro $20 million?

MR. JIM PAWLUK: That is correct.

MR. BOB PETERS: Would the Board be correct in understanding that the 2021/'22 and the 2022/'23 lower business operation spending was unplanned?

MR. JIM PAWLUK: That would be correct.

MR. BOB PETERS: It was a result -- Mr. Pawluk, as a result of construction circumstances?

MR. JIM PAWLUK: Correct. World circumstances that were impacting the work, correct.

MR. BOB PETERS: Mr. Pawluk, 10 minutes ago you explained to me that for the future years, the capital spending was being re-optimized.

I think that was your word, was it, sir?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And it's re-optimized using the Corporate Value Framework?

MR. JIM PAWLUK: That is one (1) of the main tools we use, correct.

MR. BOB PETERS: At the risk of being corrected, but that Corporate Value Framework is the

asset management framework tool that uses Copperleaf 55 software to prioritize different investments in generation transmissions and distribution?

MR. JIM PAWLUK: It is a software we use to take the value of what our investments are and optimize the execution of the work.

MR. BOB PETERS: And so, in respect of that Board directive for Manitoba Hydro to demonstrate the savings in business operations capital spending between the interim application and this application, would it be correct that Manitoba Hydro did not intentionally reduce its business operations capital in the drought year in response to the Board's directive number 6?

MR. HAL TURNER: Mr. Peters, that would be correct. And -- and if I could add and -- and give some context as to why. So the -- in any given year over 90 percent of our planned capital is associated with executing programs or executing investments, so that's work that's already in progress.

And so to stop that or slow it down, results in inefficiencies and often increased costs. Also, as I mention, and -- our assets are continuing to age. They don't take time off from aging when

there's a drought.

They continue to age. The risk continues to go up. You know, we've done an analysis and we've demonstrated, I think, here today and in our evidence, that it is in everybody's best interest for us to address these aging assets proactively, for the vast majority of assets.

And so, for a number of reasons, we didn't feel it was in our customers' best interest to reduce our business operations, capital.

MR. BOB PETERS: Mr. Turner, when you say 90 percent of the projects in the drought year were, I think your words were in flight or was it in execution -- under execution?

MR. HAL TURNER: That's correct. A lot of our assets have long lead times, so it could take -- and I'm going to date myself 'cause I'm too far from it but, you know, transformers maybe take two (2) or three (3) years once they're on order. Hydraulic runners can take three (3) years from when you order them.

So we have to start our projects many years in advance of when the actual construction is going to occur. So, yes, I -- and I -- sorry for the added wording, but I think you're correct, the word I

did use was 'in flight'.

MR. BOB PETERS: Mr. Turner, just because I project is in flight doesn't mean that there's shovels in the ground, correct?

MR. HAL TURNER: That's correct. There may not be shovels in the ground, but there may be -- welders welding in a shop somewhere or machines fabricating components. There can be -- not -- there could be -- there may be engineers either at 360 Portage or -- or consultants doing engineering.

MR. BOB PETERS: It could be that it's simply in the planning stages before any hardware is being conditioned, prepared, or built.

MR. HAL TURNER: It could be, yes.

MR. BOB PETERS: I want to turn to the questions on Corporate Value Framework and, Ms. Schubert, the witnesses have talked about -- could we go to tab 7 of Manitoba Hydro's Application?

(BRIEF PAUSE)

MR. BOB PETERS: Thank you. And I believe it's correct that Manitoba Hydro uses Copperleaf 55 software to organize and calculate Corporate Value Framework scores for various capital

projects?

MS. KRISTA HALAYKO: That's correct. We call it just Copperleaf now.

MR. BOB PETERS: The fifty-five (55) isn't important?

MS. KRISTA HALAYKO: We got rid of the fifty-five (55).

MR. BOB PETERS: All right. Thank you for that, Ms. Halayko.

The Corporate Value Framework scores are measures of risk reduction or mitigation.

Is that correct?

MS. KRISTA HALAYKO: AR, that's correct, or they can also be benefits that the project brings.

MR. BOB PETERS: And they can be calculated on a per-dollar-invested basis as well?

MS. KRISTA HALAYKO: Yes, that's correct.

MR. BOB PETERS: And higher scores are better than lower scores, perhaps unlike my weekend golf scores.

MS. KRISTA HALAYKO: Generally, that's correct. There are times, though, where we look at different factors in terms of our prioritization, but

generally higher scores are better.

MR. BOB PETERS: And Manitoba Hydro uses Corporate Value Framework scores to prioritize investments, if I've understood Mr. Pawluk's previous answers to me.

MS. KRISTA HALAYKO: Yes, that's correct.

MR. BOB PETERS: Is it correct that, according to Manitoba Hydro, that there is no cutoff or threshold Corporate Value Framework score in order to be included in the Capital Expenditure Plan or C23, as it's now been called?

MS. KRISTA HALAYKO: There isn't. We do an optimization of all the different projects and look at the -- the bundling and splitting of projects and what the optimum combination of projects is in any given point in time.

MR. BOB PETERS: That optimization --

MR. HAL TURNER: Mr. Peters, sorry. If I could just go back for a moment. So you -- you characterized that a higher score is better, and I'm not sure I would necessarily agree. A higher score might mean we're mitigating more risk or we're creating -- generating more value, but we try and optimize the timing of our investments.

And if you recall -- if you went back, Ms. Schubert, to our direct evidence, there was a -- I think a whole-life cost model slide. I apologize, I don't know the number. Keep going back. Keep going. Keep going. There we go.

So there's an optimum time, Mr. Peters, to invest. So I just -- I just want to be clear. It's maybe a fine point, but if we wait -- if we wait past the optimum time to invest, well, the risk that we're seeing, as well as our own O&M costs will go up.'

So the score may continue to climb, and so just -- I wouldn't necessarily say higher is better. Higher is more value, but we strive to invest at the optimum time.

MR. BOB PETERS: And so it would be the Corporation's subjective professional judgment as to how to prioritize the projects once the Corporate Value Framework scores are -- are tabulated.

(BRIEF PAUSE)

MR. JIM PAWLUK: When we're looking at our investments, we also do look at whole-life cycle costing. I mean, that's one (1) of the inputs, so we

do look at timing of when our investments are required.

There may be other factors beyond just value that would dictate when that optimum time is. We can't, for instance, take out a whole bunch of units at the same time. We have to schedule and stage and do them in an appropriate order that logistically we can execute that work. Even though they may have high value, we just may not be able to do that.

There's also looking at the system. We have to have the capacity still available to Manitobans to use. So again, there's a lot of factors that go into planning when we look at the timing of our investments beyond just the CVF scoring. That's just one (1) of the inputs.

MR. BOB PETERS: And, Mr. Pawluk, that -- those other factors are then subjectively assessed by Manitoba Hydro to prioritize the projects?

MR. JIM PAWLUK: I wouldn't characterize them as subjective. I mean, when you have a schedule and you know a unit is worth 'X' amount of megawatts, you can very exactly determine how many units you can take out at any one (1) time. So, no, I would not characterize it as everything being subjective.

MR. BOB PETERS: When -- when Manitoba Hydro's asset management is more mature, will there then be objective data to indicate which projects should proceed and when?

MS. KRISTA HALAYKO: At present, our use of the Corporate Value Framework is one (1) of the areas where we are quite mature. And in the -- that is the short-term planning tool that we use for the three (3) to five (5) year, so I would say that, in the short term, our -- our investment planning is quite robust.

MR. BOB PETERS: Ms. Halayko, is there a -- an algorithm that tells Manitoba Hydro when it's most efficient to implement the capital project?

MS. KRISTA HALAYKO: The value framework scores are implemented for each investment, and then there is an algorithm that it goes into in the Copperleaf software because, as I had mentioned in direct evidence, we have a large number of investments and the calculations are sophisticated.

But once that optimized portfolio comes out, we do vet it. We look at resourcing and we look at outage availability, as Mr. Pawluk had mentioned, and make adjustments. So it's an iterative process, but there is an algorithm that does the heavy lifting

of the mathematics for us.

MR. BOB PETERS: The vetting that you just referred to, Ms. Halayko, is done by the professional team using their judgment?

MS. KRISTA HALAYKO: Yes. I think with any model or tool, there has to be some professional judgment and calibration and vetting after the results are done by the model.

MR. BOB PETERS: All right. Ms. Schubert, with those answers, maybe we can go to PUB -- it's an Information Request that somehow got omitted from my book of documents: PUB/Manitoba Hydro 2nd Round Question 53 (a) to (c). Thank you. And then on the next page, 2 of 6, we start to see a table.

Am I correct, Manitoba Hydro, that this table sets forth Manitoba Hydro's proposed business operations capital expenditures for the two (2) test years in this General Rate Application?

MS. KRISTA HALAYKO: Yes, that's correct.

MR. BOB PETERS: And it goes beyond the test years, does it not, Ms. Halayko, in terms of setting out projects that would be out into the future further?

MS. KRISTA HALAYKO: Some of the

projects do extend for multiple years past the test years. And there's programs, as well, that would extend.

MR. BOB PETERS: And so, the Corporate Value Framework that you told the Board about is an output number from the Copperleaf software, right?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: The Corporate Value Framework is a tool that we use to assign value to projects, so I -- I don't know if I'd characterize it as an output number. It's a took that we use to assign twenty-six (26) different value measures and to try to determine the ful -- fulsome value of a project.

MR. BOB PETERS: Would you agree with me then, Ms. Halayko, that it is a relative number relative to other projects and programs?

MS. KRISTA HALAYKO: Yes, I would agree with that.

MR. BOB PETERS: So, we see -- if we can just see the top of the page, please, on -- what's on the screen. We see the CV - the Corporate Value Framework value. And then there's a lot of numbers.

And then -- and then, Ms. Halayko, the Corporate Value Framework value has been divided by the thousands of dollars to effect that project.

That would be an interpretation of what -- what Manitoba Hydro did?

MS. KRISTA HALAYKO: Yeah, that's correct.

MR. BOB PETERS: And I understand from previous answers that Manitoba Hydro does not embark on the highest valued projects and programs first.

Do I understand that correctly?

MS. KRISTA HALAYKO: That's one (1) factor in decision-making in combination with the other factors we had mentioned, such as resourcing and how many outages we can take at a certain time.

MR. BOB PETERS: So, you're agreeing that the highest valued projects aren't the first projects or programs to get implemented necessarily?

MS. KRISTA HALAYKO: Not necessarily.

MR. BOB PETERS: All right. I think we're on the same page.

The Corporate Value Framework value per thousand dollars, is that the metric in the top-right column?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: Is that financial metric to gauge the return on the investment?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: It is -- is not. It's another factor that we use to show how much risk we're mitigating or benefit we're receiving and how much cost we're putting in. It's another factor that we can look at, but it's not necessarily a return on investment.

MR. BOB PETERS: On...

(BRIEF PAUSE)

MR. BOB PETERS: On page 5 of 6 of this document, I see under "Corporate facilities" the Grand Rapids fish hatchery upgrade and expansion project that I think Mr. Fogg might have explained to me is now a business operations capital expenditure.

Did I get that right, Mr. Fogg?

MR. ALASTAIR FOGG: Yes, you did. You got that right, Mr. Peters.

MR. BOB PETERS: So, what is it about the Grand Rapids fish hatchery that results in that

project having a Corporate Value Framework score that is orders of magnitude above any other project?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: I'd just like to confer with my colleagues to make sure I'm accurate in my response.

(BRIEF PAUSE)

MS. KRISTA HALAYKO: So, this project was valued once it was already partially completed, so for the addendum value. So, there's a lot of risk mitigation, compliance mitigation for a small value, so it's not exactly representative of the way we usually value the projects.

(BRIEF PAUSE)

MR. BOB PETERS: When we look, Ms. Halayko, to the column to the left, the -- the second column from the right-hand side of the page, 1756990, that's a Corporate Value Framework score, correct?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: What would cause that score to be so high relative to all of the other projects that are listed on these six (6) pages?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: So, again, when we do a Corporate Value Framework score, we add up all the value points. And then we subtract the cost of the project, so it makes the value smaller. That's the total value score.

And so, we only use the addended cost of this so that -- that reduction was less. Having said that, there's a lot of compliance value in having this project.

MR. BOB PETERS: You're telling the Board that this isn't really an apples-to-apples comparison using this particular example that's jumped off the page, correct?

MS. KRISTA HALAYKO: This probably is not a typical example, no.

MR. BOB PETERS: And in terms of compliance that you referenced in your second last answer, Ms. Halayko, there are other compliance requirements on these five (5) and six (6) pages of

capital projects, correct?

MS. KRISTA HALAYKO: Yes, that's correct.

MR. BOB PETERS: But none of them score as highly as did the fish hatchery upgrade at Grand Rapids?

MS. KRISTA HALAYKO: I would have to look into that because, again, this is the total value score, so the compliance or whatever other values minus the cost of project.

So, if -- I would -- I'm being asked if this is the highest value points on compliance, I'd have to go and undertake to find if that's the case or not on any project.

MR. BOB PETERS: No, I'm not going to ask you to -- to look for that; that's not what I need. I would like you to go back to page 2 of 6, please, Ms. Schubert, of this Information Request.

