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THE ONTARIO ENERGY BOARD

Enbridge Gas Distribution Inc. and Union Gas Limited.

Enbridge Gas Distribution Inc. and Union Gas Limited Application for Amalgamation and Rate-Setting Mechanism

Hearing held at 2300 Yonge Street,
25th Floor, Toronto, Ontario,
on Thursday, March 29, 2018,
commencing at 9:47 a.m.

TECHNICAL CONFERENCE

A P P E A R A N C E S

MICHAEL MILLAR	Board Counsel
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DAN VALENTE	National Grid Gas Delivery Cos.

*appearing by teleconference

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LINDA WAINEWRIGHT*	Six Nations Natural Gas
LISA JAMIESON	TransCanada Pipelines Limited (TCPL)
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*appearing by teleconference

I N D E X   O F   P R O C E E D I N G S

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E X H I B I T S

Description	Page No.

NO EXHIBITS WERE FILED IN THIS PROCEEDING.

U N D E R T A K I N G S

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Thursday, March 29, 2018

--- On commencing at 9:47 a.m.

MR. MILLAR: Good morning, everyone. Why don't we get started.

This is Day 2 of the technical conference in the Union and Enbridge MAADs application.

Is there anyone on the line who was not on the line when last I asked who was on the line, and if so, could you identify yourself, please. I'm not hearing anyone, so thank you.

I believe that we are going to start with -- Dr. Lowry is going to ask questions first, but first I'll turn to you, Mr. Cass, to introduce your witness panel number 4.

MR. CASS: Yes. Thank you, Mike, and my apologies to everyone in the room for the delay. There was a transportation delay, and I apologize to everyone for that.

I will make the introduction very short. I don't think there is any need for elaborate introductions on the panel.

ENBRIDGE GAS DISTRIBUTION INC./UNION GAS LIMITED - PANEL 4

Mark Kitchen

Kevin Culbert

Jeff Makholm

As people will see, we have Mark Kitchen and Kevin Culbert again. Beside them is Dr. Jeff Makholm from NERA, and they are ready for questions.

MR. MILLAR: Okay. Thank you very much.

Dr. Lowry, are you on the line?

DR. LOWRY: Yes.

MR. MILLAR: Are you prepared to go?

DR. LOWRY: Yes, I am.

MR. MILLAR: Okay. Please proceed.

QUESTIONS BY DR. LOWRY:

DR. LOWRY: Good morning to the panel. The first question that I have pertains to Staff Interrogatory No. 32, so I'll give you a moment to get that in hand.

MR. MILLAR: Just hold for a moment, Mark. We're just getting our screen set up.

DR. LOWRY: Sure. Just let me know when --

MR. MILLAR: Will do.

DR. LOWRY: -- when it's up there, please.

[Technical interruption]

MR. MILLAR: Okay. Sorry about that, Mark. I think we have resolved our technical difficulties and the interrogatory in question is now on the screen.

DR. LOWRY: Okay. All right. So in that interrogatory, in part A I asked to provide citations of all the times that Dr. Makholm had prepared productivity studies and also to report the total number of productivity studies, and in response there was a list of citations, but there was no comments about the actual number of studies performed, and so I was just going to ask about -- some of them are kind of obvious, but then there's a few that aren't so obvious, so I was just going to ask quickly what kind of study might have been involved in a few of these engagements.

So the first of these is the work in 2003 for PGPB in Mexico, and I was just wondering, what kind of study was involved in that engagement and what is the entity PGPB?

DR. MAKHOLM: PGPB stands for PEMEX Gas Y Petroquimica Basica. It is PEMEX Gas, the state-run gas company in Mexico.

DR. LOWRY: Okay. Right. And then what kind of study was involved with that? I mean, the question didn't presume that it was necessarily a study, but that's what I'm asking.

DR. MAKHOLM: It was a study for total factor productivity for Mexican gas pipeline operations.

DR. LOWRY: Right. But, so what productivity did you measure for that?

DR. MAKHOLM: Total factor productivity.

DR. LOWRY: Of what industry, you know, the United States, of Mexico?

DR. MAKHOLM: Mexican gas pipelines.

DR. LOWRY: Okay. Next there was -- the next one I wasn't sure about was the work you did in Victoria, Australia. Was there a productivity study there, and then could you also explain the nature of that at a high level?

DR. MAKHOLM: At a high level that was a dispute in Victoria over how to implement the legislated regulatory regimes for the privatized electric companies in Victoria, and there was this dispute that ultimately was heard before the Supreme Court in Victoria over what constituted price-cap regulation versus rate-of-return regulation, and on that subject I was a witness.

DR. LOWRY: Okay. And so was there a new or updated productivity study in that case?

DR. MAKHOLM: No.

DR. LOWRY: Okay. Would I be right in saying that my colleague, Larry Kaufman, was involved in that proceeding as well?

DR. MAKHOLM: I saw him there. He was on the other side.

DR. LOWRY: Right. Speaking of seeing people, I was trying to think that the last time I saw you was in Mexico City, was it not, a long, long time ago.

DR. MAKHOLM: No, I think it was in California, but that's -- at a conference, but we won't quibble.

DR. LOWRY: Oh, okay.

MR. MILLAR: Let's focus on the issues, gentlemen.

DR. LOWRY: All right. NR Gas -- this is a third one, Jeff -- was there some productivity work done there, and if so, what was the nature of it?

DR. MAKHOLM: NR Gas is the Argentine gas regulatory authority, and, yes, there was a productivity study there for both gas transportation companies and gas distribution companies in Argentina.

DR. LOWRY: Okay. That's very helpful. Thank you.

Nextly, there was a question asked about the work you did for Ontario Hydro Services Company, and you said yes to a question that you had done some productivity work there.

And I was just wondering, was there a separate power distribution and power transmission studies done for Ontario Hydro Services?

DR. MAKHOLM: My recollection is the answer is yes.

DR. LOWRY: Okay. The next thing is on part F. In answer to part F, Enbridge provided the contract that you had for this engagement, and there is mention there of a total cost benchmarking study. And then the contract gets updated, and that part of is removed, but the budget doesn't fall but a little bit, and I was just wondering, did you do -- did you get started, did you get halfway through a power -- a total cost benchmarking study for Enbridge and if so, we'd like to know more about what that was all about and what the results were.

DR. MAKHOLM: No.

MR. SHEPHERD: Can I just interrupt? I didn't understand your answer. Could you elaborate?

DR. MAKHOLM: I think Mark asked me whether I had done any sort of benchmarking study, and the answer is no.

MR. SHEPHERD: Okay, thank you.

DR. LOWRY: May I ask what the reason is why the company changed its mind on that part?

DR. MAKHOLM: I think we jointly concluded in talking about finalizing the engagement that given the task ahead for Enbridge, a total benchmarking study wasn't going to be helpful and so we dropped it.

DR. LOWRY: Next I'd like to move on to the question -- I wonder if I've cut off the -- I think it is the one where it asked about working papers, so that would be helpful. I've clipped off somehow in my records here -- oh, no, here it is. Sorry, it's Staff 50.

If you would turn to Staff 50 and let me know he when you have that up on the screen.

DR. MAKHOLM: Okay.

DR. LOWRY: So my colleague, David Hovde, is going to be asking some of those questions, but I'm going to start with a few questions.

So when you presented your evidence, you did not provide a report specific to the work did you for the applicants, but instead provided a copy of the report from a previous engagement when you were working upon the AUC in the first generic PBR proceeding in Alberta.

You said in your testimony that you had -- this is the -- this is the customary -- you've done the customary empirical analysis that you do in these cases. And as I said, you presented an older report. So that raises in our mind, well, did nothing change in your methodology between that report and the work that you did for the applicants.

So that leads to some --

DR. MAKHOLM: Sorry, Mark, I'm not understanding your question. You are talking about Staff 50, correct?

DR. LOWRY: Yes, I believe so, where it says please -- where there is a question: What changes were made in the second report relative to the first report, part (c).

Am I right that that's Staff 50?

DR. MAKHOLM: No, that's not Staff 50.

MR. HOVDE: It may be Staff 34.

DR. LOWRY: Thanks for that clarification. It say Staff 50 on mine. I was cutting and pasting these things, so something may have gone awry there. I'll give you a moment to take a look at that before, and let me know when you're ready.

DR. MAKHOLM: Okay.

DR. LOWRY: So part (c) says what changes were made in the second report relative to the first report and in response to that, you provided some of the instructions from your contract, it seems, with the AUC covering what you were supposed to do.

But what we were really after were the changes in methodology between the two reports.

So what were the methodological changes that you -- salient method logical changes that you made between the first and second Alberta reports?

DR. MAKHOLM: I see. I listed the charge for the second report and I attached the second report, I believe, and I thought that those two things were self explanatory.

DR. LOWRY: I'm not sure that we found them self-explanatory, so I'm just asking what was the salient difference in the methodology between the two reports.

DR. MAKHOLM: The methodology is rooted -- as I think I say elsewhere in response to their request, the methodology is rooted in the index number study that I developed in the 1980s; the methodology hasn't changed.

DR. LOWRY: Well, you mean that there was no change in your methodology between the first and second reports? Because aren't there different numbers in the second report?

DR. MAKHOLM: I'd have to be reminded. There wasn't anything that I found particularly material. I think there were some corrections to certain kinds of data and there may have been -- I think I adopted in that proceeding one of the suggestions you had for a certain data series. But at the moment, I can't remember exactly how that changed the data.

I think the outcome of that is described in the commission's response or the commission's findings in that case. But it was a -- as far as I can remember, it was a change in handling certain labour data.

DR. LOWRY: Okay.

MR. SHEPHERD: Mark?

DR. LOWRY: My next question had to do with --

MR. SHEPHERD: Mark, I just want to interrupt.

DR. LOWRY: Yes.

MR. SHEPHERD: I didn't understand your answer again. If there were methodological changes between one report and the other, can you undertake to tell us what they were?

DR. MAKHOLM: That was my explanation. In terms of the method of creating an index number and how it fits into the calculation of GFP, nothing like that changed.

I recall that in that case, there was a suggestion on behalf of Mark that there were certain kinds of employment data that might be amended during certain periods of time to better reflect what was going on with the companies at that time. And among the various suggestions or criticisms that I got in that case with respect to my first study, I thought that that suggestion of Mark's was a useful one. I adopted it in my report, and that changed my numbers somewhat, but not by very much.

MR. SHEPHERD: And that was the only change between one and the other?

DR. MAKHOLM: That's what I was I recall as my only change.

MR. SHEPHERD: Thank you.

DR. LOWRY: Okay. So my next question has to do with part D of that same interrogatory. My original question to you was: Does Dr. Makholm's research for the applicants, like his research for the AUC, exclude general costs and cost of customer services like billing and collection.

And then in (e), I said: Please prepare a run that adds back in the general costs and cost of customer services and provide full details of the results.

So in response to this you said that the -- first of all that the analysis in this proceeding does exclude general costs, and it is not possible to add them back in because you had not gathered the data necessary to put general costs back in.

But can you comment at all about the customer services part of the question? So my next question is: Did you also exclude, in this study for the applicants, the cost of customer services and if so, could you do a run that adds cost of customer services back in?

DR. MAKHOLM: Well, my apology if my answer only applied to one of those, but it applied to both, and that is that I don't have those data for the purpose of adding back in.

I don't use general cost or customer service costs. I don't collect it, and hence I can't add it back in.

DR. LOWRY: When you say you don't collect them, are you saying that you have never included them in prior studies?

DR. MAKHOLM: I have -- I did -- I'm never -- I don't know. The AUC, first and second round, no. And this study, no.

DR. LOWRY: Okay. With that, I am going to turn the questioning over to my colleague, vice-president David Hovde, to ask questions about the working papers, and then in the time that is remaining in our hour I will ask a few more questions.

So Dave, are you ready to jump in?

MR. HOVDE: Yes, I am. Can everyone hear me okay?

DR. MAKHOLM: Yes.

QUESTIONS BY MR. HOVDE:

MR. HOVDE: Okay. I'm going to -- I'm not sure if it's going to be necessary, but I'm going to refer to a couple work sheets in the working papers, and maybe I'll just give you the names now to give you a chance to pull them up in case they're necessary.