The Board will see that there are two (2) projects included, HVDC, BP II VELB (phonetic), and then below that, a 13.2 kV shunt reactor, sounding like I know what those are.

Why does Manitoba Hydro include two (2) projects that have negative Corporate Value Framework scores?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: Well, we try to use our models to value everything that we undertake to do. Sometimes there's exceptions, and especially projects that have, you know, compliance or safety value that we just undertake even though they're mildly negative, as in these cases.

MR. BOB PETERS: Does this negative score, Ms. Halayko, mean that the project costs more than the risks that are mitigated?

MS. KRISTA HALAYKO: In the strict application of the tool, that is -- is what it means. But with any model, there has to be some post processing that's done.

MR. BOB PETERS: So, why does this project stay in the capital expenditure forecast '23 when it comes out with negative values?

(BRIEF PAUSE)

MR. JIM PAWLUK: Mr. Peters, I think I'd just like to add on these two. We might need to do an undertaking on this, but some of these projects

have been established over a long period of time, and these could be two (2) more historic projects that we undertook.

And when we applied value -- value framework, we may have done it incorrectly, or at the point where we are in the projects, we can't stop the projects, and the costs have maybe exceeded the value.

MR. BOB PETERS: Mr. Pawluk, that's one (1) undertaking that we will ask you to check into and report back to the Board to explain these negative valued projects being in C23. Would you do that, sir?

MR. JIM PAWLUK: Yes, we will.

--- UNDERTAKING NO. 10: For Manitoba Hydro to explain negative valued projects being in C23

CONTINUED BY MR. BOB PETERS:

MR. BOB PETERS: All right. Just to conclude then before the lunch recess, on page 6 of six (6) of this Information Request, there's an indication by Manitoba Hydro, in the (c) item, that there are no potential projects with higher CVF scores than the projects listed that are not included in the Capital Expenditure Plan. Do I have that correct?

MS. KRISTA HALAYKO: This was the case at the time. There's always new projects that come up at any given time. So I would say yes. But I'd have to check to make sure that's 100 percent accurate.

MR. BOB PETERS: Okay. So on the bottom of the page -- if we can scroll to see the bottom of the page, it's dated March 10th of 2023.

Is it your evidence, Ms. Halayko, that as of that date that was a correct statement, but circumstances may have changed?

MS. KRISTA HALAYKO: Yes.

MR. BOB PETERS: Yeah. I'm not asking for an undertaking on that, ma'am, no.

MS. KRISTA HALAYKO: Okay.

MR. BOB PETERS: So then, the Board will understand that Appendix 7.7 in the Application includes every capital project that Manitoba Hydro has been thinking about that has progressed to the Corporate Value Framework calculation stage, so long as it has a positive score. Correct?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: Could you restate the question? I'm not sure about the so long as it

has a positive score part of that.

MR. BOB PETERS: Well, you'll agree with me, Ms. Halayko, that all of the items listed in this Information Request, but two (2), have positive scores. Correct?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: And there's no projects out there that Manitoba Hydro is thinking of that have any scores that are higher than those listed on this Information Request.

(BRIEF PAUSE)

MS. KRISTA HALAYKO: Yes, that's correct.

MR. BOB PETERS: And from what I understood from Mr. Pawluk's answers to the Board, these projects are not culled and discarded, they just may be re-prioritized. Have I got that right?

MS. KRISTA HALAYKO: Yes. As Mr. Turner said, they're re-optimized. So they don't disappear. They're re-optimized for every year we do an optimization.

MR. BOB PETERS: The optimization or the re-optimization is an effort by Manitoba Hydro to

get the project to have a higher Corporate Value Framework value?

MR. JIM PAWLUK: I just want to -- to Ms. Halayko's previous response add that just because it's on the list does not guarantee it will continue in the form that it's been scored.

We may look at different alternatives, situations may arise, we may have to do different types of interventions which may defer the work, it may get cancelled in the future. It's -- it's not a guarantee that it made this list that it will continue as is.

MR. BOB PETERS: But it is on the list, so some form of that project will continue?

MR. JIM PAWLUK: That is correct. There is a high probably that, in some form, the risks identified would be mitigated in some way.

MR. BOB PETERS: Just my last question (AUDIO DISCONNECTION) its asset management system and continued to improve its prioritization and optimization and capital spending, using the Corporate Value Framework. Correct?

MS. KRISTA HALAYKO: That is correct.

MR. BOB PETERS: And it all boils down to my last question, which is, on the next page at

line 3, in response to the Board directive that was given, included in this case, you're asking this Board to either set aside the directive or confirm that it has been satisfied. Do I have that right?

MR. JIM PAWLUK: That's correct, Mr. Peters.

MR. BOB PETERS: Thank you. Mr. Chair, I thank the Board for its indulgence at this time. I can indicate that, in my approximate hour this afternoon, I expect to conclude before I turn it over to other counsel.

THE CHAIRPERSON: Thank you.

Ms. Guglielmin, are you going to do the cross? Any idea how long you'll be?

I'm trying to figure out where we're going to be at the end of today.

Okay. And Mr. Williams...?

DR. BYRON WILLIAMS: Thank you, Mr. Chair, and good morning. Somewhere between an hour-and-a-half and an hour and forty (40) minutes, in that range.

THE CHAIRPERSON: Okay. We'll have a discussion to see if we carry over until tomorrow morning with the cross, or if we -- we'll go late today to finish.

So we'll break for an hour. Thank you.

--- Upon recessing at 12:06 p.m.

--- Upon resuming at 1:08 p.m.

THE CHAIRPERSON: Thank you. Mr. Peters...?

MR. BOB PETERS: Yes. Thank you. I'm going to turn to my friend, Mr. Czarnecki. And he has a matter -- a few matters to address before we start this afternoon.

MR. BRENT CZARNECKI: Yes. Thank you, Mr. Peters. And, Mr. Chairman, from -- I have the exhibit numbers not from this morning sorted out. Manitoba Hydro 32 is the Panel qualifications and CVs from this morning which we filed.

--- EXHIBIT NO. MH-32: Panel qualifications and CVs from this morning which they filed

MR. BRENT CZARNECKI: Manitoba Hydro Exhibit 33 is the asset management direct evidence presentation from Manitoba Hydro.

--- EXHIBIT NO. MH-33: Asset management direct evidence presentation from Manitoba Hydro

MR. BRENT CZARNECKI: Manitoba Hydro Exhibit 34 is the AMCL Sarah Vine's maturity assessment summary presentation.

--- EXHIBIT NO. MH-34: AMCL Sarah Vine's maturity assessment summary presentation

MR. BRENT CZARNECKI: And then Manitoba Hydro number 35 were Undertakings 3, 5, 6, 7, and 8 which were filed this morning.

--- EXHIBIT NO. MH-35: Response to Undertakings 3, 5, 6, 7, and 8

MR. BRENT CZARNECKI: And last, Ms. Brako is in a position to speak to her two (2) undertakings that were provided this morning.

THE CHAIRPERSON: Thank you.

MS. TANIS BRAKO: Thanks, Mr. Czarnecki. So, the two (2) items, one (1) of them was

related to Vice-chair Kapitany, your question about demographics of Manitobans.

So, I can share that with the customer values and perception study, we can confirm that 26 percent of the respondents had a family income of less than sixty-thousand dollars ($60,000). Twenty-nine percent of respondents had a family income between sixty thousand dollars ($60,000) and nine hundred -- sorry, nine-ninety thousand nine hundred and ninety-nine dollars ($99,999).

And then 30 percent had an income of over a hundred thousand dollars. And the remaining 15 percent preferred not to answer.

We're ready to move on to the other item. The other item we --

THE CHAIRPERSON: Sorry.

MS. TANIS BRAKO: Sorry.

THE CHAIRPERSON: I'm -- I'm a slow writer.

MS. TANIS BRAKO: Of course.

THE CHAIRPERSON: Can -- can you --

MS. TANIS BRAKO: I can repeat that.

THE CHAIRPERSON: Can you give the -- the next number? Your first one is 20 percent under sixty (60).

MS. TANIS BRAKO: Twenty-six percent less than sixty thousand dollars ($60,000).

THE CHAIRPERSON: The next one.

MS. TANIS BRAKO: Twenty-nine percent.

THE CHAIRPERSON: Thank you.

MS. TANIS BRAKO: And then 30 percent --

THE CHAIRPERSON: Yeah.

MS. TANIS BRAKO: -- over the hundred thousand dollars. And then 15, one five, percent preferred not to answer.

THE CHAIRPERSON: Thank you.

MS. TANIS BRAKO: No problem. And then the second item of clarification was related to the question about TransCanada Energy and their Keystone pipeline.

So, I can confirm that there are six (6) pumping stations that are served by Manitoba Hydro, and they do have electric service only. They do not have natural gas service.

THE CHAIRPERSON: Thank you. Mr. Peters...?

MS. TANIS BRAKO: Thank you.

THE CHAIRPERSON: Thank you, Ms. Brako.

CONTINUED BY MR. BOB PETERS:

MR. BOB PETERS: Good afternoon, witnesses. I'd like to turn with you to pages 21 to 27 of Board counsels' book of documents.

And am I correct that in this response to an Information Request, Manitoba Hydro provides the Board with comparisons between the preconstruction forecast costs and compares that to the final actual as-built costs?

MR. JIM PAWLUK: That is correct.

MR. BOB PETERS: Thank you, Mr. Pawluk. And so, for example, if we go down to number 5 -- no, let's start on number -- yeah, number 6, Great Falls Unit 4 overhaul. Budget was 20 million.

The final number was 53 million, so it was 165 percent over budget?

(BRIEF PAUSE)

MR. JIM PAWLUK: In -- from when the preconstruction budget was established of 20 million to where the final costs were, it is 53. However, not all the scope was identified at the time of preconstruction and some of the work was accelerated

in order to get it completed before the major work was undertaken.

MR. BOB PETERS: So, there were some unforeseen construction requirements along the way?

MR. JIM PAWLUK: At the time when the budget was established, it wasn't unforeseen as the whole scope of what was required on that particular unit was not identified yet. And the team was still in the process of identifying the total scope and costing it out.

MR. BOB PETERS: So, maybe we're saying the same thing, Mr. Pawluk. But the reason for the cost overrun is that, once Manitoba Hydro got into it, there were some -- some items that weren't costed in the initial preconstruction budget?

MR. JIM PAWLUK: I would term it that the full scope wasn't yet established, and the number that was established of 20 million was the number to get the investment started. It was what we did back at that time. Like, we're talking in 2008. And that was kind of the process that we followed.

So, it wasn't that more scope was discovered at that time. During the course of construction more scope was discovered, correct, but it wasn't the whole 33 million.

MR. BOB PETERS: The better answer then you're telling the Board is that the full scope of the work wasn't known before it started and, therefore, the costs were -- were lower than what they should have been?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: All right. I've got your point. Does that hold true for the -- the Pine Falls major overhauls?

MR. JIM PAWLUK: Yeah, correct. When that investment initially started there was two (2) more extra units that were added to the scope of work after the initial preplanning work of the first unit was identified.

MR. BOB PETERS: All right. And we see, Mr. Pawluk, if we go down this, and I'm not going to, but we go down these sheets on the next few pages that there are differences between the final preconstruction budgets compared to the final project costs, correct?

MR. JIM PAWLUK: That is correct.

MR. BOB PETERS: And some of them are significantly more expensive than what was included in the preconstruction budgets, correct?

MR. JIM PAWLUK: That is correct.

MR. BOB PETERS: If we jump backwards to page 5 of Board counsels' book of documents and we see the future expenditures for business operations capital, whether -- and if we look at the chart at the bottom, is it correct to assume that these future expenditures on business operations capital will likely cost more than the initial forecast?

MR. JIM PAWLUK: At this time, we couldn't say whether it's going to cost more or less. There is the potential for it to cost more, but there's also potential that it'll cost less. These are plans of what the assets need in the future but a detailed scope development will be done before we actually execute the work.

So, we can't give you in twenty (20) years or fifteen (15) years from now the exact investment we're going to do and what is exactly required and what some of the constraints are, so we may look at different alternatives, so it could go either way.

MR. BOB PETERS: Is there something, Mr. Pawluk, that Manitoba Hydro is doing to ensure that these future projects don't balloon in costs?

MR. JIM PAWLUK: We've got a gated process that we use. So, at different stages of the

investments they are reviewed. They are reviewed for what they are intended to achieve. They are reviewed based on cost and the value that the projects would present.

So, we do have multiple off-ramps to make decisions of whether the work will proceed or not proceed. And if costs are ballooning and the value isn't there, then we can make decisions at that time.

MR. BOB PETERS: All right. I thank you for that. I want to turn to asset management, and including the AMCL report if I may. Maybe we'll start on page 32 of Board counsels' book of documents.

In what was a Board Order 59 of '18, would it be correct that the -- at that GRA back in '17/'18, '18/'19 Manitoba Hydro had just started to make use of its Corporate Value Framework?

MS. KRISTA HALAYKO: Manitoba Hydro started using the Corporate Value Framework in small areas of the Company in 2010. But around 2018 we had the enterprise view of Corporate Value Framework, so it was used across the Corporation.