The first one is called NERA industry TFP study, and then some numbers after it, a spreadsheet. And the second one is --

MR. MILLAR: David, I'm sorry, could we ask you to speak up. We are having a bit of trouble hearing you, so if you could speak as loud as you can, right into the phone, please.

MR. HOVDE: Sure. The first one is NERA industry TFP study, and some numbers after it. And the second one is Enbridge study capital calculation, and also some numbers after that.

I had reviewed your working papers and had found that the output and input in TFP trends ending in 2009 have changed slightly since your AUC testimony.

I'm going to have a few questions about differences that I found in the current working papers relative to your previous work in Alberta.

The first question has to do with a number of companies included. I'm finding that there's now 65 companies instead of 72 that were included previously. And I think I understand reasons for some of the exclusions, but there's four companies that I wasn't sure about and I thought I would ask.

The first two are a couple of new companies, Florida Power and Carolina Power and Light, and I was just wondering if you might be able to briefly comment on why those were excluded.

DR. MAKHOLM: For those two companies I understand that it had to do with data availability and the way in which those companies are constructed and construed. Now we don't have the data to collect.

MR. HOVDE: Okay, second question has to do with two of the Ameren companies. That's Illinois Power and Central Illinois Public Service.

DR. MAKHOLM: My answer is the same. With respect to the way that the companies have combined over time, the data is available from the FERC Form 1 data sources. We no longer have the company data to collect on those two companies.

MR. HOVDE: Thank you. Second question. Green Mountain Power acquired Central Vermont Public Service since your previous study. CVPS is one of the companies excluded, but I wasn't sure how you may have adjusted the older GMP data to construct the combined company.

I'm just wondering what, if any, adjustments did you make to the data in light of this merger?

DR. MAKHOLM: If I heard the end of your answer -- I think that, Mr. Hovde, you should speak up a little bit, because we are having a hard time hearing you here.

With respect to that, we used the data as it was presented in the FERC Form 1 data, and I performed no adjustments to those data as I included it for that company.

MR. HOVDE: Okay, so the -- so, like, the 2005 data is only going to be in the GMP data prior to the acquisition and CVPS is not going to be in the study then?

DR. MAKHOLM: It is my understanding that the data series is consistent going on through time for that company

MR. HOVDE: I also noted that the values for the triangularized weighted averages used in the benchmark year --

MR. MILLAR: David, are you still there?

MR. HOVDE: Yes, I am. I'm sorry, my screen went on screen-saver for a moment.

I noted that the values for the triangularized weighted averages used in the benchmark year capital calculations are now slightly different, and it is just that two numbers appear to be transposed, so the values for the north-central and south-central regions are transposed, and I was just wondering, is this an error or is it just a correction of the Alberta work?

If you are looking for a reference, it would be on the Handy Whitman triangularized work sheet of the NERA industry TFP study if you need to refer to it.

DR. MAKHOLM: I will check the work sheet. I am not aware of any transpositions with respect to how that data is reported or used, but I'll look into it, and to the extent that there is a transposition I will untranspose it, the -- the way those data are used in order to create the benchmark year of 1964, any transposition of this respect should have a de minimis affect on the outcome.

So I'm not particularly concerned about it, but I will go and check and see whether or not what you seem to be pointing to is in those data for 1964.

MR. MILLAR: Okay, so we'll make that an under --

David, just pause for a moment. I want to give that an undertaking number. So it is JT2.1. And that's to --

[Reporter appeals.]

MR. MILLAR: Yeah, what are you undertaking to do?

DR. MAKHOLM: I'm undertaking to check and see whether or not Mr. Hovde's description about some transposition for the 1964 Handy Whitman data with respect to the AUC or whether -- my study in this case is there, and I would be happy to check and see whether or not that transposition exists and, if listed, whether -- another question -- had any effect on the data that I used to calculate the TFP results.

MR. MILLAR: Okay. Thank you, that's helpful. That will be JT2.1.

UNDERTAKING NO. JT2.1: TO CHECK AND SEE WHETHER OR NOT MR. HOVDE'S DESCRIPTION ABOUT SOME TRANSPOSITION FOR THE 1964 HANDY WHITMAN DATA WITH RESPECT TO THE AUC, TO CHECK AND SEE WHETHER OR NOT THAT TRANSPOSITION EXISTS AND, IF LISTED, WHETHER IT HAD ANY EFFECT ON THE DATA USED TO CALCULATE THE TFP RESULTS.

MR. MILLAR: Go ahead, David.

MR. HOVDE: Okay. The next question has to do with the labour quantity calculation. I just noticed that the presentation of this calculation was a little bit different than it was in the AUC proceeding, and I think that the values that are flowing through might be the same as before. It is just that things are labelled a little differently, and what you are calling distribution full-time [audio dropout] the values have changed, but then you've introduced a new term called, I think it was called "inflation adjusted" -- I'm sorry, distribution FTEs accounting for inflation, and without getting into all the details about that, I was just wondering if you could confirm that, you know, that the same numbers are flowing through and that maybe this is just a change in presentation of the calculation?

DR. MAKHOLM: Yes, it is a change in presentation that the numbers flow through.

MR. HOVDE: Thank you. My next questions are going to have to do with the Enbridge and Union studies, and for this I would only need to look at the Enbridge study capital calculation work sheet.

In general, there's the term used, "distribution", and I wasn't clear what was meant by "distribution" in this context. The first meaning might be that it was the distribution business of Enbridge exclusive of transmission and other operations but might include the customer service and A&G expenses, but then the second meaning of it might be that it's distribution, as used in the U.S. study, where it would exclude those items.

I'm just wondering if you could clarify that for me?

DR. MAKHOLM: Well, we're dealing with distribution in this case, and so my focus both in the AUC cases and in this case is distribution, so that would have been our request.

I'm aware that the majority of the non-distribution, that is, the transmission plant, is Union's, not Enbridge's, even though there might be a small piece of Enbridge.

Whatever the case, I wanted to focus on the distribution elements to do a calculation. And that would have been the nature of my request to the companies.

MR. HOVDE: Okay. And so -- but does distribution in this context -- would this including A&G expenses and customer counts and things like that, or is it also exclusive of those like it is for the U.S. study?

DR. MAKHOLM: Exclusive.

MR. HOVDE: Okay. Exclusive. Thank you.

There's a -- you were using a 33-year life for gas plant in these calculations, as far as I could tell. And I was just wondering, was that just adopted from the power distribution work, or was there extra information that you relied upon from the companies? You know, do the companies claim to have a 33-year life for plants, or in general, just what's the basis of the choice of 33 years?

DR. MAKHOLM: The basis comes from my larger study of electricity and combined electricity/gas companies with the FERC Form 1 data that I used in the AUC case, and it was that recalculation of a number that I originally had denominated as 35 when I'd done my thesis based on prior work and prior theses at the time, and when I revisited that number in the AUC cases I revised it to 33 based on measurements of the large data set at that time. I used those number for Union and Enbridge.

MR. HOVDE: Okay, thank you. The asset price indexes that you used appear to be the same Handy-Whitman indexes for the power distribution work.

And I was just wondering, you know, given that there is availability of gas -- natural gas-specific indexes, I was just wondering why you chose to use the electric detections instead of the gas indexes.

DR. MAKHOLM: Because from one dataset comprising electric distributors and combined electric and gas distributors, a smaller number of the latter than the former, is what we're measuring. And in terms of measuring the capital input and output and deflating those properly, the proper deflation would be the one that compares best with the underlying dataset, and that would be the electric Handy-Whitman index numbers.

We don't have a gas distribution dataset, and so we wouldn't use the gas distribution Handy-Whitman numbers.

MR. HOVDE: I apologize. I wasn't clear enough in my questions. I was talking about the Enbridge and Union studies, where you are dealing with the gas company, and when I examined the working papers for that, I was seeing the electric Handy-Whitman numbers in there. And I was just wondering why you weren't using the gas version, given that you were -- you are trying to deflate gas property, plant property.

DR. MAKHOLM: I think my answer would be that the use of that consistently is something that I would -- and transparently would be something that I would consider important here.

And I did not take into or anticipate making a change in that respect in this study.

MR. HOVDE: Were the -- given that you are dealing with deflating Canadian data in Canadian dollars, I was just wondering, did you do any adjustment to the asset price index for anything having to do with currency differences?

DR. MAKHOLM: No.

MR. HOVDE: Okay. In the Excel version, the triangularized weighted-average formula wasn't provided; you just had some values stuck in there.

But above that, there was a mathematical formula that was showing, you know, a weighted-average formula and I thought maybe I'd just try to get clear about what -- to make sure that I understand what's being done.

My understanding is that your method to implement the triangularized weighted average -- I might refer to that as TWA, to help the court reporter -- is essentially a 20-year weighted-average of previous asset prices ending in the benchmark year. Would that be a fair description?

DR. MAKHOLM: Yes.

MR. HOVDE: Now, I was also looking at the working papers and saw that the benchmark year for Union was 1999 and Enbridge was 1992, and the -- and the mathematical formula was talking about using prices, a weighted average of prices between 1944 and 1964. And I was kind of expecting to see a 20-year average ending in 1999 and 1992 as opposed to ending in 1964.

And I was just wondering whether or not there is kind of a reason for using a much older price to deflate much newer assets and, you know, again if you need to take an undertaking and review or revise your work, I'd ask you to do that.

DR. MAKHOLM: I think the method I have for establishing the benchmark year works in either case for these two gas distributors, or for the larger dataset. So I don't know don't see the need to do an undertaking for this one.

MR. HOVDE: I guess I don't know why you'd use average prices between 1944 and 1964 to deflate an amount of capital from 1999. That just doesn't make any sense to me.

I believe you said a couple of minutes ago that the formula is to take a 20-year weighted-average ending in the benchmark year, and if the benchmark year is 1999, I would expect you to take the 20 years prior to 1999 to deflate that. I just don't quite understand why you'd go decades before that.

DR. MAKHOLM: I think the effect of that -- if you want to do the calculation, you will find out the effect of that probably doesn't exist.

But the method of taking a triangularized weighted average in order to reflect a discounted capital stock for the beginning year applies to both datasets, and whether it is moved from one period to another, I think, makes no effective difference.

MR. HOVDE: Okay. I did undertake to do that, and my preliminary calculations suggest that it's off by about a factor of four and has a major impact on the results. But I'll do that piece.

I guess I am done with my questions then.

MR. MILLAR: That's all your questions, David?

DR. LOWRY: That's all of Dave's questions.

MR. MILLAR: So we're going to turn it back to you now, Mark?

CONTINUED QUESTIONS BY DR. LOWRY:

DR. LOWRY: Yes. And again, Mark Lowry is the questioner and I will use the rest of the hour to ask a few more questions.

So once again, I'm possibly not sure which question this is. It says at the top of my thing Staff 50, but it's the question where there is the formula for the calculation of the one hoss shay capital quantity. Can anyone help me?

I actually have the questions here, and I'll start to get those out. I didn't realize this was going to be a persistent problem.

MR. RITCHIE: It's Keith Ritchie from Staff. I believe this is Staff 42.

DR. LOWRY: Thank you, Keith, Staff 42. So you can see there the formula for the capital quantity, one hoss shay, where the capital quantity in a given year key involves adding the gross plant additions divided by the current value of the Handy-Whitman index, and then subtracting retirement divided by the Handy-Whitman index from year T minus F.

Have you got that?

DR. MAKHOLM: Yes.

DR. LOWRY: So I asked in question (c): Please confirm that, whereas the year in which gross plant additions are made are known, the age of retirements is not. In other words, HWT minus X is not known.

And in response to that question, you said "not confirmed", and I was just wondering if you could explain that answer further. In what sense is the age of reported retirements known?

DR. MAKHOLM: Okay. The rate base, the additions in retirement are an important institution in Canadian and American regulations which are there to track property values.

They are there to track property values so you know the regulators can't maraud the value of the private property of the companies they regulate.

As such, every piece of -- every asset that goes into the rate base has a life and it's depreciated over that life, and that life is known.

So when the retirements come out, it is a known function of the depreciable life of the assets involved and that -- so when I'm asked the question are retirements unknown, the answer is no. They are known because they are there to track the property values involved.