MR. BOB PETERS: Specifically related to business operations capital, that would have been more in line with 2018 --

MS. KRISTA HALAYKO: Yes, that's

correct.

MR. BOB PETERS: -- would it -- would it, Ms. Halayko?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: Thank you.

(BRIEF PAUSE)

MR. BOB PETERS: And that history, if we turn to page 31 of Board counsels' book of documents, that's a snapshot overview history of the asset management journey to date, correct?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: And in 2016, Manitoba Hydro engaged, close your ears, Ms. Vine, UMS to conduct an asset management maturity gap assessment?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: And they made -- UMS made recommendations to Manitoba Hydro?

MS. KRISTA HALAYKO: They did.

MR. BOB PETERS: And on page 36 of Board counsels' book of documents the Board asked Manitoba Hydro to retain an independent consultant to -- to update and assess the recommendations that had been made by UMS, correct?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: And that -- and that assignment has fallen to AMCL; also correct?

MS. KRISTA HALAYKO: That's correct.

MR. BOB PETERS: And, Ms. Vine, while I haven't seen your specific terms of engagement, you recognize we're on the public record here?

MS. SARAH VINE: Yes, I do.

MR. BOB PETERS: And you recognize that I'm going to be asking you questions, including for you to be critical of your client?

MS. SARAH VINE: Yes, I acknowledge that.

MR. BOB PETERS: And you're comfortable doing that?

MS. SARAH VINE: I am.

MR. BOB PETERS: All right. Thank you. In the summary that was provided by AMCL, would it be a correct conclusion to say, Ms. Vine, that Manitoba Hydro has made some progress towards asset management maturity?

MS. SARAH VINE: That's correct.

MR. BOB PETERS: And asset manage maturity means that Manitoba Hydro has processes in place to objectively assess conditions of capital

assets and assess the risks that are related to those assets?

MS. SARAH VINE: Manitoba Hydro has processes in place that validate asset needs prior to their asset optimization process and has a gated process.

Following that, that determines what capital actually gets spend and committed.

MR. BOB PETERS: But as Manitoba Hydro becomes more mature in its asset management, it will have in place data drive decisions to prioritize its business operations capital spending. Is that true?

MS. SARAH VINE: To -- to some extent. So data is -- is useful, but we need to remember that data is a snapshot. You can't have data about the future.

So when you're doing a forecast, we -- we look at the processes, the systems in place, what data has been used, and how that's been processed and -- and cleansed. And the assumptions associated with it. You can't -- you can't audit a forecast.

MR. BOB PETERS: Manitoba Hydro does not yet have a mature asset management process, does it, Ms. Vine?

MS. SARAH VINE: It has a maturing

asset management system in place. It's capital decision making processes is -- is reasonable for the data that they have.

MR. BOB PETERS: And so, while you use "maturing" as a verb, Manitoba Hydro is increasing its asset management skills but it's not where it ultimately wants to end up?

MS. SARAH VINE: Correct.

MR. BOB PETERS: And on page 39 of Board counsels' book of documents, we see that Manitoba Hydro's overall asset management maturity score increased from one-point-five (1.5) to one-point-eight-one (1.81), correct?

MS. SARAH VINE: That's correct.

MR. BOB PETERS: And that increase was from 2016 until 2023?

MS. SARAH VINE: Correct. '22, sorry.

MR. BOB PETERS: So it's taken six (6) years --

MS. SARAH VINE: Yes.

MR. BOB PETERS: -- to increase from one-point-five (1.5) to one-point-eight-one (1.81), correct?

MS. SARAH VINE: Correct.

MR. BOB PETERS: In the book of

documents, on page 43, I borrowed a -- a metric from Midgard. I didn't know you would be providing us with one slide 9 of your own.

But maybe just start there. Is this metric in figure 10 known to you?

MS. SARAH VINE: I'm familiar with this particular figure, yes.

MR. BOB PETERS: Yes. But also -- I mean, the underlying metric, the -- the four (4) stages.

MS. SARAH VINE: No, those are not Institute of Asset Management kind of standardized terms.

MR. BOB PETERS: It is not?

MS. SARAH VINE: No.

MR. BOB PETERS: It is -- somebody's come up with this as a scale and it's not one that you endorse?

MS. SARAH VINE: The -- the not to full scale, along the top, looks about right, looking at the -- the organizations within there. But yeah, I -- we wouldn't use the term 'novice'.

And competence is normally aligned at a three (3).

MR. BOB PETERS: All right. I'm going

to ask then that we turn to -- Ms. Schubert, I think it's Manitoba Hydro Exhibit 34. And thank you for displaying page 9.

You're suggesting, Ms. Vine, that the scale that's now before the Board on the monitors is a more appropriate scale?

MS. SARAH VINE: Yes. This -- this is the scale defined by the Institute of Asset Management.

MR. BOB PETERS: And you've superimposed on this scale the same numbers that we just talked about?

MS. SARAH VINE: That's correct.

MR. BOB PETERS: And the 2016 maturity is shown as is the current 2022, one-decimal-eight-one (1.81), maturity.

MS. SARAH VINE: Correct.

(BRIEF PAUSE)

MR. BOB PETERS: Is it correct, Ms. Vine -- I'll look to Board counsels' book of documents, page 45 -- that AMCL is telling this Board that it would expect a utility to advance from one-point-five (1.5) to two-point-zero (2.0) in -- between

two (2) and three (3) years?

MS. SARAH VINE: That -- that's what we have seen in the past, yes.

MR. BOB PETERS: And AMCL expects that a utility should advance from one-point-five (1.5) to three (3) in about five (5) years total?

MS. SARAH VINE: It does vary by the size of the organization and the complexity but, yes, that would be reasonable.

The -- the -- I liken it -- this to trying to steer a speedboat versus trying to steer a shipping container.

The -- the smaller the more -- the organization, the -- the easier it is to make systemic change. That's -- that's not so easy in an organization this kind of size.

MR. BOB PETERS: So the size of Manitoba Hydro's organization is restricting its ability to move up the scale?

MS. SARAH VINE: I wouldn't say restricting, I would say it's just -- it makes it harder. It makes it slower.

MR. BOB PETERS: And on page 45 of Board counsels' book of documents, in the (c) part, at the bottom, I understand Manitoba Hydro is telling the

Board it'll take another four-and-a-half (4 1/2) years to get from one-point-eight (1.8), where they currently are, to a score of two-point-four-five (2.45). Do you see that?

MS. SARAH VINE: Yes. July -- July 2027.

MR. BOB PETERS: And by my -- by my math, which has been criticized on the public record by some of your panel mates, the cumulative time line from 2016 makes it a full eleven (11) years for Hydro to get to two-point-four-five (2.45).

Do you agree with my math?

MS. SARAH VINE: That math sounds about right, yes.

MR. BOB PETERS: And it'll even take longer than those eleven (11) years for Manitoba Hydro to get to level 3, correct?

MS. SARAH VINE: It -- it largely depends on the systems and processes they put in place and the resources they put to it.

So what we -- what we typically see, if -- if we go back to the graph that's got the -- the maturity progression on it.

MR. BOB PETERS: Page 9 of your evidence from this morning.

MS. SARAH VINE: Yeah. So what we typically see is -- is between one (1) and two (2) -- or maturity scales one (1) and two (2), it's quite hard work, it's quite chaotic.

And that can be, you know -- there's a significant amount of -- of business change going on there.

Once organizations start getting some momentum, it -- it becomes a bit easier, so your data starts getting better. You're starting to -- to use your tools more consistently.

So it -- it -- it kind of makes life a bit faster.

MR. BOB PETERS: Ms. Vine, AMCL is telling the Board it should only take four (4) to five (5) years to go from one-point-five (1.5) to three-point-zero (3.0). Correct?

MS. SARAH VINE: Empirically, yes. But that's an average figure that we've observed.

MR. BOB PETERS: So why have you found Manitoba Hydro is taking so long to get to a typical or world class maturity rating?

MS. SARAH VINE: The -- the size and complexity of the organization. So many -- many organizations that -- that have these assessments

would only be looking at one (1) energy stream. So by energy stream or value stream, that's either generation companies, distribution companies. They're -- dealing with one (1) asset class or asset type is far easier than -- than dealing with multiple asset classes on a consistent basis.

So having one (1) Corporate framework -- - Corporate Value Framework is actually quite challenging, compared to other large provincial providers of -- of power in Canada. They're -- they're trying to now mash that together from four (4) different business -- business units into one value framework. It's quite hard to do.

MR. BOB PETERS: Have you worked for Canadian electrical companies, such as BC Hydro or Hydro Quebec?

MS. SARAH VINE: Not Hydro Quebec. But I have worked with BC Hydro, ENMAX, Toronto Hydro, Newfoundland Power, and a few -- few of the smaller ones.

MR. BOB PETERS: Is it correct that BC Hydro is further along -- and -- and I'm looking at page 43 of Board counsels' book of documents -- that BC Hydro, Ms. Vine, is further along the maturity scale than Manitoba Hydro?

MS. SARAH VINE: I would rather not comment on BC Hydro's maturity. I think that's for them to discuss. They -- they have been on the journey for a long time.

MR. BOB PETERS: Has it taken BC Hydro as long or longer than Manitoba Hydro to progress?

MS. SARAH VINE: I would say about the same.

MR. BOB PETERS: On page 42, Ms. Vine, one (1) of your criticisms I take of Manitoba Hydro is highlighted at the top sentence. Do you see that?

MS. SARAH VINE: Yes, I do.

MR. BOB PETERS: You're telling this Board that Manitoba Hydro's ability to improve its score on asset management, it's being constrained by the asset information that is available.

MS. SARAH VINE: No. The maturity in asset information. So when we look at maturity of -- of -- the maturity scores for asset information, it's based on whether there is a strategy in place, whether there are standards, information standards, in place.

An example of an information standard is -- is, as we discussed this morning, whether you're looking at interruptions to supply over two (2) minutes or five (5) minutes. Simple things like that

make data analysis very complicated. So, we look at the data standards, we look at the systems in place, and we look at the -- the data and information management.

So what -- what we saw or what I -- what I observed with Manitoba Hydro is they put a huge amount of data. It's in disparate systems, and there's a lot of manual data cleansing and manual handling of data to get it usable.

And it's -- as soon as you start having to manually data cleanse, you're losing an audit trail. So it's not to say that it's -- it's wrong, but it's not efficient.

It certainly doesn't help you make timely decisions based on risk, and -- and as soon as you start data cleansing and -- and manually smooshing two (2) -- two (2) databases together or -- or getting extracts that are not quite aligned with each other, it -- it becomes incredibly difficult to get that very crystal clear cause and effect data-driven response.

MR. BOB PETERS: Can I put that another way and ask if you agree that Manitoba Hydro is lacking good information about the condition of its assets, and therefore, the decisions as to maintain or replace them is being impaired?

MS. SARAH VINE: You'd -- I would -- I would use the term 'adequate'. They have -- they have good enough data. It's not -- it's not perfect, but my view is that going and collecting data and doing data collection is -- is not necessarily a very effective use of time and resources.

I would rather see it embedded into day-to-day business processes like when you go out and do an inspection anyway to capture data rather than do a specific condition assessment program because it's only a snapshot.

MR. BOB PETERS: Is Manitoba Hydro doing that now?

MS. SARAH VINE: I -- I don't know if they're doing that at the moment.

MR. BOB PETERS: All right. So one (1) of the criticisms was the maturity of asset information, correct?

MS. SARAH VINE: Correct.

MR. BOB PETERS: What's another criticism that AMCL has of Manitoba Hydro's asset management?

MS. SARAH VINE: The -- the second one was their understanding of -- of risk, and that's at an organizational level. So what I look for, and

again as we discussed this morning, that -- that balance of cost-risk and performance.

What I couldn't see is a very clear picture of what their current risk is and whether that's getting better or worse. So it -- it worries me when I see half a picture and I can't see whether they're -- I think my biggest concern would be that they're eroding some of the system resilience that they already have, but they can't see by how much.

So we don't know if we're -- if -- if that's then pushing -- pushing risk forward to -- to future generations.

MR. BOB PETERS: And what do you understand Manitoba Hydro is doing, if anything, relative to that concern?

MS. SARAH VINE: Well, the -- the advice that -- that we've given them, and some colleagues of mine have been -- been assisting with, is to focus on how you want to be making decisions in the future, how you're going to articulate risk, and then work back to what information do you need to support that and what systems and processes do you need to capture that -- that information on an ongoing basis.

MR. BOB PETERS: All of that delays

the time line to getting to a more mature asset management program?

MS. SARAH VINE: Absolutely.

(BRIEF PAUSE)

MR. BOB PETERS: I'm going to turn to questions relative to the spending on business operations capital in light of the asset management.

And is it correct that Manitoba Hydro sees itself as above the Canadian average on the SAIDI and SAIFI metric scores?

MR. JIM PAWLUK: It's Mr. Pawluk. In regards to that, that is correct.

MR. BOB PETERS: And is it possible, Mr. Pawluk, that for Manitoba Hydro, if it made a corporate decision to have its system at the Canadian average for those two (2) metrics, how much money Manitoba Hydro could stop spending?

MR. JIM PAWLUK: In order to evaluate that, we're not able to determine what that amount would be at this time. We're working through our asset management maturity to get there, and so to come up with a realistic number and to give customers less than what they've had, we wouldn't be able to do that

yet.

MR. BOB PETERS: But you understand that'll be something that could develop in future as your asset management matures?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: As your asset management systems mature, Manitoba Hydro would be able to identify which projects could be cancelled or deferred, postponed in some way such that the SAIDI and SAIFI indices for Manitoba Hydro would drop down closer to the Canadian average?

MR. JIM PAWLUK: That question is actually quite -- quite complicated. When you look at the geographic region of Manitoba Hydro and where all of our customers are located, it's not just as simple as not doing a project.

It may or may not impact SAIDI and SAIFI when you're taking an index across the whole customer base. So -- so it's quite complex to do the analysis to understand what projects would or would not impact SAIDI or SAIFI to get to the average.

MR. HAL TURNER: Mr. Peters, sorry. It's Mr. Turner. If I could just interject for a moment.

We have no information or data from our

customers suggesting that they want us to target CEA average performance. As Ms. Brako spoke in her direct evidence, our customers have told us that they want a balanced approach with respect to rates and reliability.

MR. BOB PETERS: So humour me with this hypothetical then. Mr. Tess walks into Mr. Fogg's office and says, You've got to drop your business operations capital by 10 percent.

How, Mr. Turner, do you go about determining how you would do that?

MR. HAL TURNER: Hypothetically, we would try and either defer or pause the investments that yielded the least amount of value for our customers and had the lowest impact on them.

MR. BOB PETERS: And, in fact, Manitoba Hydro has reduced its business operations capital, that you showed us before the break, and twenty (20) million in the drought year and I think, forecast, up to fifty (50) million the following year. Correct?

MR. HAL TURNER: I think we indicated that factors in this world happen that caused the capital spend. We didn't necessarily do it on purpose.

MR. BOB PETERS: No, I -- I accept that, but when -- when Manitoba Hydro is reducing its spending, it's having to make those multi-factorial decisions on where does that reduction occur?

MR. HAL TURNER: Again, I think we're in -- in the -- the reductions in the -- in the years that we went through earlier this morning, they were -- they occurred because events outside of our control. So we were not choosing to reduce it.

If we were, we would then have to try and minimize the impact to our customers and the reliability of the system.

But as I've mentioned in my direct evidence and Ms. Halayko spoke to as well, you know, we're at a point where we see the performance of our systems declining. Our customers are seeing more outages each and every year. There are -- I think we said, five thousand (5,000) additional customer outages a year.

We are seeing the availability of the generation system and HV system declining, which means, we are, in most years, exporting less electricity to the United States or to our neighboring markets, excuse me, which reduces our net export revenue and puts the increased pressure on our

customers -- domestic customers, to come up with those funds.

So, and -- and additionally, we know that, for the majority of our assets, it makes sense for both our customers and us, for us to address them pro-actively. And so, you know, we think we're at a point where we're not investing enough, Mr. Peters.

So, if we were to -- I guess what I'm saying is in -- in our opinion, would be a bad idea for us to reduce our investment. It would not be in our customers best interest.

MR. BOB PETERS: Well, we -- we certainly got your point on that and also in your materials.

But, one of the Interveners has put forward the 10 percent reduction number. You're familiar with that?

MR. HAL TURNER: You're referring to Midgard?

MR. BOB PETERS: Yes, sir.

MR. HAL TURNER: I -- I am familiar.

MR. BOB PETERS: And, on page 54 of the Book of Documents from Board Counsel, Mr. Fogg, if you can help us, this one's got numbers on it.

The annual revenue requirement effect

of a 10 percent or I'll say $55 million reduction in business operation capital would amount to something in the neighborhood of $4 to $5 million a year?

Would you accept that, sir?

MR. ALASTAIR FOGG: I think, Mr. Peters, what this shows here is the sensitivity from a -- really, this would be the depreciation expense impact of reducing business operations capital by 10 percent per year. So, it does compound on itself year over year.

But, this was purely the financial sensitivity. There was no assessment of risk of that 10 percent reduction or potential increases to operating expenses associated with that 10 percent reduction.

MR. BOB PETERS: All right. I'll -- I'll accept that, but if you look at the green highlighted portion, this is looking at what would happen to net income if certain of these sensitivities occurred. Correct, Mr. Fogg?

MR. ALASTAIR FOGG: Yeah, so this is -- this is showing the impact in each of those years to net income and I apologize what I was suggesting, is that's based on the deferral you're seeing a decrease to the depreciation expense which is then showing you

the impact here, highlighted in green, to net income year over year.

MR. BOB PETERS: Well, in addition to -- Mr. Fogg, you're making the assumption that there's no financing costs attached to -- to these business operation capital expenses. Correct?

MR. ALASTAIR FOGG: I -- I should have clarified that it would predominantly be depreciated as an expense, as we showed this morning, that we've -- we've intended to primarily fund the investments for business operations capital based on cash from operations or self-generated funds.

So, the finance expense impact would be the lesser impact on those line items.

MR. BOB PETERS: And -- and for the purposes of your answer, you've assumed the financing impact it's -- it's zero dollars.

MR. ALASTAIR FOGG: I've made a simplifying statement there. Well -- that's why I've clarified that it would be predominantly the depreciation aspect.

MR. BOB PETERS: All right. And it would be in that neighborhood that I said of four (4) to five (5) million a year and then it would accumulate over the different years. Right?

MR. ALASTAIR FOGG: It would start in that four (4) to five (5) million a year, as you've suggested. It does start to compound and as it compounds that amount grows year over year.

MR. BOB PETERS: All right. Let me ask it a different way and, Ms. Schubert, there was a financial MF4-33 that I'd ask you to put up from tab 10. I think it's a single page.

And, Mr. Fogg, I'll end by, on this topic, by just looking at this table that's reproduced here and let's look at the very bottom line:

> "If business operations capital expenditure was decreased by 10 percent a year [and we look in the right hand column] for Manitoba Hydro to be kept whole out of its financial forecast, the 2 percent rate path could be reduced by 0.17 percent."

Am I understanding that correctly?

MR. ALASTAIR FOGG: Mr. Peters, I think, just to be clear that this is assuming everything else is maintained equal. This is simply assuming a 10 percent reduction.

The business operations capital, no

associated increases to operating and -- and administrative expenses for additional maintenance et cetera, but on the basis of that as a single variable that was changed, all else being equal, that's what that shows.

The -- the 2 percent rate path would be reduced by that negative .17 percent, in order to achieve the same level of retained earnings in the 2041/'42 fiscal year.

MR. BOB PETERS: Thank you. And, again, now testing my math, Mr. Fogg, the -- instead of a 2 percent rate path, it would be a 1.83 percent rate path.

MR. ALASTAIR FOGG: Yes, I think your math is good on that one.

MR. BOB PETERS: All right. Then I'll stop at that point, but I do want to turn to a topic you answered in your second last question to me, and that was, the O&A expenses aren't factored into this discussion. Correct?

MR. ALASTAIR FOGG: The O&A expenses are not included in this analysis, nor is there any other impact around or potential impact, I should say, to net export revenue or other factors that could be impacted by unplanned outages of the generation system

or transmission system, or others.

MR. BOB PETERS: All right. On page 55 of Board Counsels' Book of Documents, there's an extract from the Midgard Report in this proceeding.

And Midgard is suggesting that increasing operational staff to fix equipment failures in a timely manner, is the best near term strategy.

Do you see that?

MR. ALASTAIR FOGG: I do see that, yes.

MR. BOB PETERS: Ms. Vine, turning to you, is increasing operational staff to fix equipment failures the best near-term strategy, rather than replacing mostly depreciated assets with newer, high cost undepreciated assets?

MS. SARAH VINE: I think that's the first time I've ever seen a consultant advise a client to be more reactive and less planned.

MR. BOB PETERS: That's not something that the asset management industry is comfortable doing?

MS. SARAH VINE: Generally not, no. Some -- some assets are fine to do fix on fail, but when you get to the point that your beyond the asset failing and failing service to customers, you've gone

way too far.

MR. BOB PETERS: And when you say you've gone way too far, that was on that -- that graph that was shown by Manitoba Hydro, the coloured line, as to where it might be best to put your $20 million rather than incurring fifty-five (55) million at a later date.

MS. SARAH VINE: Yeah, going -- going back to the -- the chronology, if you -- if you stop changing your oil, stop changing your tires, don't change your brakes, you'll be fine for a while. But then the -- the failure becomes more catastrophic and you've got four (4) or five (5) things going at once.

And from an asset management perspective, and especially with this kind of -- of asset base, that's when you end up with an outage management problem rather than just throwing more people at it.

I've -- having been in a few organizations that have -- have lost control of that balance, it -- it -- you -- there's only so many people you can have doing repairs at the same time without taking, you know, safety and availability risks.

MR. BOB PETERS: Mr. Pawluk -- Mr.

Pawluk, has Manitoba Hydro quantified what additional operations support would be required to keep the older assets in good condition?

MR. JIM PAWLUK: We haven't quantified what it is, but we do have maintenance programs that are in place and are being reviewed and we do look at -- when we don't get to investment that we will be doing more investment, it's about timing and -- and it is a strategy to maintain some of our assets and not just replace.

MR. CYRIL PATTERSON: And, if I may, Mr. Peters, it's Mr. Patterson speaking.

To Mrs. Vine's point about just throwing more people at the problem, some of the realities in our environment for hiring the highly-skilled labour force that we need to do these types of repairs, internal labour takes at least four (4) years for them to become qualified, in order to do this highly-skilled hazardous work.

Also, the resource capacity in the Province of Manitoba for contractors is not at such where it's mature enough to absorb this high level of work requirement, in order for us to peak shave this type of asset replacement work.

So, there's a combination of both:

highly-skilled internal labour as well as contract resources that can be leveraged to improve but it takes time to ramp up those skills and to get people in place in order to do this work. Meanwhile, you're SAIDI and SAIFI performance continues to slip, while you're progressing in -- forward in time, trying to train and onboard these resources.

MR. BOB PETERS: And you're trying, Mr. Patterson, to onboard those resources now, but you're still telling the Board you're going to be a number of years out before you -- you're going to have the complement that you need to do that?

MR. CYRIL PATTERSON: Correct. Yes. We're a training utility. So, it's most of our trades program are four (4) years and, in order for these folks to be highly-skilled and qualified to do the work safely that they need to do, they need that full scope of that four-year training program.

MR. BOB PETERS: Mr. Pawluk, would it be correct --

MR. HAL TURNER: Mr. Peters, if I may interrupt. We're -- we're talking about the financial impacts to Manitoba Hydro on a run to failure versus proactive approach. What we also shouldn't forget about is the impact to our customers.

So, you know, we have, for example, a wood pole line that was installed in the '50s or '60s and it's getting near the end of its life. So, if we wait and let those poles fail one at a time, every time a pole fails and falls over, our customers on that line are going to see an outage.

And, whereas, if we proactively go and replace that line with a crew and do all the poles at once over, you know, some period of time, we can manage the impact to the customers a lot better. So, there's -- there's financial impacts to Manitoba Hydro we have to consider, but there's also the impact to our customers we need to consider.

MR. BOB PETERS: All right. Thank you. I have your point.

Would it be correct, Mr. Pawluk, to conclude that Manitoba Hydro needs to advance in its asset management maturity before it'll know whether it's less expensive for customers to defer or repair an asset rather than replace it?

MR. JIM PAWLUK: In the full context of that, I don't agree because we -- we do have strategies, where we run some of our assets to failure. So, it's not that we haven't been doing that. We're not strictly just replacing assets. We

do make decisions to continue to maintain assets. Can we qualify and do sensitivity analysis at this point with where we are in asset management? We are not able to do that to that degree of accuracy.

MR. BOB PETERS: And that's a -- that degree of accuracy will only come in about four (4) to six (6) years from now?

MR. JIM PAWLUK: It's a journey to get there. I'm not saying it's going to take us four (4) to six (6) years to get to that exact point. We're working on multiple aspects. It's an asset management system that we're maturing, not just one aspect of asset management.

So, it's not all going on in a straight line. We'll mature in some areas quicker than others. So, for us to have the full enterprise maturation to be at that level, yes, but in certain areas, we may be sooner.

MR. BOB PETERS: Thank you. Let's turn to Pointe du Bois, on page 56 of Board Counsels' Book of Documents.

The Board will understand that Manitoba Hydro is embarking on a major refurbishment of Pointe du Bois. Correct?

MR. JIM PAWLUK: That is correct.

MR. BOB PETERS: I should have probably asked this first, but Mr. Czarnecki didn't jump to the button, but the numbers on page 56 are openly in the public record. Correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And this project includes a federal contribution that Manitoba Hydro has applied for?

MR. JIM PAWLUK: We've applied for funding under the, I believe it's Investing in Canada Infrastructure Program.

MR. BOB PETERS: And that's the $114 million that's shown here as part of the application?

MR. JIM PAWLUK: That's correct.

MR. BOB PETERS: Is it on the public record as to whether or not Manitoba Hydro's application has been approved, or denied, or pending?

MR. JIM PAWLUK: It is not.

MR. BOB PETERS: And I'm not asking you to put it on the public record.