They are not there to track the age of the assets, or the lifetime of the assets; they are there to track the lifetime of the property and that is a known quantity.

DR. LOWRY: Well, do you mean then to say that the life of the assets that are retired is known to the regulator?

DR. MAKHOLM: It's known from the perspective of the books and records of the company.

DR. LOWRY: Right, but when you are doing a productivity study and you have retirements for Green Mountain Power in year 2006, what year are those associated with? Is that known to the practitioner of the study?

DR. MAKHOLM: Yes, it's retirements for plant that's coming out of the rate base according to the age of the plant when it was installed, as specified for the kind asset involved.

It can be a short period of time for trucks, long period of time for power plants, or other hardware, or pipes or such. But everything that goes into rate base has a service life, a depreciable life, that is a specific part of that kind of property as it's tracked by the regulator and the company involved. Thus, it's known --

DR. LOWRY: Well, is that reported anywhere on the FERC Form 1? I mean, when you do a study you are using the total value of retirements, right, so in order to deflate that you need something like an average service life.

So how do you know the average service life that corresponds to the value of the retirements?

DR. MAKHOLM: That's a different question. I told you how I calculated the average service life of 33 years. In terms of the additions and retirements, however, those are specific additions of plant additions and retirements as done in the complicated and detailed accounting of each company in that data set. And so your question --

DR. LOWRY: Right, but how do you know --

DR. MAKHOLM: -- your question, which is are those retirements unknown, I think you asked, the age of retirements is not. Well, that's not true. The age of retirements is known. If you look deeply enough into the plant accounts you would determine that each asset in there has a service life that's known, and when it comes out the amalgamation of those is also known. It is a simple --

DR. LOWRY: Are you saying that you do that when you -- because my understanding, you had said earlier that you had come up with a notion of average service life which is 33 years, so are you saying that somehow in the FERC Form 1 if you could spend the time on it you could actually ascertain the average service life of the specific retirement value, but that you don't do that and you just make an assumption?

DR. MAKHOLM: It's not an assumption; it's a known -- it is something that I know, which is that retirements relate to assets, the service life -- the depreciable life of which is set at the outset of the installation of the asset.

And it is a known quantity for any asset, and the collection of those retirements for those assets is, hence, a collection of known quantities. That's my point. The 33 years is also --

DR. LOWRY: Now --

DR. MAKHOLM: -- a known quantity. That was the average for the entire data set that I did for the AUC in 2012.

So all of these are known quantities, and I was not confirming the question that something about retirements, vis-a-vis additions, is unknown.

DR. LOWRY: Well, I guess I would like to pose as a -- request as an undertaking that you further explain where on the FERC Form 1 information is provided that would allow you to know the average service life of reported retirements.

DR. MAKHOLM: That's not a question for the FERC Form 1; that's not a reasonable undertaking. The accounting that makes up the property values of regulated companies in the United States and Canada, according to the way that the courts in both countries have decided to track property value, has to do with a specific kind of accounting for rate base.

There's nothing unknown about that accounting for rate base, because we are tracking the value of property that makes rates legal in both the U.S. and Canada.

Therefore, since everything about the property values that are tracked -- tracked, relating both to the Northwest Utilities and the HOPE cases, it is an important legal standard, since all of those individual asset values were tracked over known lifetimes. The sum of the additions and retirements are also known and tracked over their lifetimes.

It is only the sum that is reported in the FERC Form 1 to the extent that we use it in our calculations, but it is the addition of known values that represent the property, hence the number on it, which you are going to return, for the regulated investor of utilities in Canada and the U.S.

Those are all known quantities. What we see in the FERC Form 1 is the sum for those additions and retirements for each company in each year. That is what we're using. And there's no undertaking to take. If you believe that somehow those are unknown, I would say that that reflects of a lack of understanding of the accounting that makes up regulated rate base in the United States and Canada.

DR. LOWRY: Okay. The issue here again is how a practitioner of a productivity study is to know the average service life of the specific retirements. No one is disputing the correctness of the value of retirements as reported, and that someone in that regulatory community knew their age at the time, but how does the practitioner of a productivity study know the age, and I understood you to say that it's all there on the FERC Form 1 somewhere, and then I said: Could you undertake to explain where the actual age of retirements is found on the FERC Form 1.

DR. MAKHOLM: It's not.

DR. LOWRY: Okay. All right. So let's move on.

The -- another issue that comes up is your use of the

22-year -- the 20-year average of Handy Whitman indexes in order to calculate the quantity of capital in the benchmark year.

And you assume a 30-year average service life, 33-year average service life, but you only calculate the triangularized weighted average for 20 years, and so I asked you a question as to why that was reasonable, and you said that it's -- the answer is in a question that you answered in Alberta.

And there you said that it was due to a traditional desire on your part to limit the analysis to post-World War II pricing and quantity data.

And my question is: Well, wasn't part of the net plant value in 1964 attributable to plant that was added before 1945, and could you further explain why you have traditionally had the desire to limit the analysis to post-World War II pricing quantity data?

DR. MAKHOLM: I answered that in a data request. I can't for the moment recall --

DR. LOWRY: We're in the same --

DR. MAKHOLM: -- which one that was, when I said that it reflected the use of other scholars at the University of Wisconsin at the time to limit the triangularized weighting to years after the war.

And to the extent that it reflected a triangularized weighting method of deflating the 1964 gross capital numbers for the purpose of a starting point for a TFP analysis it was useful and acceptable in that context then.

And if you will -- I'm looking for another data request, number 43. But the data requests are what they are. They are filed and they're there. If I miss one of them it's still in the record.

The desire to use post-war data was a more general desire than mine alone. And it reflected something that seemed to make sense both for my thesis at the time and for another thesis upon which I drew some methodological similarities, and I mentioned those -- I mentioned the data request responses, and for the purpose of coming up with a benchmark year, that was sufficient, and I've used that ever since.

DR. LOWRY: Okay. I would like to turn now to Staff 43, in which you are asked questions about how you came up with the 33-year average service life, so I will give you a moment to find Staff 43.

DR. MAKHOLM: Yes.

DR. LOWRY: So I asked you the question to provide a full substantiation for the 33 average year average service life, taking particular care to explain why it would be appropriate for power distributors and gas distributors.

So in response, you said that you had -- at the time you wrote your Ph.D. thesis, you had discussions with utility executives and also consulted another prior dissertation supervisor at D.W. Madison.

So my first question for you is the nature of these discussions with the utility executives. Did you essentially ask them what they used as an average service life for utility assets at that time?

DR. MAKHOLM: Well, no one would use such a number for anything at that time, except somebody doing a productivity study. So there was no use for such a number; every asset has its own service life.

DR. LOWRY: Well, right. But you came up with this number of 35. Did you basically come up with it by saying to some utility executives, "What is your typical average service life?"

DR. MAKHOLM: I would have wanted to confirm that the 35-year life that had been used in a previous dissertation was a reasonable life at the time, and I -- the -- those discussions happening at least three and a half decades ago. And as I referred to that particular part of my thesis were that those individuals agreed.

DR. LOWRY: Okay. And when you talk about this other Ph.D. thesis, are you talking about the Ph.D. thesis of Mary Li Sing?

DR. MAKHOLM: Yes, I think I listed that somewhere in my data request responses.

DR. LOWRY: But that is the one, okay. So at the time you were actually doing a study of vertically-integrated electrical utilities, so was that -- the question that you asked is, was it not -- was that a reasonable average service life assumption for vertically-integrated electric utilities?

DR. MAKHOLM: I don't recall.

DR. LOWRY: Okay. So then in preparation of the study for -- in Alberta, you gave the matter some more thought and you came up with the number of 33 years. I would like to ask what analysis went into changing the number from 35 to 33 years, and did that include just going out and looking at the reported average service lives that the utilities provide to their regulators?

DR. MAKHOLM: It had to do with comparing depreciation rates with rate base to see the multiple in one vis-a-vis the other for the combined group of companies on average over all the years.

DR. LOWRY: I'm sorry, could you just explain that a little bit further? I'm not quite catching the correction.

DR. MAKHOLM: It is a broad average of the multiple of rate base to depreciation for all the companies for all the years.

DR. LOWRY: So you did not look at the reported average service lives of power distributors?

DR. MAKHOLM: To the extent that this is average over all of them of the ratio of rate base to depreciation, that is an average defined that way for all the companies for all the years.

I didn't look at any particular asset. And since there is no average service life listed for the various companies for various years because they would have nothing to use it for, that's not a number that they would employ in any particular way, that broad-based average of mine was the way of coming to a conclusion with respect to the service life on average for all years for all companies for the population in the dataset.

DR. LOWRY: Could you undertake to provide that analysis, or a similar analysis?

DR. MAKHOLM: I can certainly provide the calculations that went into the 33, yes.

MR. MILLAR: That will be JT2.2.

UNDERTAKING NO. JT2.2: TO PROVIDE THE CALCULATIONS THAT WENT INTO THE 33

DR. LOWRY: Now, we also asked the question about where the 33-year average -- what was the average service life of Enbridge and Union, and you responded by saying -- or someone responded by saying "Dr. Makholm used 33 years as the service life for Enbridge and Union."

And my question is: What are the average service lives of Enbridge and Union as estimated by the companies?

It's even possible that that information is in the proceeding presently, so in that case, it would just be a matter of commenting where in the record it already is. But if not, we would just ask the companies provide those calculations.

[Witness panel confers]

MR. CULBERT: It is Kevin Culbert for EGD speaking.

We didn't provide the calculations. We could certainly attempt to provide a calculation of that nature, but we would have to understand how the 33-year average service life was calculated first to be able to do such a calculation.

DR. LOWRY: I beg to differ in the sense that Dr.

Makholm has his own method for calculating average service life, and what we're trying to do here is to come up with some -- you know, come at this from a different angles. And most utilities frequently report their average service lives, and what I'd like is for the companies to do it the way they would do it and provide, at a reasonable level of desegregation, the details for how they came up with that, of course.

They're not asking to do it the way that Dr. Makholm did it, but do it the way you would do it.

MR. KITCHEN: It is Mark Kitchen for Union. I'm not even sure how long it would take for us to get the information to do it.

I've never been involved in calculating it before, so I can't really say. But I guess I'm wondering if it's practical even for to us do it.

MR. SHEPHERD: Can I just jump in here? This is something that you do regularly. You look at your depreciation rates and you look at the service lives for your assets, both historically and in the future. You have a whole record of this in each of your companies. It's something you have to do on a regular basis.

DR. LOWRY: Well, this is not a minor matter this this pleading. It is actually a central issue.

MR. CULBERT: To Jay's point, we do have the information with respect to depreciation rates, et cetera. To Dr. Makholm's point, we don't use such calculation for any purpose. It is a fallout calculation, essentially.

So we can do an interpretation. I guess my point was to the extent that we do an interpretation, then you are going to get into a discussion perhaps about how our calculations have been done versus how the calculations are done here, which was my point.

In order for it to be helpful or useful, don't we have to take into consideration how the average service life calculation is done in this study?

DR. LOWRY: I don't think so. What we're -- my own view of the matter is that average service lives should be based on what utilities report. And therefore, I'm very interested to know what your -- what you would report on that.

MR. SHEPHERD: It appears to me, Kevin, that the average service life that Dr. Makholm used is an electricity service life. So the question here is whether the actual service life of these two utilities, which are gas utilities, is materially different. This is something you should know.

DR. LOWRY: That's an extra reason, another reason why we'd like the number, yes.

DR. MAKHOLM: Let me provide -- what is your name? Excuse me.

MR. SHEPHERD: Jay Shepherd.

DR. MAKHOLM: The companies are right that they know what the depreciation is for every asset, and they use it in a particular way. They don't use it the way I use it, though, to do productivity studies, because they don't do such things.

So I have a means and a method to do so. And it's always been my perspective that the most important thing to -- the most important principle to hew to in a proceeding like this is objectivity and transparency, and to the extent that you have something that's calculable and objective and stable and replicable, you should use it.

I don't know -- I do know that any particular company in year -- and even the big data set for electric distributors and electric and gas distributors combined, can -- as I say in other data request responses, can be notoriously unstable.

And to the extent that any one company's ratio of rate base to depreciation -- it -- we don't know what it is for any one company, and it is important for me to do the average over all the companies.

I wasn't interested in doing that calculation for Enbridge and Union because I know the instability of single-company pieces of information in that respect, which is why I use the average service life that I use for the other companies on average.

So my answer is -- and I can see the company's concern about this -- is that it's not a number that they use for anything, it is not a number they collect and present for any other purpose, and they would like to see the way I compute this for the big average company before they decide what data they want to apply to that calculation, and that seems to me to be pretty reasonable.

MR. SHEPHERD: Well, I would like to make the request --

DR. LOWRY: Well, if Enbridge and Union would like to --

DR. MAKHOLM: Excuse me, Mark, we were talking here in the room --

DR. LOWRY: -- analogous --

MR. SHEPHERD: Go ahead, Mark.

DR. LOWRY: All right, if Enbridge and Union would like to do a calculation analogous to what you have done, after learning what you have done, that's fine as a supplementary exercise. What I'm asking for is their conventional way of doing this. I mean, utilities do this all the time. If they don't compute the average they have the service life for each asset class, and they have the value of the assets, and then I can compute it myself.

But it's very important to have a -- an insight on what the company's numbers are. We are not saying that we are going to use the company's numbers in our calculations, but it is important that the Board know what the average service life is of Enbridge and Union by conventional methods.

MR. CASS: So Mark --

DR. LOWRY: Hydro One -- I'm sorry.

MR. CASS: This is Fred Cass, counsel for the applicant speaking. Two things. First, there seems to be an issue here how to come at this. There is also an issue about how long it will take.

In those circumstances the best we can say is we'll take it away and look at it, and best efforts to see what can be done.

At this point, it is not clear to me, and I don't think it is clear to others, about how it will be done or how long it will take, so we'll look at that.

MR. MILLAR: So we're going to --

DR. LOWRY: Okay.

MR. MILLAR: We will give that --

DR. LOWRY: How do you feel about that --

MR. MILLAR: -- JT2.3. Is the company clear what has been requested at least? I understand there may be difficulties in providing it, but do you know what the ask is?

DR. MAKHOLM: Yes.

MR. MILLAR: Okay.

UNDERTAKING NO. JT2.3: TO PROVIDE THE AVERAGE SERVICE LIFE OF UNION AND EGD ASSETS ON BEST EFFORTS BASIS

DR. LOWRY: Well, I will just add this clarification. At a minimum, the value assets and the service life of -- the typical service life of companies in the various asset categories, so you could have mains, you could have compressor stations, and then you have the value of assets in those categories, and what is the service life for those categories. That would be the minimum, and you could also roll that into an average service life.

MR. SHEPHERD: Mark, you are looking for weighted averages?

DR. LOWRY: Well, that's right. And I say, I mean, I could probably compute that myself, but if the company is in the habit of computing average service life, then please make -- compute your own average, but at least give me the basis from broad asset categories of computing it myself.

MR. MILLAR: Okay. I think we've got it, Mark, so can you move to your next question.

DR. LOWRY: Okay. I am just going to ask one more question, because I promised to try to keep this under an hour.

And it is sort of an analogous sort of question. I had asked for a forecast of the quantities that go into the commission's quantity index for power distribution, the forecasts of the customers, number of customers served, peak day sendout -- that would be the analogous thing -- and the total delivery volume, perhaps broken down in their case by distribution and transmission.

And what I'd like is -- what I had requested was a forecast for the plan of those billing determinants. Here again, that information may well already be in the record. I'm not sure exactly where all three of those pieces are, and Dr. Makholm had said that I don't have that information, but analogously can the company please provide forecasts of the gross in those three measures of operating scale?

MR. CASS: Dr. Lowry, is there a particular interrogatory response you are looking at that you could point us to by any chance?

DR. LOWRY: Yes, it is Staff 47.

MR. MILLAR: Mark, I guess your question is if Dr. Makholm does not have it, can the utilities provide it; is that right?

DR. LOWRY: That's right.

MR. CULBERT: Pardon us for a second. We're just looking. We believe the first two pieces of information are already on the record. It is the third piece as to whether that is or is not on the record.

DR. LOWRY: I'm guessing that maybe the peak day sendout is not on the record.

MR. CULBERT: Yes, that's... In the interest of moving along, we can provide where that information is resident. We believe it is in FRPO 11 and various tables, but we'll find out where it is resident, and the standalone -- or, excuse me, the peak day sendout, that is not on the record.

MR. KITCHEN: We'll endeavour to find out if that's available.

MR. MILLAR: Thank you, gentlemen, that's JT2.4.

UNDERTAKING NO. JT2.4: TO PROVIDE FORECASTS OF THE GROSS IN THE THREE MEASURES OF OPERATING SCALE.

MR. MILLAR: Was that the last of your questions, Dr. Lowry?

DR. LOWRY: Yes.

MR. MILLAR: Okay. Thank you so much, and thank you, David, as well.

We have a couple more questions from the --

DR. LOWRY: Thank you to the panel.

MR. MILLAR: We have a couple more questions from Board Staff in the room, so Mr. Ritchie, I will turn it over to you.

QUESTIONS BY MR. RITCHIE:

MR. RITCHIE: Thank you, Mr. Millar. Good morning, panel.

I only really have one line of questioning, and it's for Dr. Makholm, and I'm referring to Staff 38.

DR. MAKHOLM: Is Mr. Ritchie in the room?

MR. MILLAR: Yes, he's way down at the end. I think your mic is off, sir.

MR. RITCHIE: Good morning, Dr. Makholm.

And my -- and there was also -- this also came up in another IR, Staff 45, but Staff 38 is really the pertinent one.

DR. MAKHOLM: Yes.

MR. RITCHIE: And it is dealing with the beginning of the response to part (a), where you are basically, I guess, distinguishing between the term "sample" versus "population."

I'm trying to -- you know, I guess the questions we'd asked, you know, were not about this distinction, but you've provided this discussion in the response and I'm wanting to understand your differentiation between the population versus the sample for this 65 electric and gas and electric utilities that you've used in the AUC study and updated for here.

DR. MAKHOLM: Pardon my terminological inexactitude, but it is popular to use population when describing the entirety of a group that meets certain criteria. And if the criteria are data availability in the FERC Form 1 and if we have 65 companies throughout the entire period, that as population of companies.

Sampling implies that there was some sample and sampling involved in coming up with a smaller number than a population. But I use population to convey, properly, that this is the entirety of the group of companies that meets the criteria having to do with the available data.

MR. RITCHIE: Okay. So the result from that Study that you've attached, the AUC or the update, that would in fact basically be the total factor productivity trend pertaining -- and really a population estimate for that specific group of companies.

DR. MAKHOLM: The specific group is the population of companies that meets the criteria of data availability.

And so when I'm being asked a question about the Sample, I'd rather say the population, just to be precise.

MR. RITCHIE: But this is not -- so your result is not necessarily representative of the population of all US electric and gas and electric utilities that report FERC form 1?

DR. MAKHOLM: No, that's not right. It is population of all companies that report on a FERC form 1 that provide data that I can use for a total factor productivity growth study.

There is no bigger group than the group that I have.

MR. RITCHIE: Okay. Thank you. That's my question.

MR. MILLAR: Thank you very much, Mr. Ritchie. Mr. Shepherd, we'll probably go to you next, if that's okay. But you have more than a few minutes, I take it.

MR. SHEPHERD: Yes.

MR. MILLAR: Why don't we take our break now and come back at 11:20.

--- Recess taken at 11:00 a.m.

--- On resuming at 11:20 a.m.

MR. MILLAR: Welcome back, everyone. We will continue our examination of panel 4 with Mr. Shepherd.

QUESTIONS BY MR. SHEPHERD:

MR. SHEPHERD: Dr. Makholm -- am I saying that right, Makholm?

DR. MAKHOLM: Yes. I appreciate that, yes, that's correct.

MR. SHEPHERD: I'm Jay Shepherd. I'm the lawyer for the School Energy Coalition, and I have no training whatsoever in econometrics, so you have to go gentle on me, please.

I have a couple of follow-up questions on the questions from Dr. Lowry. The first is: He was asking you how you know the life of retirements in your capital model. And I listened to the back and forth, and it sounded like you were saying -- and tell me whether this is right -- that basically you assume that the -- that assets on average are brought out of -- are retired at the exact end of their useful life, according to the depreciation schedule.

So whatever the average life is of the assets, that's going to be the average life of the retirements. Am I right there?

DR. MAKHOLM: Not quite. I think that Dr. Lowry asked whether -- the statement, I think, was additions are known but retirements are unknown. It was put in that way.

MR. SHEPHERD: The age of retirements is unknown.

DR. MAKHOLM: The age of retirements is unknown, and I disagreed by saying that the age of the retirement of any particular plant when it's installed is known, because a 30-year asset will be depreciated over the course of 30 years, and those numbers are really important for determining the revenue requirement and other aspects of regulation.

So there is another purpose for all those numbers, and they are known. Now, whether a piece of pipe lasts for longer than 30 years, that's not my concern. And that's not the point of tracking additions and retirements -- pieces of property, actual pieces of property, sometimes last less -- fewer years and sometimes last for more years than their book depreciation. It goes into the calculation of the revenue requirement.

Those things average out over time, and just because it is a hunk of pipe in the ground that has lasted 40 years on a 30-year depreciable life and it has no book value is of no concern to me. Those things sort of work out in the larger scheme of utility operations.

The question was: Is one concept -- that is, additions -- known and another concept -- that is, retirements -- unknown? And from the perspective of measuring the data that comes through the Form 1, that answer is still no.

MR. SHEPHERD: I guess my question was going to be: Is the effect of the approach you take to assume that the age of an asset at retirement is, on average, the age that it was expected to survive when it was installed? Is that the effect of your approach?

DR. MAKHOLM: I think the effect is -- that's a fair way to put it.

MR. SHEPHERD: Okay. Thank you.

The second question I have is, you were asked about your 33-year life, which comes from primarily electricity data, and what the lives were for Union and Enbridge, and we're going to find out what those were, and I want to ask a slightly different question, which is: If the average life, the weighted-average life, of Union's assets, let's say, is significantly different from 33 years -- I'm estimating it might be 37, for example -- does that have a material impact on your results? Or could that have a material impact on your results?

DR. MAKHOLM: By "results" being my ultimate conclusion?

MR. SHEPHERD: Yes.

DR. MAKHOLM: I would say no, and the reason for that is as follows. The -- I know, more than anybody else, having been doing this longer than anybody else, know the uncertainty associated with any one particular firm or company's data, and I write about the instability. I have a couple of references in my backup, as I refer to it, about that specific issue.

I put great stock and hold to be highly objective and credible large collections of data that allow those idiosyncrasies to average out. But to the extent that any one company is off of the average of a distribution life, I would have to look at that and say that it's an anomaly.

MR. SHEPHERD: The -- I wanted to follow up on that. I am actually now at a -- completely out of synch here, but that's okay. You, in your articles, appear to say that productivity, in general -- and in fact, you say that this is generally believed by a lot of academics in the field -- sort of reverts to the mean over time. If you get a large enough piece of data the productivity will normally end -- for an industry end up at roughly the same place eventually.

Is that -- am I understanding that roughly correctly?

DR. MAKHOLM: Let me put it a little differently, and I think a couple of data -- a couple of IR responses where I went on and on and on about things that I say I did in another study in Alberta.

One of the things that I said was that out there in the world there is a productivity growth trend for any particular industry: telecommunications, electric and gas utilities, whatever. And we're endeavouring to find out what that is with the data that we have.

And to find out what that number is out in the world, if we have a big enough data set and use the proper methods with that data set, we do the best job of determining what that number is in the world. It is a real number out there that reflects industry productivity growth. And that's what we're after.

And it could be -- if it's not zero, it could be high, like telecom companies in the 1990s, at 3 to 5 percent, pretty high, but that was the number for that industry in the '90s.

What I've concluded here is that the number has settled down to be zero for electric and gas distribution in this day and age.

MR. SHEPHERD: You quoted Loeb and somebody else as -- I'm just looking for the reference -- as saying that -- and I don't know where it is. If I find it I will let you know -- as, those are sort of people that are well-respected in this field, right? Academics that are well-respected in this field. Loeb and whoever the other one -- Haggard or...