MR. JIM PAWLUK: Understood. I was just going to provide some context so the -- the Federal Government who operates that program, one (1) of the conditions is that any announcement of a decision for or against is made by the Federal

Government.

So, we are not at liberty to say whether we have funding or not.

MR. BOB PETERS: Mr. Fogg, are you at liberty to say whether this project requires a public review under the amended Manitoba Hydro Act?

(BRIEF PAUSE)

MR. ALASTAIR FOGG: Mr. Peters, as per the requirements under the Act, it -- it wouldn't meet the requirement for a public review, as it's not new generation station -- sorry, it's not a new generating station or asset.

MR. BOB PETERS: It's a refurbishment?

MR. ALASTAIR FOGG: It's a refurbishment.

MR. BOB PETERS: All right. And the idea of a Pointe du Bois refurbishment has been around for a long time. Correct?

MR. JIM PAWLUK: That's correct.

MR. BOB PETERS: And at the 2017/'18, '18/'19 GRA, this Board would have understood that that project was being shelved, in my terms?

MR. JIM PAWLUK: That's correct.

MR. BOB PETERS: And it was shelved because the export prices were dropping and there was no need for its capacity back then?

MR. JIM PAWLUK: That's correct. At the time, I believe we were projecting dates for new resources in the 2040s.

MR. BOB PETERS: And if I understand your evidence on export prices, they're dropping even further then they were back at the last GRA.

Would that be correct?

MR. JIM PAWLUK: I think we talked about this last week and that the long-term projection for export revenues is declining due to the increase proliferation of low-cost renewables.

But what we also talked about is our changes in our supply demand analysis and the fact that the need date for new assets has move forward to, I believe, it was 2030/'31, subject to check.

MR. BOB PETERS: So, this project has made its way back to the capital expenditure forecast because of the capacity requirements in -- in the forward years?

MR. JIM PAWLUK: I'm sorry, would you mind repeating that, Mr. Peters?

MR. BOB PETERS: Yes, the Pointe du

Bois Project has made it back into the Capital Expenditure Forecast because Manitoba Hydro now has capacity concerns and constraints in the forward year of its forecast?

MR. JIM PAWLUK: It provides both capacity and energy, but -- so, correct.

MR. BOB PETERS: How much new capacity is on a net basis has been provided? I would have known the answer last week, but I'm hoping you know it this week.

MR. JIM PAWLUK: I believe the answer is on page 60 of PUB Counsel board of documents. I believe the answer is 54 megawatts.

MR. BOB PETERS: But is that -- is that on a net basis, because I understood some of the units are going to be allowed to expire; some were going to be fixed; and yet others will still not be fixed.

MR. JIM PAWLUK: Yeah, it -- so, I guess you'd have to help me and -- and give me the date or the year in which you want me to make the answer, because there are, I think, subject to check, by the units operating.

And I think we assume three (3) of them will be able to operate significantly longer into the

future. So, it really depends on when -- at what point in time. If the answer would have different potentially three (3) years and it may be different two (2) years.

So, if you want me to tell you with respect of today, I can absolutely do that, but I'll need to take that as an undertaking.

MR. BOB PETERS: And I'm going to ask you to take that away and -- and maybe come back and provide the Board with the -- I'll ask for the three (3) snapshots of capacity that will be available depending on how this program rolls out.

MR. JIM PAWLUK: So, in which year? Relative to which points in time, please.

MR. BOB PETERS: Well, it was to do with the number of units, not so much the calendar, because certain units were going to be retired, some were going to be refurbished.

And -- and once the new ones are refurbished, some of the other ones are going to be left to die in my --

MR. JIM PAWLUK: Maybe what I'll suggest, Mr. Peters, is we'll give you a time line of when we anticipate the as -- the existing assets to fail and when the new assets will come on.

Will that work?

MR. BOB PETERS: Yeah, that'll work. And we can then find the net capacity gain that is being provided here.

MR. JIM PAWLUK: Great.

--- UNDERTAKING NO. 11: Manitoba Hydro to provide a time line of when they anticipate the existing assets to fail and when the new assets will come on.

CONTINUED BY MR. BOB PETERS:

MR. BOB PETERS: Would it be correct that the net present value of this project has increased because of the reduction of water rentals and debt guarantee fees in the province?

(BRIEF PAUSE)

MR. ALASTAIR FOGG: Mr. Peters, we -- we would look at -- at those items, the -- the debt guarantee fee and the water rental fee particularly the debt guarantee more broadly or on an overall basis

versus on an asset basis.

So, what I would suggest is we'll -- we'll take that as an undertaking as well, just to confirm that amount, as it may be nuance than the simple answer I can provide right now.

MR. BOB PETERS: All right. Thank you for that undertaking then, Mr. Fogg.

--- UNDERTAKING NO. 12: Manitoba Hydro to confirm the amount, debt guarantee fee and the water rental fee particularly the debt guarantee more broadly or on an overall basis versus on an asset basis.

CONTINUED BY MR. BOB PETERS:

MR. BOB PETERS: The Board will see that included in the refurbishment of the generating station is the refurbishment of some of the transmission lines that links Pointe du Bois to, I think it's called the White -- White Shell Station.

Is that correct?

MR. JIM PAWLUK: That's correct. This is Mr. Pawluk.

MR. BOB PETERS: Why -- why is a new transmission line needed for this project?

MR. JIM PAWLUK: The current infrastructure that's in place wouldn't be able to carry the energy that's being produced out of Pointe du Bois. And there's also a need for more capacity in the area.

MR. BOB PETERS: More transmission capacity?

MR. JIM PAWLUK: Correct.

MR. HAL TURNER: Maybe I'll just add, Mr. Peters, I think subject to check, there were two (2) lines coming out of Pointe du Bois. One (1) of the two (2) lines has failed at -- at some point in the recent past, so there's sufficient capacity for the amount that's generated now, but when we have eight (8) new units, there won't be sufficient capacity, due to the failure of one (1) of the two (2) lines.

MR. BOB PETERS: All right. We'll wait to see your -- your net numbers before we -- we ask further about that.

I'd like to turn to -- related to transmission, Bipole I and II outages. That was the subject of Manitoba Hydro's evidence this morning and

on Board counsel Book of Documents, page 17, we see that Manitoba Hydro, in the -- I'll call it the dark blue, is planning on spending a lot of money on HVDC converters, correct?

MR. JIM PAWLUK: It's Mr. Pawluk, that's correct.

MR. BOB PETERS: And -- and when we -- when we say, Mr. Pawluk, HVDC converters, is that code for Bipoles I and II as well?

MR. JIM PAWLUK: That is for Bipole I and II converter stations, correct.

MR. BOB PETERS: And then on page 18 of Board counsels' Book of Documents, and this one is a document that Board advisers put together to try to sum up some of the tables that are on pages 19 and following but -- in the Book of Documents, but -- but the Bipole I and II HVDC refurbishment is going to be between $1 and $1.8 billion over the next ten (10) or twelve (12) years, correct?

MR. JIM PAWLUK: Approximately. Yeah, that's correct.

MR. BOB PETERS: And in Manitoba Hydro's rebuttal evidence, if you need it, I can find it. The Utility is critical of Midgard's suggestion that Manitoba Hydro need not spend as much as it's

planning on refurbishing Bipole's I and II right now.

Are you familiar with that?

MR. JIM PAWLUK: I am.

MR. BOB PETERS: And then Manitoba Hydro, I think on page 73, thank you, Ms. Schubert -- on page -- I think it's 73 of 131, so I'm not sure what PDF -- yes, this page.

Manitoba Hydro is suggesting that Midgard's analysis and conclusions are incorrect. Have I interpreted that properly?

MR. JIM PAWLUK: That's correct.

MR. BOB PETERS: And then if we go to the Consumer's Coalition Information Request of Manitoba Hydro -- speaking of Gretzky -- 1st Round 99 (a) to (e), there's -- I want to be quick with this.

The solid blue line is Manitoba Hydro's peak winter load as labelled, correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And that's grossed up, Mr. Pawluk, by 12 percent to get the dashed blue line. And that 12 percent is a reserve margin, correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And then the solid green line represents the total generation with all of

the bipoles in operation, correct?

MR. JIM PAWLUK: That -- that is correct.

MR. BOB PETERS: And that's Bipoles I, II, and III, correct?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And so, the -- the beige line -- I'll call it beige, I don't know if it's orange, but beige -- it's only when Bipole II is out that it comes down to that beige line, correct?

MR. JIM PAWLUK: That is what that line indicates, but that is not necessarily correct.

MR. BOB PETERS: Well, it's your chart. So, what -- what is correct?

MR. JIM PAWLUK: Well, that's -- that's if the Bipole II fails; that is correct. But in the event that Bipole I fails, the math between the Bipole II failure impact and the -- so that's the beige line and the red line, we would be underneath the solid blue line if Bipole I failed.

MR. BOB PETERS: Okay. Let's -- let's make sure my questions were clear.

If only Bipole II failed, your beige line is approximately accurate?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: But if Bipole I and Bipole II failed simultaneously, we'd be down to the red line?

MR. JIM PAWLUK: Correct.

MR. BOB PETERS: And so, the point Manitoba Hydro is making is, if Bipoles I and II fail, we could be in trouble?

MR. JIM PAWLUK: Correct, as well as if Bipole I failed. The red line is the accumulation of both Bipole I and II. The beige line is just Bipole II. The delta between those is what the impact of Bipole I is.

So, if Bipole I was to fail, we would be under the solid blue line.

MR. HAL TURNER: I think what Mr. Pawluk is saying is, if there was a chart -- a line on the graph that was for a Bipole I failure only, it would be below the solid blue line. That -- I think that's the point he's trying to make.

MR. BOB PETERS: Thank you for that. But let's turn then to another colourful chart. It's in a Information Request from the '17/'18 GRA.

MR. HAL TURNER: Before we leave that, Mr. Peters, while we would be able to meet Manitoba load, that doesn't mean there wouldn't be an impact.

So, that -- some generation would be stranded in the North, which means we would be exporting less generation, which means we would have lower net export revenue.

So, there will be an impact to our customers, maybe not from a reliability perspective, but it could be from a rates perspective.

MR. BOB PETERS: Be a financial impact on the Company, and you may choose to pass that along to consumers by way of higher rate increases?

MR. HAL TURNER: Correct.

MR. BOB PETERS: All right. Let's turn then to PUB Manitoba Hydro 2nd Round 34 from the 2017/'18 GRA.

Anybody on the Panel remember this chart? Maybe we'll start with the bottom graph on this page and start with the summer -- the summer load.

(BRIEF PAUSE)

MR. BOB PETERS: So, let me ask it this way, and -- and you can tell me if I'm interpreting this and the Board's interpreting this correct.

In the green line the summer load that would have to be served in the event of a failure, a catastrophic failure, of Bipoles I and II is shown in the solid green line?

Do I have that correct?

MR. HAL TURNER: That is my understanding.

MR. BOB PETERS: All right. And then going over to the 2017 and '18 and '18 1/2 years on the 'X' axis, the date axis, we see that up until the middle of 2018, if Bipoles I and II went down, there would not be an ability to get the generation to load, correct? There would be consequences?

MR. HAL TURNER: I think what this graph is telling us is, in the summer, now that we have Bipole III in service, we could get sufficient generation out of the North to meet Manitoba summer peak load.

That doesn't mean there wouldn't be stranded generation. It just means that there would less generation. So, what that means is, ultimately, there would be less energy available for export to neighbouring markets.

MR. BOB PETERS: Okay. Mr. -- Mr. Turner, I'm not sure if -- if I agree entirely with

what you said because if Bipoles I and II went down, having Bipole III would allow Manitoba Hydro to supply the summer load, correct?

MR. HAL TURNER: That's correct.

MR. BOB PETERS: Now -- and you've also mentioned there may be stranded generation that can't get to market, and that's a --

MR. HAL TURNER: Correct.

MR. BOB PETERS: -- concern more of Mr. Fogg, but Manitobans will be -- the lights will be on?

MR. HAL TURNER: The lights will be on, correct.

MR. BOB PETERS: All right. So, let's -- let's go to the top of this chart and look at the winter situation.

It's not -- and likewise, what you're trying to show on this map -- or this chart is that, if there is a winter catastrophic failure of Bipoles I and Bipole II simultaneously, the green line has to be -- is the load that has to be met, correct?

MR. HAL TURNER: Correct. The --

MR. BOB PETERS: And until the middle of 2018, you see that vertical blue line; that's Bipole III coming into service, correct?

MR. HAL TURNER: Correct.

MR. BOB PETERS: And then as we move over closer to 2020, the vertical line where the -- Ms. Schubert has the cursor, that's related to the Manitoba/Minnesota transmission project that has come in service, as well?

MR. HAL TURNER: Correct.

MR. BOB PETERS: So, when we look at this, Manitoba Hydro's ability to serve the load if Bipoles I and II go down is being met fully with Bipole III, together with some import capability, correct?

MR. HAL TURNER: That's correct. I believe the graph below excluded imports and this graph includes imports.

MR. BOB PETERS: And that's because in the summer we didn't -- we wouldn't need the imports. We --

MR. HAL TURNER: Correct.

MR. BOB PETERS: We'd have access to them, but we don't necessarily need them, right?

MR. HAL TURNER: Correct.

MR. BOB PETERS: Okay. And in the winter we would need them?

MR. HAL TURNER: Correct.

MR. BOB PETERS: Before we leave this, on Manitoba Hydro's rebuttal --

MR. HAL TURNER: I know it goes with -- just to be clear to everybody, that means we're spending a lot of money to buy energy to import into Manitoba, so there'll be a financial consequence, but the lights will stay on.

MR. BOB PETERS: They'll stay on until approximately 2041?

MR. HAL TURNER: Based on that year's load forecast. I don't think that would --

MR. BOB PETERS: That's not current.

MR. HAL TURNER: -- reflect the current load forecast, so I -- the date may have changed.

MR. BOB PETERS: Yeah, your point is correct. I -- I take your point. Thank you. Ms. Schubert, I would like to turn to end this on Manitoba Hydro's rebuttal, page 75 of 131.

Manitoba Hydro lists many events that affected Bipoles I and II, correct?

MR. HAL TURNER: Correct.

MR. BOB PETERS: Did any of these incidents that are listed over the past thirty (30) years result in a loss of load for Manitoba Hydro?

(BRIEF PAUSE)

MR. HAL TURNER: I believe that's correct. I will check that, but subject to check, that's correct.

MR. BOB PETERS: All right. In the fifteen (15) minutes I'm going to ask to continue on, I have just a couple more topics.

And in the Midgard report, on page 48, there was a statement from Midgard to the effect that Manitoba Hydro lacks appreciation for the time value of money. And I think that's on Midgard's report, page 48, if we can find it.

Do you remember reading that?

MR. ALASTAIR FOGG: This is Mr. Fogg. Yes, I recall reading that.

MR. BOB PETERS: And does Manitoba Hydro agree that there is a value to ratepayers by deferring a project?

MR. ALASTAIR FOGG: There can be a value to that deferral, although I would note that the way it's been contexted in Midgard's report I would suggest is not accurate.

MR. BOB PETERS: In addition to a

value to ratepayers, there would also be risks, such as asset failure causing an outage.

That's -- that's your point?

MR. ALASTAIR FOGG: It would be this tradeoff of risks around asset failures as well as that potential cost savings. But what I wanted to note, when I say that I don't think they represented it accurately is -- well, it's twofold.

One is the calculation itself of the time value of money is wrong in this. They've multiplied the weighted average cost of capital by the value spent. That's not how you calculate the time value of money.

The other aspect is they're contexting this in a way that suggests that -- I believe, if you go to the next page, they've suggested there's a billion dollars deferred by one (1) year, which would be a savings to ratepayers of $57 1/2 million on a net present value basis.

But as we've also discussed, we take the cost of that asset and then depreciate it over time. And that is how it's factored into the revenue requirement.

So I would suggest that there's not $57 million savings that customers would experience from

that amount.

MR. BOB PETERS: Your point is that that 57 million, if it was going to be a realized savings, would occur over a number of years?

MR. ALISTAIR FOGG: My suggestion is that it would be more related to the -- the difference spread over that long amount of time from a depreciation expense perspective between spending it today or next year, but spread over fifty (50) years in each case.

MR. BOB PETERS: Mr. Fogg, earlier this afternoon, we talked about Manitoba Hydro quantifying a revenue requirement impact if there was a 10 percent reduction in business operations capital spending. Do you recall that?

MR. ALISTAIR FOGG: I do, yes.

MR. BOB PETERS: And you put most of the savings in the depreciation basket as opposed to the interest rate basket.

MR. ALISTAIR FOGG: What I indicated was I would expect that would be the largest portion of the savings, yes.

MR. BOB PETERS: All right. Does Manitoba Hydro consider customer revenues to be a free source of capital?

(BRIEF PAUSE)

MR. ALISTAIR FOGG: I'm sorry, Mr. Peters. I'm not sure what you mean by 'free source of capital'?

MR. BOB PETERS: Well, depreciation expense is a non-cash expense for the Utility. You'd agree with that?

MR. ALISTAIR FOGG: Yes, I agree with that.

MR. BOB PETERS: That depreciation expense comes from your ratepayers? Come out of their pockets?

MR. ALISTAIR FOGG: It's -- it's factored into the revenue requirement, that comes from ratepayers, yes.

MR. BOB PETERS: All right. It's factored into the revenue requirement, which is factored into the rates, which are charged to the client who get a bill, who pay the bill, and it comes out of their bank account.

MR. ALISTAIR FOGG: Yes.

MR. BOB PETERS: All right. So Manitoba Hydro is, in essence, using depreciation expense to fund business operations capital.

Can you go with me there?

MR. ALISTAIR FOGG: I think we can go there. I think we talked this morning that they're not -- it's not that we're setting the spending levels based on the depreciation amount. But -- but that's how it's recovered over time, through rates.

MR. BOB PETERS: Well, we can ask Mr. Tess that. We're not sure how he does that, but we'll -- we'll come to that panel next week, okay?

MR. ALISTAIR FOGG: We can save that one. I'm sure he'd be happy to answer that further.

MR. BOB PETERS: All right. So recognizing that there may not be a direct correlation, but they are relatively in the same ball park; that being, the deprecation expense that's coming from consumers and the business operations capital that the Utility is spending.

MR. ALISTAIR FOGG: They're related, yes.

MR. BOB PETERS: All right. So customer are either investing in Manitoba Hydro's assets or, if Hydro defers a project, even for a year, then those customers retain those funds and spend them as the customer otherwise decides.

MR. ALISTAIR FOGG: On the assumption

that that has changed what we need -- what we are asking for from a rate perspective, that would be correct.

Since depreciation, in this case, is a non-cash expense, I -- I wouldn't say for sure that that simple deferral would result in a change to the rate path that we were seeking to achieve our debt-to-equity target.

MR. BOB PETERS: I wasn't trying to build in an assumption of the rate path, but we did the math earlier.

That's just a mathematical different rate path if that happened, correct?

MR. ALISTAIR FOGG: In the particular example we talked about, that's correct.

MR. BOB PETERS: All right. Is it correct that Manitoba Hydro does not model or evaluate project deferrals as an alternative course of action?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: It's Ms. Halayko. Within the Copperleaf software, the time value of money is considered and the increasing risk is considered. And so deferral of a project is valued in

that way.

So we -- and we do optimize every year and there's a re-optimization.

MR. BOB PETERS: So -- so then maybe I misunderstood earlier, Ms. Halayko.

I had understood that the do nothing option was modelled. Was I -- am I correct?

MS. KRISTA HALAYKO: Yes, that's correct.

MR. BOB PETERS: And in addition to the do nothing option, there is also a deferral option that's analyzed.

MS. KRISTA HALAYKO: I wouldn't say it's actually an option. But every time the portfolio was optimized, it calculates when the best start date of projects is to create the most value for the whole portfolio.

MR. ALISTAIR FOGG: Mr. Peters, if I could just -- just add, when we've looked at that 10 percent reduction in BOC expenditures as a scenario, that, again, is a simplified assumption.

We haven't done an assessment to say what will it actually cost after that deferral to execute that project at a later time, to factor in any additional costs resulting from that deferral; whether

that's further asset degradation or other costs that have increased in the marketplace.

MR. BOB PETERS: Your -- your shot across the bow, Mr. Fogg, is that it might be short-term gain, but there might be some long-term pain.

MR. ALISTAIR FOGG: I think of -- it would be -- to suggest that there's a number of factors that could result in those costs being higher in the long run, yes.

MR. BOB PETERS: All right. I've got your point.

Ms. Halayko, just to end with you, how would Manitoba Hydro compare the benefit to customers of saving money, such as avoiding a rate increase, with the value as determined by the Corporate Value Framework scoring?

MS. KRISTA HALAYKO: In general terms, as we've shown in Appendix 7.5, we have aging assets and we have investments that we have to make year after year.

So any investment that we defer now is going to be for, you know, future Manitobans or for next year. It's not like the spending that we have now can be deferred and there's nothing following in its place.

So risk is going up, reliability would be going down, and that -- that cost is just being pushed into the future. So we call that -- in asset management -- a bow wave that you're just pushing in front of you when you don't do things now.

MR. BOB PETERS: But in that answer, Ms. Halayko, does Manitoba Hydro quantify the benefit to customers of saving money now compared to proceeding with a project in its Corporate Value Framework score?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: We do not.

MR. BOB PETERS: Thank you. Mr. Chair, Board members, I'd like to thank these witnesses for their cooperation in answering my questions. Those conclude my questions at this time. Thank you.

THE CHAIRPERSON: Thank you. I think it would be appropriate to take the afternoon break now. So we'll return at 20 to 3:00. Thank you.

--- Upon recessing at 2:22 p.m.

--- Upon resuming at 2:47 p.m.

THE CHAIRPERSON: Mr. Peters, I understand we've got some scheduling changes.

MR. BOB PETERS: We do, and one (1) housekeeping matter in advance of that, if I might, Mr. Chair.

During my questions of these witnesses from Manitoba Hydro, I referred back to the 2017/'18, '18/'19 GRA in one (1) of the Information Requests that Ms. Schubert sourced. I neglected to mark it as PUB Exhibit 24, and that's what I'm asking be marked now just so we have it here on our record of this proceeding.

--- EXHIBIT NO. PUB-24: 2017/'18, '18/'19 GRA

MR. BOB PETERS: Now, turning to the schedule, Mr. Chair, yes. Just a -- some changes. What we see in front of us this afternoon is we're going to proceed.

Ms. Guglielmin is going to continue with the Assembly of Manitoba Chiefs' questions of this panel, following which we are going to ask the Board to take the afternoon adjournment so that we can start at nine o'clock tomorrow morning with Consumers

Coalition, followed by the General Service Small/General Service Medium representative, followed by the MIPUG representative.

I would indicate that tomorrow we would also ask the Board to sit into the afternoon, and at approximately, I'm going to guess 2:30, we would invite the Midgard independent consultants to come and present their direct evidence to the Panel which would be between an hour, an hour and a half. And that would conclude the day tomorrow.

What that will do by doing that is we will -- we will build in some we think extra time on Thursday just to ensure that we will complete on Thursday. And it'll probably be I'm suspecting an earlier day than otherwise would be the case.

THE CHAIRPERSON: Thank you. Mr. Williams, you're -- you think Midgard would be an hour to an hour and a half Thursday morning, direct?

DR. BYRON WILLIAMS: Mr. Chair, we were instructed an hour, so with qualifications, we're planning for an hour and ten (10) minutes, something like that.

THE CHAIRPERSON: Okay. That's fine. Thank you.

Okay. Ms. Guglielmin...?

CROSS-EXAMINATION BY MS. EMILY GUGLIELMIN:

MS. EMILY GUGLIELMIN: Thank you, Mr. Chair. My questions are going to be -- sorry, for some of you who can't see me. There's usually not quite so many people back there.

My questions will be for the panel, and any person can respond, but I'm going to remind you to try and remember to state your name for the transcript.

So my first question is in reference to Exhibit AMC-2-13A.

(BRIEF PAUSE)

MS. EMILY GUGLIELMIN: And so in this Information Request, Manitoba Hydro has indicated that it does not measure or track reliability metrics for First Nations customers specifically.

Is that correct?

MR. JIM PAWLUK: This is Jim Pawluk. That's correct.

MS. EMILY GUGLIELMIN: And then turning to Exhibit AMC-2-11B, in this response, Manitoba Hydro has indicated that it has not

undertaken an analysis on the reliability of its assets on First Nations reserves.

Is that correct?

MR. JIM PAWLUK: That is correct.

MS. EMILY GUGLIELMIN: So since Manitoba Hydro does not track asset reliability for First Nations customers, is it unable to fully account for the impact of its capital spending priorities on First Nations customers over the past decade?

MR. JIM PAWLUK: At this time we would -- we would not be able to make a direct correlation between our capital expenditures to the First Nations reliability.

MS. EMILY GUGLIELMIN: Okay.

MR. CYRIL PATTERSON: And if I may -- it's Mr. Patterson speaking -- just to your previous question about understanding the condition of assets on some of the communities, we have gone through exercises of hardening the distribution grid in those remote communities and those communities where response time is greater than average.

And so we have upgraded or enhanced the distribution grid in those areas to withstand environmental factors that might cause outages.

MS. EMILY GUGLIELMIN: Okay. Thank

you.

(BRIEF PAUSE)

MS. EMILY GUGLIELMIN: So in a follow-up to the original question, it is unclear how the asset management or system reliability expenditures impact the reliability of electric service for First Nations customers, and therefore, unclear whether First Nations customers benefit equally to other customers in relation to improvements created through capital spending.

Is that correct?

MR. JIM PAWLUK: That is correct, but it is also correct for all of our customers. We have customers all throughout the province, and it would be hard to -- to direct all of what we do to a specific customer or identification of a customer like that with our assets.

MS. EMILY GUGLIELMIN: Are there any of -- are any of the electric capital investments included in this Application explicitly targeted to improve reliability for First Nations customers?