Was that a yes or no?

DR. MAKHOLM: I can't remember exactly what you are referring to. If you've got a reference I'll take a look.

MR. SHEPHERD: Anyway, they said something like: For a given industry, the productivity trend will be constant over time or generally constant over time. Do you agree with that?

DR. MAKHOLM: I don't know. You will have to tell me who I'm referring to and what I'm using that for --

MR. SHEPHERD: I'll come back to that.

DR. MAKHOLM: -- and whether or not they actually said what you're saying they said. I am, like, three steps removed from an answer.

MR. SHEPHERD: All right.

DR. MAKHOLM: If you will permit me to say so.

MR. SHEPHERD: That's fine. When you -- I'm looking at Staff 32, attachment 4. And I will give you a second to bring that up. And this is the consulting agreement, the original consulting agreement, that you signed May 1st, 2017 with Enbridge; right?

DR. MAKHOLM: Okay. Yes, 32... Yes, I have it.

MR. SHEPHERD: Now, I think I understand this to be correct that when you were originally hired the expectation was that you were assisting Enbridge in developing a custom IR proposal; is that right?

DR. MAKHOLM: That -- the term "custom IR" came up at the outset, yes.

MR. SHEPHERD: So I'm going to turn to you, Mr. Culbert, and I'm looking at page 31 of that attachment. It refers to the CIR plan, which presumably the CIR plan is what Dr. Makholm was going to be helping you to develop; right?

DR. MAKHOLM: At the time, NERA was going to be providing a study that would be used in some way, shape, or form within an application to the Board.

MR. SHEPHERD: So Dr. Makholm, when you said in your -- this is your description of the deliverables that you were going to give, you said:

> "NERA will require senior advisory personnel from EGD throughout the study to evaluate the effectiveness of the CIR plan...," blah, blah, blah.

Could you just tell us what -- give us an idea what that means relevant to your work?

DR. MAKHOLM: Relative to the work that I filed in this case? Nothing.

MR. SHEPHERD: Relative to what you were hired to do.

DR. MAKHOLM: I was hired to investigate a custom incentive regulatory plan, and I was unsure, at the time of writing that sentence, what that kind of custom plan would be. And that was what was going to require close collaboration with the company to determine what elements of a custom plan they were going to propose.

I did not have that information when I wrote that sentence.

MR. SHEPHERD: I see. Okay. Now, your original budget for this was $610,000 -- sorry, $640,000, right?

DR. MAKHOLM: Your dollars.

MR. SHEPHERD: Our dollars, 12 U.S. dollars.

DR. MAKHOLM: I don't mean to pick at that scab. I'm sorry.

MR. SHEPHERD: So let me just make a note: Dr.

Makholm doesn't like Canadian dollars.

DR. MAKHOLM: Yes, that's on page 88.

MR. SHEPHERD: It's on the last page of attachment 4.

DR. MAKHOLM: Yes.

MR. SHEPHERD: Now, your study then changed after May 1st. When did it change?

I mean, I know there is a new agreement, but actually the change was discussed before that, right? Your new agreement is November 10th, but long before that you were no longer doing a CIR plan thing; right?

DR. MAKHOLM: Yes.

MR. SHEPHERD: So when did it change? When did you actually change sort of how you were approaching this?

DR. MAKHOLM: My own thinking is some time in the early part of 2017 that element, the custom element went away.

MR. SHEPHERD: Well, your agreement is May 1st. And then your second agreement is November 10th. So I'm looking for somewhere in that time they -- Enbridge said to you, "No, no, no, we're not going to do this CIR anymore. We're going to do something else, and we want you to change your study," right?

DR. MAKHOLM: Within those two parameters, I can't recall. I never had a definitive, as I said in the last answer, notion of how the CIR would be constructed, as opposed to an IR plan that would have the kind of TFP study that I produced. So I don't know.

MR. SHEPHERD: Originally, you weren't expected to design the CIR plan, right? You were doing the productivity study and the benchmarking study, right?

DR. MAKHOLM: Correct -- no, the benchmarking study was a component of the CIR plan, as far as I understand.

MR. SHEPHERD: I understand that. But your role was those two studies; right?

DR. MAKHOLM: Correct.

MR. SHEPHERD: And the benchmarking got dropped off and you were doing the TFP, right?

DR. MAKHOLM: Correct.

MR. SHEPHERD: When did that happen?

DR. MAKHOLM: I can't recall.

MR. SHEPHERD: Mr. Culbert, do you know?

MR. CULBERT: That would have happened in discussions between ourselves in NERA in terms of what the custom IR model was about, i.e. I don't know the exact wording in the Board's requirements, but the CIR application was to include a custom index of sorts which --I'm not sure what that means necessarily. But at that point in time, we had discussions with Dr. Makholm and decided that, well, it wouldn't be all that useful whether we were going with a custom IR or a price cap to perform the benchmarking study, that the TFP study would be sufficient.

MR. SHEPHERD: I understand. When did that happen?

MR. CULBERT: That would have been -- by recollection, sometime in March or April.

MR. SHEPHERD: So before the original contract was signed, you'd already dropped off the cost benchmarking?

That doesn't seem right to me.

MR. CULBERT: Sorry, I'm just looking through my notes here.

Yes, you're correct, the conversation would have happened in June and July of ...

MR. SHEPHERD: June and July, okay. Now back to you, Dr. Makholm -- and maybe you can turn to page 31 of attachment 4 again.

The -- when you -- your original TFP study was to support an index for a custom IR plan, which is sort of the British model of incentive regulation, right? It is closer to the British model than the American model, right?

DR. MAKHOLM: I'm not sure I would agree with that.

MR. SHEPHERD: Okay.

DR. MAKHOLM: The British model has like vast, vast differences. So I don't know if I'd agree with that characterization.

MR. SHEPHERD: Let me put it a different way, then. You've contrasted the objective North American approach to incentive regulation and the more forecast-related approach using contested proceedings and stuff like that in Australia and in England. You recall that you've written about this extensively, right?

DR. MAKHOLM: Yes.

MR. SHEPHERD: And custom IR is more like the latter, where do you a forecast and your cost trajectory is based more on the forecast, whereas price cap is more the North American approach where you use objective past data, right?

DR. MAKHOLM: To the extent that we're talking about the scope and the length of forecast being different under the custom plan, yes, I understand that.

MR. SHEPHERD: So my question -- the reason I ask that is did you change the nature of your TFP study when you realized that it wasn't for custom IR any more, now it was for price cap which was a different type of incentive regulation?

DR. MAKHOLM: No.

MR. SHEPHERD: Okay, so why didn't you? Sorry, there is an outstanding question. Why didn't you?

DR. MAKHOLM: I said no. Sorry, were you waiting on me?

MR. SHEPHERD: I said why didn't you.

DR. MAKHOLM: I'm sorry, I didn't hear that part. My apologies.

MR. SHEPHERD: Well, we all had a nice nap.

DR. MAKHOLM: And now given the passage of time, I've forgotten the question.

MR. SHEPHERD: Why didn't you change your study if the study is now for a different purpose?

DR. MAKHOLM: Well, as far as I understand, whether it was custom or not, I was going to provide, as I discussed in the retention agreements, an update to the TFP study that I had produced in Alberta. And that was going to be the core of any work that I was going to do.

MR. SHEPHERD: Now ...

DR. MAKHOLM: And I had not -- as we've discussed, I had not come to any conclusion as to how I would extend that to deal with the custom business, that it was listed the CIR plan. I knew what the company had done before in terms of a benchmarking component of a CIR plan. But how I was going to take the work that I had done, to update what I had done in Alberta to perform the basis for that kind of benchmarking exercise, I would have defined it differently than the company did it the last time.

But we never did that, because it never got to that stage.

MR. SHEPHERD: All right. And so when you updated your study, and I'm looking at this page 31 -- it looks to me like literally right away you had preliminary results. In the first month you had preliminary results; right? So I'm going to ask you to explain what that means? What work had you done to get to preliminary results?

DR. MAKHOLM: Let's go to those dates, because, no, this is not a quick right-away thing. You have my spreadsheet. It is a large data collection and data verification exercise. So I wouldn't have had anything right away, once I started this. What dates are you referring to here?

MR. SHEPHERD: Well, so if you look at the May 2017, the first month after you signed the contract, it says:

> "Discuss expectations and timing, identify methodology, preliminary results, and recommendations."

So that sounds pretty fast to me. In fact, my --

DR. MAKHOLM: What are you referring to? Which --

MR. SHEPHERD: The left-hand column on the screen. Look on the screen.

DR. MAKHOLM: Yes, I see that. Thank you. This was the plan, but we did not follow this plan.

MR. SHEPHERD: So when did you actually provide preliminary results to Enbridge?

DR. MAKHOLM: I recall that it was -- it -- late summer.

MR. SHEPHERD: Late summer? And so prior to that time did you give Enbridge any indication that you would conclude that productivity was zero?

DR. MAKHOLM: No.

MR. SHEPHERD: Awesome. I'm going to move now to -- to SEC 54, the attachment, which is your article regulating fast and slow; do you recall that?

DR. MAKHOLM: SEC 54. Can you help me find this?

MR. SHEPHERD: It is a five-page article you wrote called "Regulating Utility Efficiency Fast and Slow: The Current Australian Problem." Do you recall that?

DR. MAKHOLM: Yes, I am familiar with it.

MR. SHEPHERD: And it has, by the way, a tremendous history of this area, but the thing I wanted to ask about is -- and you sort of see it at the bottom of the third page of the article, where you talked about the problem that Brandeis saw in his decisions, and it sounds like what you are saying -- and tell me whether this is right -- is that the point of IRM is --

DR. MAKHOLM: The point of what?

MR. SHEPHERD: The point of what you call PBR and what we call here IRM, incentive regulation -- is to -- is to as closely as possible proxy the market. Is that -- am I right that that's where you think it should be going and where -- what the problem that Brandeis was indicating?

DR. MAKHOLM: I'm not sure how it relates to Brandeis. I've said a couple of times in this proceeding that the point of this business is to lengthen regulatory lag. And lengthening regulatory lag is a little more modest of a goal than what you just described.

MR. SHEPHERD: But lengthening regulatory lag is -- the reason why that's useful is because it moves closer to proxy-ing the market, right? Because utilities are then more vulnerable to market forces; right?

DR. MAKHOLM: Umm... They are both vulnerable and -- and having -- embodying the ability to profit from beating a long-term productivity growth trend, yes.

MR. SHEPHERD: All right. Okay. My next question is on SEC 55, and you've written extensively about RPI minus X and when it works and when it doesn't work, and we concluded from your various writings that you think that that method is a little bit of an anachronism now and really doesn't work very well.

Is that an incorrect conclusion from your writing?

DR. MAKHOLM: No.

MR. SHEPHERD: So you do think that it needs to be evolved and changed.

DR. MAKHOLM: I'm sorry, I'm not exactly -- you are referring to SEC 55?

MR. SHEPHERD: Yes.

DR. MAKHOLM: And here, the question was that the RPI minus X method pioneered in the U.K. is out of date and no longer a good idea in most jurisdictions, and I did not agree with that statement.

MR. SHEPHERD: Well, you said -- you didn't agree or disagree, you said you didn't make that statement.

DR. MAKHOLM: Right, I didn't make that statement.

MR. SHEPHERD: Do you disagree with it?

DR. MAKHOLM: I agree that I didn't make that statement.

MR. SHEPHERD: Do you agree with the statement or not, yes or no?

DR. MAKHOLM: Please confirm that, in the expert's opinion -- me -- the RPI minus X method pioneered in the U.K. is out of date and no longer a good idea in most jurisdictions. I don't agree with that.

MR. SHEPHERD: You do not?

DR. MAKHOLM: No.

MR. SHEPHERD: Thank you. The next question is in SEC 60. And we asked whether stretch factors should be variations around zero, and you said "not confirmed", but you didn't say anything further.

We looked at your evidence where you referred to us, and what you talk about is that the conventional stretch factor is intended to capture the extra productivity that you get from going on PBR; right?

DR. MAKHOLM: The transitionary boost in anticipated reward for having a new regime.