(BRIEF PAUSE)

MR. JIM PAWLUK: There are some investments that we're making that are impacting First Nations' service. There's a line that's out of Laurie River that we've worked on, and we've also make (sic) investments in our diesel communities and put some -- which definitely has an impact to the First Nations in those areas.

MS. EMILY GUGLIELMIN: Okay.

MR. CYRIL PATTERSON: It's Mr. Patterson speaking again. And on top of that, some of our capital program through investment in partnership with some of our Indigenous partners include capital programs like Fire Shield and Fire Guard, as well as vegetation management programs to remove vegetation encroaching in the right-of-ways.

So we have partnered with communities on those capital programs, created employment, and also improved reliability to those communities with those programs.

MS. EMILY GUGLIELMIN: Thank you. Are you able to provide a list of the communities you've partnered with?

MR. CYRIL PATTERSON: Yes, we would be able to. Yeah.

MS. EMILY GUGLIELMIN: I guess that

would be an Undertaking. Yeah.

--- UNDERTAKING NO. 13: Manitoba Hydro to provide a list of communities they're partnered with.

CONTINUED BY MS. EMILY GUGLIELMIN:

MS. EMILY GUGLIELMIN: Does Manitoba Hydro track customer complaints made by First Nations customers regarding reliability, distinct from other customers?

(BRIEF PAUSE)

MS. TANIS BRAKO: Ms. Brako speaking here. So, for our Customer Complaint Registry, we do not flag who the customer is or where -- which region they would represent. But we do identify what the reasons for the complaint is, such as reliability.

MS. EMILY GUGLIELMIN: Okay, thank you. If we could turn now to Exhibit AMC-2-13 (b) through (d). And in the preamble, sorry just a little bit there, we can see in the preamble that Manitoba Hydro states that customers have indicated that reliability of products and services is more important

and must be balanced with lower rates.

Can you confirm that Manitoba Hydro has filed no evidence about any direct engagement with First Nations customers regarding issues of reliability?

MS. TANIS BRAKO: Ms. Brako here again. No, that's correct.

MS. EMILY GUGLIELMIN: And, similarly, has Manitoba Hydro filed any evidence about direct engagement with First Nations customers regarding priorities between issues of reliability and rate levels?

MS. TANIS BRAKO: That's correct.

MS. EMILY GUGLIELMIN: No, no direct evidence. Right?

MS. TANIS BRAKO: No direct evidence specific to that, correct.

MS. EMILY GUGLIELMIN: Thank you. And, although Manitoba Hydro has a dedicated Indigenous accounts and payment administration group in its customer care division, can you confirm that from that group, there is no evidence of reliability concerns from First Nations customers?

(BRIEF PAUSE)

MR. CYRIL PATTERSON: So, there would be no direct evidence with ongoing interaction through our customer contact center, with First Nation communities, about reliability issues, but during actual events themselves, where there are power outages, there is direct engagement with the leadership of those communities on the cause and the durations and our response and mitigation plans.

And so, they are engaged directly during those events to -- to mitigate concerns or to help them plan their own response during some of these events.

MS. EMILY GUGLIELMIN: Okay. Thank you. And I -- I actually I do have a followup from that.

In the presentation this morning, I saw that there's a customer service center management meetings with First Nations leadership.

Is that what you're referring to when you talk about that?

MR. CYRIL PATTERSON: No, those are separate. So the -- the ones I just referred to would be during a -- a major event, such as a storm or a -- a forest fire where our emergency operation centers and the staff that work in those -- in those centers

would actually liaise and communicate daily with the leadership of the community in support of our Indigenous relations and communications group.

What that refers to, the -- in the document you just referred to, refers to our customer service center leadership and the managers responsible for the geographic areas that the communities are in. Offer to have meetings with the community to discuss any issues that they may have, whether it be reliability, service extensions for new infrastructure, employment opportunities and any contracts that they may be able to -- to engage us on.

MS. EMILY GUGLIELMIN: And that customer service center management, do they provide those offers to all sixty-three (63) First Nations in Manitoba?

MR. CYRIL PATTERSON: Correct. Yes, in our business plan we have a -- define that we try to get to each community, two (2) to three (3) times every three (3) years, or on demand, should they request additional meetings, once the engagements have been successful.

Not all communities have met with us, but a great many have taken the opportunity and have actually had several meetings, depending on what their

leadership is concerned about and what opportunities exist within the community.

MS. EMILY GUGLIELMIN: Okay. And, from that customer service center management meetings, can you confirm that no evidence has been filed at this hearing about the relationship between reliability and rates and priorities between those two (2) items?

MR. CYRIL PATTERSON: Not between reliability and rates from the meetings. Reliability, I would say, is of primary concern and is very important to them. It is probably the number one discussion point in each of these meetings, is about the reliability and -- and not having power outages to their community and -- for various reasons. But very seldom does the relationship between reliability and rates come up.

MS. EMILY GUGLIELMIN: And when they bring up concerns about reliability, are those most often related to weather events or -- or things like that?

MR. CYRIL PATTERSON: Yeah, that's right. Weather events that would cause a lengthy duration outage to a community requiring something like evacuation or back-up generation to support the

community members.

MS. EMILY GUGLIELMIN: And, outside of those kinds of events, have there been any concerns about reliability?

MR. CYRIL PATTERSON: Yes, anecdotally, there's been ongoing discussions and communications between Chiefs and council in each of the communities, about -- particularly shortly after an event occurs.

And then there's more awareness about events, causes of outages and how we mitigate those and respond to them. And so, conversations typically happen shortly after an event happens.

MS. EMILY GUGLIELMIN: Okay, thank you. And my other question about this slide, I see on the slide that there are thirty-five (35) supported languages in the employee linguist program.

Are you aware of whether any of those supported languages are First Nations languages?

MS. TANIS BRAKO: We can take that -- this is Ms. Brako speaking -- we can take that away. We don't have the list on hand at the moment, but we can certainly provide it.

MS. EMILY GUGLIELMIN: Okay. Thank you. Yeah, that would be great.

--- UNDERTAKING NO. 14: Manitoba Hydro to provide a list of supported languages.

CONTINUED BY MS. EMILY GUGLIELMIN:

MS. EMILY GUGLIELMIN: And so, going back to AMC-2-13 (b) through (d), in the response to (b) and (c), which is one page down, I believe. Or one -- yeah, sorry. Right. Well the -- between these two (2) responses.

Is the only evidence filed about the interests of First Nations ratepayers, in relation to reliability, set out in the Customer Satisfaction Tracking Study in the 2019 Customer Perception Study?

(BRIEF PAUSE)

MS. TANIS BRAKO: Do you remind repeating the question. I just want to make sure I have it.

MS. EMILY GUGLIELMIN: Is the only evidence filed about the interests of First Nations ratepayers in relation to reliability set out in the Customer Satisfaction Tracking Study and the 2019

Customer Perception Study?

MS. TANIS BRAKO: Yes, that -- that's correct, in terms of customer surveys that we have conducted but, you know, I'd also like to just, you know, speak to what Mr. Patterson was speaking about as well in terms of the numerous engagements that we do have with communities to also have conversations about reliability and concerns that each community would have. So, that would be taken into consideration, as we make plans moving forward.

MS. EMILY GUGLIELMIN: Okay. With relation to the studies, can you confirm that neither of these studies indicate whether First Nations' respondents live on or off reserve?

(BRIEF PAUSE)

MS. TANIS BRAKO: So, we -- we can determine, from our surveys, if the respondents are on First Nations, however, you'll see, in the response to 1-13C, that the sample size was rather small for -- on First Nations.

MS. EMILY GUGLIELMIN: Okay.

MS. TANIS BRAKO: But we can see that, number of participants.

MS. EMILY GUGLIELMIN: And, when you came back, I think it was after the lunch break, you had mentioned that there was a certain percentage of respondents below $60,000 in income.

Is there any further breakdown you can provide below that amount, like below the $60,000 amount?

(BRIEF PAUSE)

MS. TANIS BRAKO: Not readily available, but we could in an undertaking, if that was something you were interested in.

MS. EMILY GUGLIELMIN: I think maybe I'll go to AMC-3-11 first and see. So, in this Information Request, in the question and also in the answer, this had provided the median on-reserve income level in Manitoba in 2015, which is $13,099.

And if you go down a little bit, it does indicate that it's not possible to draw direct comparisons because it's median after-tax income, whereas Manitoba Hydro is looking at economic families but, still, the $13,000 number, even if you estimated two (2) or three (3) adults at the median income level, would you agree that the below $60,000 general

guideline doesn't necessarily capture the percentage of respondents that would be the -- the sort of average respondents on First Nations reserves?

(BRIEF PAUSE)

MS. TANIS BRAKO: So, with consideration for a potential undertaking to confirm this, but I think what might be interesting to add to the conversation here is that, when we asked our customers if -- if there was -- well, essentially, the question was:

> "Paying my energy bill has a major impact on my finances and requires I do without things I consider necessities for myself or my household."

30.5 percent of participants indicated this to be true. So, we know that participants are answering this in all three (3) different income spans.

So, we understand that it's important for our customers to maintain our rates as low as possible, which is why we will be very responsible in our spend to be sure that we maintain low rate

increases and also gradual over the course of time.

MS. EMILY GUGLIELMIN: Okay. I think going -- I think I can go back to AMC-2-13, (b) through (d), and you had already indicated, so, in (b) the customer satisfaction tracking study, approximately 3 percent of the sample identified as being from a First Nation. Is that correct?

MS. TANIS BRAKO: That's correct.

MS. EMILY GUGLIELMIN: And then at (c) -- sorry, I believe this is the part you'd already identified which is that:

> "The sample size of respondents who identified as being from a First Nation for the Customer Perception Study was too small to use for a statistical analysis."

Is that correct?

MS. TANIS BRAKO: That's correct.

MS. EMILY GUGLIELMIN: And just to followup on what you were saying a little bit before, in those customer surveys, there was no questions that identified reliability issues between a weather event and regular reliability issues.

Is that correct?

MS. TANIS BRAKO: Yes, that's correct.

MS. EMILY GUGLIELMIN: And then if we look at (c) again, I think it's at the bottom of this, this states that:

> "When looking at only Indigenous responses, there's a preference for a balance between accepting decreased reliability and increasing rates. Indigenous respondents averaged near the mid-point on a scale provided, indicating a balanced approach is preferred."

My question is: Based on the discussion we've just had, is it correct to say that the sample size of First Nations respondents is simply too low to suggest the true preference of most First Nations customers?

MS. TANIS BRAKO: Yes, that's certainly what the answer is saying here, that the sample size is too small to have a sts -- statical representation of the response.

But of those responses that we did see, that there was still a response that -- that indicated that that group of customers did want a balance -- a balanced approach.

MS. EMILY GUGLIELMIN: And, I think --

those are my questions about the survey.

My next question, it is my understanding that Manitoba Hydro's evidence in this application is that there's been an increase in outages in recent years.

Is that correct?

MR. JIM PAWLUK: There's been an increase in outages related to equipment failures, that's correct.

MS. EMILY GUGLIELMIN: And has Manitoba Hydro calculated a cost of the outages or a value of loss load?

(BRIEF PAUSE)

MR. JIM PAWLUK: When we look at all the energy that would be impacted by the outages, no, we haven't taken that into consideration, but we do have the resource margin that we carry, so there is some contingency within the load.

MS. EMILY GUGLIELMIN: Does Manitoba Hydro have an internal metric that it uses to determine the lost value to customers associated with these outages?

(BRIEF PAUSE)

MR. JIM PAWLUK: So, when we look at individual investments, we do look at reliability and we do look at potential impacts and the risks that -- and benefits there are to customers.

But we don't carry a metric that would be able to specifically express that in -- in percentages of reliability or anything like that. It's a value measure for a very specific investment.

MS. EMILY GUGLIELMIN: Okay. Thank you. Can I turn now to Manitoba Hydro's presentation from this morning, which I believe is Manitoba Hydro Exhibit 33. And slide 20 of this.

So, in this slide we're looking at the asset investment planning example. And this shows the environmental risk at a numerical value point of twenty-one (21).

Is that correct?

MS. TANIS BRAKO: That's correct.

MS. EMILY GUGLIELMIN: And I think you said earlier this morning that this twenty-one (21) is the risk of oil spilling into the river?

MS. TANIS BRAKO: That's correct.

MS. EMILY GUGLIELMIN: And it's much

lower than all of the other numbers, which indicates that, I guess the weighing of that risk is lower than the other risks.

Is that correct?

MS. TANIS BRAKO: That's correct.

MS. EMILY GUGLIELMIN: Is that twenty-one (21) value point, is that indicating the financial risk only to Manitoba Hydro of remediating this bill?

(BRIEF PAUSE)

MS. KRISTA HALAYKO: It's Ms. Halayko. The reason that that number is quite low is because it -- oh, I should answer your question. It isn't just due to the financial impact. It's to do with the extent of the spill.

And the number is quite low because we deemed the probability of the spill to be quite low. And we also have different ways of cleaning up the oil spill and mitigating how far it can extend. So, those calculations are all done within that value measure.

MS. EMILY GUGLIELMIN: Thank you. Does Manitoba Hydro engage directly with First Nations where you have identified that an environmental risk may arise in relation to an aging asset?