MR. SHEPHERD: And then you said:

"The Ontario stretch factors in electricity are a different type of stretch factor, where they test the relevant productivity between different utilities."

Right?

DR. MAKHOLM: It -- I said that -- in a sense, yes, and more specifically, Ontario regulators have a different job than any other regulator in North America, which is to deal with 70-odd -- 70-some of small, mostly municipally owned distribution companies and dealing with the regulated rates without having to do a rate case for every particular one.

That's a tough job, and to the extent that they have of construed a stretch factor in that context, it means something different than it was, for instance, agreed to in the AUC generic proceeding, yes, it is a difference.

MR. SHEPHERD: So what I'm trying to understand is, if the stretch factor is trying to measure relative productivity, then isn't the implication of that from your work that some would have a positive stretch factor and some would have a negative because the industry average productivity would be zero? Doesn't that necessarily follow?

DR. MAKHOLM: No, I don't agree with the question.

MR. SHEPHERD: Okay.

DR. MAKHOLM: And the reason why is that the only thing we're after -- I'm after in this proceeding is measuring industry productivity growth. Growth, not levels. And as you saw in my testimony, I deal with that often, you know, the swampiness and the swamp stuff.

We don't know whether a company is efficient or not in an absolute sense, but we do endeavour to find out what the growth rate is and total factor productivity for the industry out there.

Now, you are talking about stretch as the way it's used by the OEB for its electricity regulatory duties, and I've said that that is a different concept; it could be called a different name. And if it were called a different name it would aid the process, because then you wouldn't use any of the concepts used to sort out the seventy companies with respect to what they do in an econometric model that predicts what they call stretch, what I would call something else, and what we're doing here. I don't see a reading across any of that.

Besides the fact that the companies there are not investor-owned and here they are investor-owned. And to the extent that you have anything associated with competitive activity or competitive incentives, they don't apply to MUNIs.

So there is a lot of difference here. But I wish that the term "stretch" wouldn't be used in that respect, and I've always tried to make a distinction and respect what the OEB has to do with respect to regulating its electricity distributors, and separate that from what we're doing.

MR. SHEPHERD: All right. Go ahead.

FOLLOW-UP QUESTIONS BY MR. QUINN:

MR. QUINN: Hi, Dr. Makholm, this is Dwayne Quinn on behalf of FRPO. I've been listening with interest this morning and Mr. Shepherd just asked a question that I thought he was going to follow up, so I'll ask a follow-up.

Why do incentives -- I think I heard you say that incentives won't work for MUNIs. Why is that? Why would you believe that?

DR. MAKHOLM: It is not a belief. It as long-term conclusion.

Let me put it this way. Canada is unique in the world. North America has for a century had investor-owned utility enterprises. It reflects long-term institutional differences between us, say, in the UK, or Europe, or Australia or New Zealand, where utilities were basically created by government and overseen by government.

To the extent that we inject competitive-like activities into regulation by doing what we're doing here, we are incentivizing the investors to do things so that they can improve the return on their investment.

MUNIs don't have investors, so that element of spurring activity to improve a return doesn't exist for them, not in any context like that.

MR. SHEPHERD: Have you done any studies of Ontario municipally-owned utilities?

DR. MAKHOLM: No.

MR. SHEPHERD: So you don't know whether they're similar to municipal -- what you call MUNIs in the U.S., do you?

DR. MAKHOLM: I've looked at who they are, and just for my own interest, I've checked out the websites of a handful of them to see who they are and how they're spread out and how big they are, to see whether or not they are similar to the kind of MUNIs I have known and worked with and for, and I don't see any particular difference in that respect.

So they're not a -- they are not unknown to me. They are familiar to me, but they are not investor-owned companies and that's a different kettle of fish.

MR. QUINN: Thank you.

CONTINUED QUESTIONS BY MR. SHEPHERD:

MR. SHEPHERD: Let me move to SEC.65, if you could. We're trying to understand your view of the impact of exogenous cost changes on the prices of a regulated utility, and you've written about this.

What we're trying to understand is -- we're trying to distinguish between exogenous cost changes that affect an entire sector. And so in a competitive market, everybody would change their prices, right? Is that true?

DR. MAKHOLM: Yes.

MR. SHEPHERD: And exogenous cost changes that affect only one company, in which case they can't change their prices. They are price takers and they must simply suck it up, right?

DR. MAKHOLM: Out there in the world in the unregulated business, yes, that's correct.

MR. SHEPHERD: So is that also appropriate in the regulated utility business, that only exogenous cost changes that are sector-wide should be part of a price adjustment, and an exogenous cost change that affects only your company is your tough luck. Is that reasonable?

DR. MAKHOLM: No.

MR. SHEPHERD: Why not?

DR. MAKHOLM: Because in the way what that we regulate investor-owned enterprises, there is what we call a regulatory compact that underlies everything, which is the point of contact between the private interest of investors and the public interest.

And the general deal is that you will give a reasonable return on the investment that comes from investors to provide public services, as long as in some form or fashion, you cover those costs.

Now, the point that we're doing here is we are encouraging regulatory lag so that in the covering those costs category, we inject more competitive incentives than we would have had otherwise. But we're not subjecting them to an unregulated perspective. They are still regulated -- and I write about this in my testimony, in my IR responses; you've seen it.

The way we regulate eventually comes back to cost-based regulation. That's what we have here. That's not necessarily what they have the UK, but this is what we have here and the extent to which we have a longer rebasing period, to the extent to which Alberta and Ontario and British Columbia and a handful of U.S. states have decided to not do a basic cost-based regulation, is reflective of their desire to -- to boost the efficiency incentives of delaying the cost-based rebasing.

That's all a good idea, but the cost-based rebasing is still there and the regulatory compact is still there, despite the regulatory lag that we've imposed in the intervening time.

MR. SHEPHERD: So there are these two theories of incentive regulation, one of which is that it is simply a different way of setting a cost trajectory, but you are still trying to set costs. And the other is that it is a method of exposing companies to market forces.

And I take it that you're primarily on the former, that you think it's simply a way of setting cost expectations.

DR. MAKHOLM: It is the way it is.

MR. SHEPHERD: Okay.

DR. MAKHOLM: These are still local monopolies and you are not exposing them to market forces, because if you did, you'd let them price as they wish; and allowing them to charge market-based rates is out of the question.

MR. SHEPHERD: All right. So, then my next question Is -- if I can find it.

You've commented in your article here -- this is attachment to SEC.65, and I'm looking at page 41 of the article, page 9 of the attachment -- you've commented There, and you've commented in your other writing as well, that the K-factors or capital trackers of various types are intended to capture capital expenditures that are unusual, right? That the routine capital expenditures aren't part of that sort of process in your view, is that right?

DR. MAKHOLM: No, I think that's a little too specific.

MR. SHEPHERD: All right.

DR. MAKHOLM: They are capital expenditures that otherwise aren't dealt with under the regulatory regime.

In that respect, unusual, I can agree with.

MR. SHEPHERD: So when you say -- sorry, the clip is in the way.

When you say at the bottom of page 9 and the top of page 10:

> "Numerous regulatory bodies have adopted infrastructure trackers for specific capital expenditures, and that is the approach we would recommend. The capital expenditures that are candidates for such trackers must be comparatively unusual and narrowly defined (such as cast-iron pipe replacement for gas distributors or specific aged infrastructure replacement for electric distributors)."

Can you track that quote to what you've just told me?

DR. MAKHOLM: Sure. If you look further back up in that same paragraph, you will see that "such provisions are known as K-factors and help ensure that utilities cover costs for necessary and prudent system upgrades."

That's in the same paragraph and that gives context to the whole rest of the paragraph, which is that we are living in the Brandeisian prudence sense.

The companies have the public to serve and if the public requires, through a new subdivision or a new extension, or a upgrade of service or increased demand, new facilities to be invested in to serve them, prudence would require that we take a look at them and find a way to track those costs.

We don't make companies serve new users without some confidence that they -- that the capital they expand for that purpose is well-tracked, and a return will flow from it. That's the basic regulatory bargain.

So nothing about what the end of the paragraph contradicts what I wrote earlier in the paragraph with respect to prudence.

MR. SHEPHERD: So -- and you talk in your earlier -- in lots of your articles about this prudent standard as being sort of central, the fair return standard it's called here, I think it's called that in the U.S. too, that that, or the regulatory compact, that that is sort of the primary driver. Is that fair?

DR. MAKHOLM: Yes.

MR. SHEPHERD: And so if a utility -- whatever their rate plan, if a utility has cost pressures they should be able to come back in and get some more money, because they shouldn't be expected to spend the money unless it's in rates; is that right?

DR. MAKHOLM: Don't overdo it. I make a point of saying that one of the reasons why the Brits cooked up this I minus X business in the first place was to try to get away from their simplistic notion of cost plus regulation. I don't want anything I want to say imply the cost plus-ish vibe of that question of yours. We have a proceeding here that is subjecting incremental capital module issues to a very specific kind of computation that the OEB oversees. It just doesn't sort of roll out the money just because a new thing is built. It does something much more definitive than that, and much more careful than that.

MR. SHEPHERD: Which is what?

DR. MAKHOLM: Which is to determine whether or not the formula can provide any sort of investment activity or whether something in addition to that is required. It's just basically what the K-BAR is doing in Alberta at the moment, or the additional -- the original capital tracker that I proposed in Alberta did. It was to provide a method of covering the prudent costs that are needed to serve the public within the context of a larger I minus X regime.

And the I minus X bid that we are doing here is a derogation from the basic cost-based regulation, and a useful one, but it also -- it always recognizes the principles on which our basic regulation is based.

MR. SHEPHERD: So the notion that -- which many regulators have talked about -- that you might go to -- you might basically say to the utility, Lookit, here's your budget, make it work, just like the competitive markets do. Here is your prices. We're going to let your prices go up 1 percent a year, that's what you get, figure it out. That's -- you think that breaches the regulatory compact; right?

DR. MAKHOLM: I don't know where that happens anywhere, in terms of gas and electric companies.

MR. SHEPHERD: So if the Ontario Energy Board says that to Enbridge and Union, you say they're wrong?

DR. MAKHOLM: This is too weirdly hypothetical and contrary to the kind of regulation we are dealing with for me to have a quick answer to that. I don't want to tell you that it's wrong, but I would never contemplate that the OEB would specify a lump of money and tell the company to go live with it, and if any customers come in and want extra service because gas is preferable and it's cheap because of the way we deal with it in North America, that the company would tell the users, Sorry, we don't want to serve you any more.

That's why I say that that's too weirdly hypothetical a consequence for me to actually deal with.

MR. SHEPHERD: So in any regulatory structure in which -- in which the utility can't come back and ask for more money basically is not conceivable?

DR. MAKHOLM: That's too general a question for me to answer.

MR. SHEPHERD: All right. I'm looking now at SEC 66. So you -- we asked you: Is it your view that input price inflation for gas distributors in Ontario is the same as input price inflation for the economy as a whole? And you said, look at question 37, so we looked at question 37, and you said: We studied that very question in the U.S. and determined that U.S. input prices for gas distribution are the same as -- or actually, I think it was electricity -- and the economy as a whole were the same.

So you're assuming that that applies also in Ontario; right?

DR. MAKHOLM: I didn't say they were the same. To be picky about it, I said that to the extent that I measured these over time I've never been able to reject the hypothesis that they come from the same -- that they come from different distributions.

That's the nature of the T-test that goes along with looking at two different data -- it is not to say that they are the same, but it is a way of saying that given the way statisticians construe the world, they construct a hypothesis, and if they can't reject it they can't reject it, and I never have.

MR. SHEPHERD: So the result is that it's fair to conclude that input price inflation in Ontario for the entire economy is a reasonable proxy for the price increases faced by gas utilities? The cost increases, sorry. Is that fair? Inflationary costs increasing --

DR. MAKHOLM: The GDP IPI that's been proposed?

MR. SHEPHERD: Yes.

DR. MAKHOLM: I think it's fair.

MR. SHEPHERD: Okay. You haven't done any studies of that; that's simply from your experience looking at similar issues in the U.S.

DR. MAKHOLM: Correct.

MR. SHEPHERD: Okay. My next question is -- ah, here's Loeb and Navarro. This is actually not the quote that I was thinking about, but I'm going to ask you about this one anyway. This is page 3 of SEC 68, attachment 1. You have that? And you will see right in the middle of that top paragraph:

> "Loeb and Navarro confirmed --

DR. MAKHOLM: Excuse me, Loeb and Navarro...

MR. SHEPHERD: See where I'm quoting?

DR. MAKHOLM: Yes, let me go back and look at the reference. Give me just a second, Mr. Shepherd. Okay.

MR. SHEPHERD: So what you say in this article is -- or -- this is a book chapter?

DR. MAKHOLM: Yes.

MR. SHEPHERD: Yes.

> "Loeb and Navarro confirmed that a price cap plan begins with prices set so that the value of total inputs including a normal return on capital equals the value of total output for the company as well as the industry."

So the starting point is, get the balance right between outputs and inputs; right? This is why you have rebasing in IRM proceedings; right?

DR. MAKHOLM: Correct.

MR. SHEPHERD: Okay. And you agree with this statement?

DR. MAKHOLM: As a general matter in terms of the description of what this kind of regulation does, yes.

MR. SHEPHERD: Now, are you aware that in this case the applicants are asking for a price-cap plan that doesn't start with a rebasing; were you aware of that?

DR. MAKHOLM: Well, as far as I'm concerned, I know that in this proceeding they are not rebasing, but they have rebased before, not in this proceeding, however.

MR. SHEPHERD: So help me understand how a price cap is an appropriate price cap if you don't start -- if you don't set those prices based on a cost-of-service proceeding?

DR. MAKHOLM: Well, that -- the prices in this case have been set on a cost-of-service proceeding.

MR. SHEPHERD: No, they're not. They're -- the prices have been decoupled from costs for five years.

DR. MAKHOLM: Yes, and they came from a cost-of-service proceeding.

MR. SHEPHERD: So it doesn't matter how far back your rebasing is. As long as you've rebased at some time in the past, then IRM still works properly?

DR. MAKHOLM: You have to look, and, yes, it depends, but the -- we live in an environment where prices are based on costs, and you might have to go back a while to find the cost if you're in the middle of a regulatory regime that has an I minus X program, but I minus X program reverts to the original cost.

MR. SHEPHERD: All right. My next question is on Staff 45. You were asked by Staff to provide certain of the sort of sub results of your study year-by-year growth rates for various components of the study, and you basically said no, calculate it yourself.

So that's a refusal and I'm going to ask you to provide that table, please, because I can't compute it. I don't know whether the Board Panel can; maybe they can, but I can't and I'd like to you give as a table that shows that so we don't have to look at your spreadsheets. Can you do that?

DR. MAKHOLM: Let me just read the question once again. We can provide yearly growth rates. We can do that.

MR. MILLAR: JT2.5.

UNDERTAKING NO. JT2.5: TO PROVIDE A RESPONSE TO BOARD STAFF INTERROGATORY NO. 45

MR. SHEPHERD: That actually reminds me of something that came up in your discussion with Dr. Lowry.

You had this discussion about whether, in your general productivity study and your analysis of the productivity of Enbridge and Union, you include A and G and customer care costs. And you say no, you don't, right?

DR. MAKHOLM: I believe that's correct.

MR. SHEPHERD: Then how is this total factor productivity? Who I don't understand that. Aren't those costs a big portion of costs?

DR. MAKHOLM: We're talking about growth; we're not talking about levels. So the cost is constant; over time it cancels out. We are only talking about growth rates.

MR. SHEPHERD: So you are assuming then that the growth rate in A&G and customer care productivity is the same as other costs, right?

DR. MAKHOLM: I'm assuming that it is constant enough for us to be able to allow it to cancel out as opposed to coming up with some allocation scheme for us to figure out what component of those costs we can reasonably and fairly allocate to distribution, that's correct.

I think the former is the better choice.

MR. SHEPHERD: Isn't it generally true that customer care costs are actually an area where utilities generally get substantial productivity because the economies of scale keep going and going?

DR. MAKHOLM: I don't think I agree with that as a general notion, no.

MR. SHEPHERD: Have you looked at the customer care costs of Enbridge and Union?

DR. MAKHOLM: No.

MR. SHEPHERD: Mr. Culbert, isn't it true that your customer care costs on a per customer basis have been -- have increased at much less than inflation over the last ten years, twenty years?

MR. CULBERT: Increased at much less than inflation? I don't know if that's the case. I know they have been -- there's been productivities in the customer care function.

MR. SHEPHERD: That continues to be true, right? You are continuing to get productivity in the customer care function?

MR. CULBERT: Again, I can't speak for that department, but there have been productivities that have been increasing or stabilizing for the past number years, yes.

MR. SHEPHERD: Is that the same in Union, Mr. Kitchen?

MR. KITCHEN: I think I have to give a similar response. I'd have to take a look and I'm not sure, but there have been improvements in productivity over the years in customer care like in other areas.

MR. SHEPHERD: If customer care is -- let's say it's 20 percent or 25 percent of operating costs of a typical gas utility, productivity and customer care costs would affect your TFP number, wouldn't it, Dr. Makholm?

DR. MAKHOLM: The inclusion of any kind of cost would, but that's not the question that I'd -- I didn't -- the last answer that I gave talked about weighing the options to do one or the other. And in order to be objective and in order to be -- to use a large dataset with lots of different companies, and in order not to be in the business of making complex allocations of common costs like NG, the central office for a larger operation that might have operations that are not just distribution, we stick to numbers that we know are distribution and that we can -- and we can warrant our distribution in the nature of the data that's collected.

So we don't allocate, and we don't allocate as a matter of principle. And that's a common theme for the creation of this dataset, to do TFP growth studies. And I think it's a good thing.

MR. SHEPHERD: Is your exclusion of A&G and customer care, does it only apply to OM&A costs, or does it also apply to the capital aspect of A&G and customer care?

DR. MAKHOLM: We're also -- we not dealing with anything that's not relatable as to distribution. So if there is a capital expense for a central office and it is not related to distribution, but it is called a capital part of administrative and general expenses, we don't count that either.

Only data that we can identify is distribution.

MR. SHEPHERD: Well, that's not what I was asking because obviously, if you have an entity like Enbridge or Union that is a distribution entity or all of our distribution electricity distributors, their A&G and their customer care, they are all distribution expenses; right?

DR. MAKHOLM: But that's not true generally; it's certainly not true of Union. They have a lot of different things that aren't distribution. And if I took their central office and decided to parcel it out between their various activities, not all of which are distribution, I would be tasked with allocating.

MR. SHEPHERD: I wonder if Enbridge and Union could each -- or collectively you could undertake to provide your customer care cost per customer for the last 20 years. It should be readily available, right, especially for Enbridge, I know that, but probably for Union as well. Can you do that?

MR. CASS: Jay, while the witnesses are speaking, I have a fundamental problem with it because Mr. Makholm has just explained why it is not a element in the work he's doing. I don't know what value it is going to have to the Board.

MR. SHEPHERD: We are going to challenge his work because it doesn't capture a key aspect of productivity for these utilities.

MR. CASS: Right, and he's explained to you his position as to why that is not a challenge to his work. So I don't know how having these numbers is going to help you to make something that is essentially an argument.

MR. SHEPHERD: So if your clients are happy to stipulate that their customer care costs have a 1 percent per year long-term trend of productivity, I don't need the numbers.

MR. CASS: I don't think they are stipulating Anything, Jay. I'm questioning the value of this information to the Board in light of the analysis that Dr. Makholm has described he's done.

MR. SHEPHERD: And if we convince the Board that the study is deficient because it doesn't capture this production, the Board then needs data to reflect it in their decision. I'm asking for data that the companies have that's readily available.

MR. CASS: Well, I don't even know that it's readily available, Jay. But for present purposes, I don't think we're going to provide an answer to that question.

MR. SHEPHERD: So that's a refusal?

MR. CASS: Yes.

MR. SHEPHERD: Sorry to hear that. My next question is you talked about -- in Staff 50, you talk a little bit about the ICM, the incremental capital module, and you say it doesn't raise concern to you about the appropriateness of your productivity study.

Am I right in understanding that as long as ICM spending is only higher than the average capital spending in prior years, in the historical years, it shouldn't affect your study because it's incremental; right?

DR. MAKHOLM: My study is historical data. That's what it does. So it doesn't deal with the premise of your question.

MR. SHEPHERD: Well, your study captures capital spending in the past, whatever it was; right?

DR. MAKHOLM: Correct.

MR. SHEPHERD: And as long as the future is the same as the past, your study captures the cost trends; right?

DR. MAKHOLM: As long as the future is the same as the past is a heroic assumption. And so given that heroism, I would say yes, but I have to tell you that populations don't decline, the sun doesn't stop shining. Things change in the world, and so it is kind of an abstract assumption and doesn't have much to do with what we're doing here.

MR. SHEPHERD: Well, except that the only reason your productivity study is useful at all is, assuming we agree with the results, is that you are applying a past trend to the future as if the future is going to be the same as the past; right?

DR. MAKHOLM: No, the purpose of my productivity study is to help a regime that can lengthen regulatory lag. I've said that a whole bunch of times. That's its purpose, is to assist regulatory lag.

MR. SHEPHERD: So the number doesn't matter, it is just how long you use it?

DR. MAKHOLM: The results do matter because, as I've also explained, to have any period that needs regulatory lag, the way you want to extend regulatory lag, you have to somehow inflate the numbers involved, you have to recognize inflation, and whether or not the inflation numbers that are published by Statistics Canada are worthwhile and useable is what my study is about. I went on to explain exactly what it's there for. It there is to determine whether or not you can use those published inflation numbers and I say that you can. That's what my study is about.

MR. SHEPHERD: And your conclusion is because you look at the past level of productivity and you say --

DR. MAKHOLM: Growth.

MR. SHEPHERD: Sorry, productivity growth, sorry, you're right, the productivity growth, and you say as long as that continues those inflation numbers are right.

DR. MAKHOLM: No, and it doesn't have -- as long as that continues just doesn't work into that. It's that the -- as we measure the relative productivity of the industry vis-a-vis the economy, we have concluded that there's no reliable difference, hence the X is zero, hence you can use the published inflation index as a way of lengthening regulatory lag.

I'm not saying that it has the ability to predict the future. There is nothing about future prediction here --

MR. SHEPHERD: No, I --

DR. MAKHOLM: -- it only is whether or not you can use the published inflation indices as the vehicle by which to lengthen -- to help lengthen regulatory lag. That's all it does.

MR. SHEPHERD: You've said that in your past study period the inflation figure and the cost trajectory of the utilities is the same, and there is no -- there is no difference, there is no productivity difference; right? That's essentially what you've concluded?

DR. MAKHOLM: Yes.

MR. SHEPHERD: And so you're saying --

DR. MAKHOLM: Growth.

MR. SHEPHERD: Then we can apply that into the future. You are not predicting --

DR. MAKHOLM: No, I'm not saying you can apply that into the future. I'm saying that the conclusion comes that you can use the published inflation indices to take us into the future. That's what it says.

MR. SHEPHERD: And that is only true if the future cost levels are the -- or the cost growth is the same as the past; right?

DR. MAKHOLM: No, all I've done is to confirm the idea of using the published inflationary indices going forward to lengthen regulatory lag. I'm not predicting future costs, I'm not saying that the future is the same as the past.

MR. SHEPHERD: All right. Almost finished. In fact, I lied. I have finished. Thank you.

MR. MILLAR: Thank you, Mr. Shepherd.

Does anyone have 15 to 20 minutes?

MR. LADANYI: I have maybe ten.

MR. MILLAR: Ten? Ten will do. Go ahead, Tom.

QUESTIONS BY MR. LADANYI:

MR. LADANYI: My name is Tom Ladanyi. I am consultant to Energy Probe. If you could turn to Energy Probe 38.

DR. MAKHOLM: Yes.

MR. LADANYI: Very good. So I asked the question: If it is not reasonable to impose a stretch factor for PBR regime that will be nearly 20 years old when the next price-cap framework begins -- and I quote this from your evidence:

> "What is the maximum age of a PBR regime where a stretch factor would be reasonable?"

And your response refers me to your evidence, Exhibit B, tab 2, Q&A 19 and footnote 26. If you could turn to that.