(BRIEF PAUSE)

MR. JIM PAWLUK: This is Jim Pawluk. On some of our investments, we do have engagement with First Nations on -- on the projects, not on all projects though. So I -- I can't say for every project, but we do go into the communities in -- in some of the First Nations and -- and advise when we're working on projects and allow there to be an engagement process.

MS. EMILY GUGLIELMIN: Do you know what factors are considered when it's decided when to engage with First Nations with those?

MR. JIM PAWLUK: I'm just -- Jim Pawluk again. I'd have to take that as an undertaking to get all of them, because I -- I'm not aware of every scenario where we will endeavour to do that.

MS. EMILY GUGLIELMIN: Is Envi -- do you know if environmental risk is one of them?

MR. JIM PAWLUK: Environmental would be one (1) of the considerations that we consider.

MS. EMILY GUGLIELMIN: And where an environmental risk has been identified, and there is engagement with the First Nation, does that influence the value points that are allotted to the asset when

you're considering asset investment planning?

MR. JIM PAWLUK: I would say it can influence the value. When we engage and we find out what the solutions are and then we would put that into the investment and it would be included as -- in our assessment of the project going forward. So, it would be included in the decision-making.

(BRIEF PAUSE)

MS. EMILY GUGLIELMIN: Okay. Could we turn to Exhibit Coalition-2-89 (a) to (c). This says -- I'm sort of just generally referencing this and it's kind of going back to some of my original questions, but this Information Request, it discussed advanced metering infrastructure investments.

My question is: Will an advance metering infrastructure investment allow for more granule -- granular tracking of outages for First Nations customers or other customer groups?

MR. JIM PAWLUK: This is Jim Pawluk talking. If this investment is to go forward, it -- it would give more granularly to that tracking, absolutely it would.

MS. EMILY GUGLIELMIN: Okay. Thank

you. And I'm going to move onto a different topic, and I don't have an Information Request for this so I'm just going to go right into it.

Has Manitoba Hydro undertaken a detailed study of the potential for non-wire alternatives, including distributed energy resources, like solar and batteries, to mitigate the need for other forms of capital spending in this application and the longer term forecast?

(BRIEF PAUSE)

MR. HAL TURNER: Hi, it's Mr. Turner talking. No, we have not.

MS. EMILY GUGLIELMIN: Has -- so, then I'm -- I would guess the answer to this, but I'll ask anyhow.

Has Manitoba Hydro explored the potential for non-wire alternatives to improve access and reliability for remote First Nations customers?

MR. HAL TURNER: I -- I would say we're -- we would study non-wire solutions in general. And for -- and we would consider that for any type of remote community, not just Indigenous remote communities.

MS. EMILY GUGLIELMIN: Do you believe that there's a potential for non-wire alternatives to improve access and reliability for remote First Nation customers, or remote customers, at a lower cost than system-wide investments that are being considered in this application?

(BRIEF PAUSE)

MR. HAL TURNER: I think it's just too early to conclude that. Sorry. And this is Mr. Turner talking.

MS. EMILY GUGLIELMIN: Thank you, Mr. Turner. One (1) of the -- or sorry, I'm skipping ahead of my own questions.

One (1) of the concerns for many First Nations customers are impacts from natural disasters or weather events, like flooding or forest fires which I know Manitoba Hydro's also identified as a concern for them.

Has Manitoba Hydro considered whether or not wire alternatives could be a most cost-effect solution to either mitigate future impacts from weather events or for returning service to First Nations customers following such an event?

(BRIEF PAUSE)

MR. HAL TURNER: I'm sorry, I want to make -- sorry, Mr. Turner talking. I want to make sure I get that correct. Would you mind repeating the question.

MS. EMILY GUGLIELMIN: Sure. My question was: Has Manitoba Hydro considered whether non-wire alternatives could be a more cost-effective solution to either mitigate the impacts from future weather events or natural disasters or returning service to First Nations customers following such an event?

MR. HAL TURNER: I believe the answer is no.

MS. EMILY GUGLIELMIN: And I can -- can I turn to Exhibit AMC-2-8(b), and looking at page 2 here -- or right here. I think that's (b).

This response -- it discusses competition in the MISO market due to tax subsidization. And that's sort of just my jumping off point to talk about the Federal budget for 2023 and the Clean Energy Investment Tax Credit that was introduced.

Are you familiar with that tax credit?

MR. HAL TURNER: I'm familiar there is a tax credit. I believe that there are details that will impact the amount that the tax credit is that haven't been released yet.

MS. EMILY GUGLIELMIN: Okay. So, then maybe it's too early to tell this, but given the recent tax incentives in that budget, has Manitoba Hydro considered whether any of the capital investments proposed as part of this application could be deferred, cancelled, or replaced with wind, solar, or battery investments that could receive that tax credit?

(BRIEF PAUSE)

MR. HAL TURNER: I think it's -- so, Mr. Turner talking. It's early days as far as this tax credit goes, so we have not considered deferring or cancelling existing investments because other solutions may be cheaper once we have more clarity. We would certainly consider that.

I will say that our ears did perk up when the tax credits were announced. And we are certainly looking at our existing investments to see

which would qualify, and -- and then would obviously apply in an effort to keep cost as low as possible for Manitobans.

MS. EMILY GUGLIELMIN: Great. Thank you. I just have a few more questions. Hopefully, that's okay. Okay.

Does -- so, this is about distribution now. Does Manitoba Hydro have any data or analysis on whether distribution-related outages are more likely to occur for First Nations customers compared to its broader classes?

(BRIEF PAUSE)

MR. CYRIL PATTERSON: We haven't done an in-depth study to -- to be able to give you the data that you're looking for, but we are aware that rural customers in general will show lower reliability rates than large urban centres in Manitoba.

MS. EMILY GUGLIELMIN: And does Manitoba Hydro have any initiatives under consideration that would improve information collection and data in a way that could help us understand the impacts of distribution outages for First Nations customers living on reserve?

(BRIEF PAUSE)

MR. CYRIL PATTERSON: We are looking at future projects to be able to gather this data for all of our customers. We're not just going to focus on one particular customer, but we're looking at the whole system and be able to get more granularity in the data, and that's part of our maturing asset management system, as well.

MS. EMILY GUGLIELMIN: Okay. Thank you. Those are all of my questions. Thank you for answering everything.

THE CHAIRPERSON: Thank you. Before we end for the day, Mr. Sy has a question and I have a question for this Panel.

BOARD MEMBER SY: Thank you. Thank you very much. My questions are related to the survey. So, Ms. Brako, thank you for getting back to Madam Vice-Chair about the income distribution. We are economists, and we like to study income and -- and income distribution.

So, my first question to you is, you gave the information that 26 percent of the respondent had income less than sixty thousand dollars ($60,000),

twenty-nine (29) between sixty thousand (60,000) and ninety-nine thousand dollars (99,000), 30 percent greater than a hundred thousand dollars.

Is this family income or individual income?

MS. TANIS BRAKO: Family income. Yes.

BOARD MEMBER SY: Excellent. And we know the median -- median family income in Manitoba is eighty thousand dollars ($80,000).

And if I look at the breakdown -- so you got 26 percent less than sixty thousand (60,000), 29 percent between sixty (60) and ninety-nine (99). If you add the twenty-six (26) and twenty-nine (29), you have 55 percent, not including the remaining the 15 percent that did not declare.

Are you representing the median income -- family income in Manitoba where we know 50 percent of the family income is -- 50 percent of families earned less than sixty thousand (60,000) and 50 percent earned more than sixty thousand (60,000)?

(BRIEF PAUSE)

MS. TANIS BRAKO: We would like to take this away as an undertaking, if -- if that's

okay.

BOARD MEMBER SY: Okay.

--- UNDERTAKING NO. 15: Is Manitoba Hydro representing the median family income in Manitoba where we know 50 percent of families earned less than sixty thousand (60,000) and 50 percent earned more than sixty thousand (60,000)

BOARD MEMBER SY: Sorry, I'm not done yet. Sorry.

Earlier we were talking about elasticities. So 26 percent of the sample makes less than sixty thousand dollars ($60,000).

What assumptions do you guys have for the price elasticity for that group?

(BRIEF PAUSE)

MS. TANIS BRAKO: We have not conducted a price elasticity analysis related to -- to

rates.

BOARD MEMBER SY: But you -- you know the whole part of the survey is to see when prices change, would it have an impact on the consumer? Because we are asking them to choose between reliability and increase in rate, which is change in prices. Am I correct of that assumption?

MS. TANIS BRAKO: I -- I wouldn't say that the purpose of that particular study was specifically for understanding in-depth what rate increase we're requesting related to reliability. It was a portion, certainly, of the survey, where we asked that question.

But the -- the broader purpose of that survey was to understand, you know, what -- what values, perceptions that customers had of Manitoba Hydro more broadly.

So I hear -- I hear what you're saying. And if we were to endeavour in that type of research specifically related to rates trade-off with reliability, we would have to take that into consideration.

BOARD MEMBER SY: Okay. So I'm just reading here. It says:

"The result is leaning in favour of

spending what is necessary to reduce the number and the length of outages."

This is -- has to do with increasing the rate to allow you guys to spend more on the asset to reduce the length of outages. Is that correct?

(BRIEF PAUSE)

MS. TANIS BRAKO: Can you provide the reference of what you're looking at at the moment?

BOARD MEMBER SY: Oh, I'm just reading it on page 13 of -- of the deck.

(BRIEF PAUSE)

MS. TANIS BRAKO: Yeah. So what we were asking here was whether a customer would prefer more or longer power outages. So that would be on your far left-hand side, the zero (0). Or to pay higher rates to -- basically, as you get higher -- to the higher rates, you're -- you're now asking for significantly improved reliability.

So what we see is the slight lean towards -- and that's why we've indicated improving or

maintaining reliability. Because it's a slight lean above the median, indicating that our customers want us to maintain or even slightly improve existing reliability and increase the rates relative to what that would mean and require for Manitoba Hydro.

BOARD MEMBER SY: Increase the rate price elasticity.

MS. TANIS BRAKO: Yes.

BOARD MEMBER SY: So sorry, I -- I have to make a full disclosure. My thesis at Master's level of Manitoba -- University of Manitoba was exactly on these kind of surveys, trying to make them quantitative.

And my thesis was published in the American Journal of Agricultural Economics, May 1997, volume 79, number 2.

It is still used as a reference as of right now. I get about five (5) to six (6) references per month because people are realizing, when you are doing a survey and using the (INDISCERNIBLE) valuable for the definite variable, you need more quantitative economic modelling. Thank you very much.

THE CHAIRPERSON: Ms. Brako, I have a question for you and I'm not an economist.

You -- I believe you said that you used

the number 30.5 percent of, I take it, total respondents said high -- and this is where -- I don't know if I've got it down right -- high energy bills affected what they could -- what they could buy or -- I'm just tyring to...

MS. TANIS BRAKO: I can repeat it.

THE CHAIRPERSON: Sure. If you could.

MS. TANIS BRAKO: Yeah. So basically, the statement:

> "Paying my energy bill has a major impact on my finances and requires I do without things I consider necessities for myself or my household."

So that's where 30.5 percent of participants indicated this to be true.

THE CHAIRPERSON: Okay. Right. So the question I have for you is, if that's 30.5 percent of the total people who responded, do you have a break down of that number for people under sixty thousand dollars ($60,000)? What the percentage would be of them?

(BRIEF PAUSE)

MS. TANIS BRAKO: We do have that information. If you just give me a moment.

THE CHAIRPERSON: Sure.

MS. TANIS BRAKO: Thank you.

THE CHAIRPERSON: Yeah.

(BRIEF PAUSE)

MS. TANIS BRAKO: Got quite a few numbers before me, so is there -- is there a specific income level you'd be interested in?

THE CHAIRPERSON: Well, what -- as I understood it, sixty thousand dollars ($60,000) was the lowest income level.

MS. TANIS BRAKO: Correct.

THE CHAIRPERSON: Okay. So the people earning up to sixty thousand dollars ($60,000) -- if thirty-point-five (30.5) is the total respondents, I assume the number below sixty thousand (60,000) is higher. I'd just like to know what that number is.

MS. TANIS BRAKO: Yes. So in the less than sixty thousand (60,000), it is 39.2 percent that would agree with that statement.

THE CHAIRPERSON: Okay. I thought -- I thought it would have been higher, quite frankly.

If you're doing under sixty thousand (60,000) compared to people...

MS. TANIS BRAKO: Yeah. So -- so for comparison --

THE CHAIRPERSON: ... people over a hundred thousand (100,000).

MS. TANIS BRAKO: Right. And over a hundred thousand (100,000), it was 18.4 percent.

THE CHAIRPERSON: Okay. And I guess we're -- maybe you can give me all -- well, so what we need is we need the numbers of -- under ninety-nine thousand (99,000). That's the only one left.

MS. TANIS BRAKO: Thirty-point-three (30.3) percent.

THE CHAIRPERSON: Thirty-point-three (30.3), okay. Great. Thank you very much.

I think we're going to adjourn for the -- for the day. I thank the panel. And we'll see you again tomorrow morning at 9:00 a.m. Thank you.

--- Upon Adjourning at 3:41 p.m.

Certified Correct,

_____

Wendy Woodworth, Ms.