DR. MAKHOLM: Yes, I see the footnote, thanks.

MR. LADANYI: Very good. So I read this several times, and I must admit I really don't get it, so can you explain this to us, what exactly are you trying to say here?

DR. MAKHOLM: I think in that footnote, the AU -- and I'm referring to what the AUC has done in respect of the stretch factor. The AUC had a generic proceeding. They polled the various experts that do this sort of thing like what I do and came to recognize a general conclusion that the stretch factor was there to reflect the transition to a new regime.

And indeed, when they did their second-generation plan they included the transitionary nature to be the basis, the foundation of the stretch factor.

And I -- I'm sorry for not talking about it more at length, and it is good that you asked. It is not the number of years so much as the nature of the transition. So you would -- you would apply the new I minus X regime, that it was a three-year regime, and then you changed it to boost the nature of the incentives for the next three years.

Well, then the foundation for the stretch factor would depend on the nature of those events, not the length of time between them. It would be the new signals that are being given.

So I don't have a number of years, but that footnote reflects is the fact that it's -- the nature of the numbers of transitions, not the years between them.

MR. LADANYI: Right, I understand.

DR. MAKHOLM: That's what I would have meant to say had I been a little more expansive on the subject.

MR. LADANYI: Very good. Thank you. Now, can you turn to Energy Probe -- sorry, Energy Probe 40.

DR. MAKHOLM: Yes.

MR. LADANYI: And my question was: Is your position that stretch factors undermine incentive regulation? And you gave a response, and I'm not going to read your entire response, but I was intrigued by a reference to a well-recognized foundation, which is on the last line.

Could you actually expand on this idea of what is a well-recognized foundation?

DR. MAKHOLM: I would simply refer to the discussion of the issue that came along with the generic proceedings in Alberta, and what was unique about that was that the AUC was restarting I minus X regulation in 2010 to '12.

And as all the companies had their own experts, and as I was the independent expert for the AUC, the AUC could fairly represent the consensus of the experts in the field. And when it comes to well-recognized foundation, I refer to that: The consensus of those in the field, as discerned by the AUC in its generic proceeding.

MR. LADANYI: All right, and my last question is on

Energy Probe 41.

DR. MAKHOLM: Yes.

MR. LADANYI: You referred to the differences between the two utilities. And you obviously have studied the data. Can you, at a high level, explain what are the main differences between the two utilities that would account for the differences in TFP growth?

DR. MAKHOLM: I don't know.

MR. LADANYI: You don't know. So you actually crunched the data, but you have no concluding remarks that you can say about this?

DR. MAKHOLM: Yes, I just crunched the data, but the data is not -- no data for any utility that I deal with is so precise and disaggregated that allows to you discern after-the-fact what boosted productivity growth.

And I say that having done the first academic study in the whole history of the world that tried to discern that for large groups of companies. It was my doctoral dissertation.

I had I never had any idea that it would result in proceedings like this. I didn't do it for this. I did it for another purpose. This just happened to come along for the ride.

But I did a econometric analysis to try to determine for American electric and combined gas companies where the productivity changes come from. And I had some success, but only for large groups of companies and only on average, and having nothing to do with a contested regulatory proceeding.

But given my knowledge of that context, I would never be able to look at one company or another company and judge what it was that resulted in their getting to where they are today.

The data is not good enough for that, for single companies; it is not anywhere near good enough for that, for single companies.

MR. LADANYI: Okay, thank you.

DR. MAKHOLM: So sorry, I don't know.

MR. LADANYI: Those are all my questions.

MS. McOUAT: Thank you, Mr. Ladanyi. Can anyone do anything usefully in 10 to 15 minutes? Mark?

MR. GARNER: My name is Mark Garner. I'm a consultant for VECC, which is a low-income consumer group.

I really have only two questions, and I know I should take umbrage with the first question that I'm questioning your qualifications. If I was doing that, I'd asked you how you voted in the last election.

DR. MAKHOLM: And I'd answer.

MR. GARNER: I'm sure; it may come up. But what I really want to know is -- you are a practising academic now, aren't you?

DR. MAKHOLM: No.

MR. GARNER: You're not, okay. But I still think you can still help me with this.

Every time I see these TFP studies on the electric and gas industry, they all seem to be generated out of the same school out of Wisconsin, the same graduate-type thing. I want to ask you questions.

How widely practised are these studies that you are doing outside of that school on electricity and gas, not on general TFP which is done generally in economics, I know. But on this stuff, it seems a lot of it comes out of that school.

DR. MAKHOLM: There is a reason for that.

MR. GARNER: Okay, help me.

DR. MAKHOLM: And that is that what I've done here and what Lowry does and what anybody else does is to create an index number. Now you might think that creating index numbers is sort of easy, but it's not. It's troublesome. It is difficult and it consumed much of the economics profession in 20th century to create national income indices and so forth.

Some graduate work was done in Berkeley, UC Berkeley, under Professor Dale Jorgenson and his various students, including Christensen, who went to Wisconsin, to determine how we can create an index number for capital inputs. That was their basic advance. It almost won Jorgenson a Nobel prize -- almost, not quite.

But because Christensen, his most productive student, went to the University of Wisconsin, that's where I encountered him. He was my major professor and he also started little firm there called Christensen Associates that grew doing this kind of work for government agencies, and railroads, and telecom, and postal, and other areas.

And so the creation of index numbers and the techniques for doing that reliably is a rather small field, but it was centred in those two places, Berkeley and Wisconsin, and then a couple of the other students went to the University of British Columbia, and that's where you'll find the researchers in this area. That's why it's localized in these places.

MR. GARNER: And relatively small, it sounds like. In the area of utility TFP in the States, a relatively small group of, it sounds like, well known to each other people, because you all know each other.

DR. MAKHOLM: Correct. But it would only be in North America and in the U.S., because people don't regulate on the basis of identifiable costs in other countries. They don't even have accounting conventions in the UK after twenty 20 years of privatization.

So it applies usefully in a certain context, and it is an index number technique which developed in certain defined spots.

MR. GARNER: Thank you. My second question, and you don't need to pull it up, is with C Staff 38 where they asked you some questions about the data.

The thing I'm trying to understand is this. As I understand the dataset you use, the dataset you use is predominantly -- not exclusively, but predominantly electricity. It's almost all U.S. and within the electricity, there is some combined utilities with gas and electricity, but in that IR you explain how you couldn't extrapolate those out, et cetera, and I accept all that.

It seems to me therefore that you are relying on a hypothesis, and in this case, the hypothesis you rely on is that you can extrapolate from what you've done from the electricity industry to the gas industry, because we really don't have much gas data in all of that data. Would that be a fair statement?

DR. MAKHOLM: Yes.

MR. GARNER: How did you test that hypothesis?

DR. MAKHOLM: There is no testing, except to do as the AUC did when it dealt with this in a generic fashion, which is to look at the institutional environments, the nature of the activities in a general sense, and what distributors do and what defines the natures of their areas, and what defines the natures of their functions.

And in weighing the extrapolation, as you call it, against the use of datasets that are provably inconsistent between province and province or state to state, in performing that weighing, the AUC chose the measurable consistency for index number purposes of having companies from jurisdictions that is are generally indistinguishable institutionally from Canadian institutions, and also perform activities that are similar enough to weigh more heavily in terms of their usefulness with respect to more locally-derived data from various provinces, various states where there is no central collection authority.

They weighed that and I think in their judgment they got it right, and they chose that the form 1 data is a uniquely useful dataset in its reach and its breadth to create the kind of index numbers that they thought reliable.

MR. GARNER: Well, I don't really know what happened at the AUC. What I'm asking you really is -- I understand your answer. You're saying you haven't tested that hypothesis and the only thing I understand to be very similar between those two industries, quite frankly, is their billing concepts. They both do billing, but other than that, they have a quite different infrastructure, a quite different assets set, a quite different set of depreciation values. They are actually quite different industries, in my experience of them.

So what gives you some -- what gives you in doing the study that you can make that extrapolation, notwithstanding someone has looked at the same data and said they would do it, you are doing the study. You are the one who's saying I can apply this to the gas industry.

I am kind of looking for specifically why you think that's true.

DR. MAKHOLM: Okay. I've worked for, either individually or in groups, maybe 50 electric distributors around the world and 50 gas distributors around the world, more or less, in various different forms or fashions. Their books, their activities -- I'm not an engineer, but I see what they do and I know what they do, and my conclusion mirrors that that came out of the AUC, which is that the way we regulate them, the risk to which we face -- that they put their capital to, the way in which we make the rates, the way in which the courts defend their interests, the way in which they run lines up and down city streets and have trucks to follow around customers, billing, metering and so forth, there is a great deal of commonality between electricity distribution and gas distribution. And my perspective is contrary to the one you just expressed, which is that there is a whole host of differences. There's not really whole host of differences.

Electricity is way different than gas. Electricity transmission is way different than gas pipelines at the interstate level. But the distribution function and how these companies deal with their local franchise monopolies or unfranchised monopolies, in the context of what informs a study like mine, they're pretty similar.

MR. GARNER: But you don't make a study of that; that's what you've told me. And you have no evidence to do that.

You haven't presented anything that actually in this case would provide us with that assurance that in fact they are that similar that you believe they are.

I mean, if you do, point it out to me. I would be happy to look at it. I just didn't see it.

DR. MAKHOLM: I have provided, I think, writings of mine in this case in response to IRs about -- and I have tested and delved deeply in the institutional similarities that help form my opinion.

The fact that Northwestern Utilities' decision is the same as the Hope decision in the way it underlies the safety of the capital deployed for the public services.

I have done those things and I have studied those things.

The idea that there is a quantitative or a T-test to determine whether gas or electricity distribution comes from the different populations, we don't have that ability. We don't -- we don't have that --

MR. GARNER: That would be difficult to test with a statistical test, you're saying.

MR. CASS: Mark, you keep asking him questions for clarification. Perhaps you could just let him finish his answers without interrupting him. Thank you.

DR. MAKHOLM: It is not a bad question. But you understand that a statistical test to determine whether they are the same doesn't -- we don't have that. If we had such things we wouldn't be here discussing these things. We have to weigh some options in terms of what works, in terms of lengthening regulatory lag and having an X that matters, and in those tradeoffs I agree with what most recently the AUC did when it made those tradeoffs, both when I was there in 2010 and what they have done subsequently in 2016 and what the Massachusetts DPU has accepted as November 2017, which is that my data set, which is used in all those places, is a useful place to get an X, despite the fact that we don't have verifiable proof that these two kinds of distribution operations are the same.

MR. GARNER: Right. And as -- when Mr. Cass interrupted there, why I was saying that is because you are doing a statistical analysis and you can't test that hypothesis, I'm suggesting -- and I was just saying that's one of the reasons you just can't do that, right? That is all I was trying to confirm.

DR. MAKHOLM: All right. And that's fair enough.

MR. GARNER: Those are my questions. Thank you.

MR. MILLAR: Thank you, Mr. Garner.

I think, given where we are, we can take the lunch break, but I do want to do a time check for this panel. Who -- let's start in the room. Who still has questions for this panel? Dwayne, how long will you be?

MR. QUINN: My estimate is 15 minutes, but it may be plus or minus depending on how we --

MR. MILLAR: That's fine --

MR. QUINN: -- get the answers, thanks.

MR. MILLAR: -- Tom?

MR. BRETT: Between 30 and 40 minutes --

MR. MILLAR: Anyone else in --

MR. BRETT: -- probably closer to 40.

MS. GIRVAN: I have a couple of questions.

MR. MILLAR: So five minutes. Anyone else?

On the line, anyone have questions? Okay. So we will get to panel 3 in about an hour -- about an hour into the afternoon.

We have to finish at four o'clock today. Are people comfortable with a 45-minute lunch if that helps us get through things?

MR. CASS: Definitely from the applicant's point of view, Mike.

MR. MILLAR: All right. Let's come back at about 1:30.

MR. QUINN: Mr. Millar, just one point. The folks on the line, as I was earlier, might be on WebEX, so they might not be able to get their numbers in to you, so possibly at the start we can just check in with the people may have gone WebEX as opposed to phoning --

MR. MILLAR: We will make sure everyone has the chance.

MR. QUINN: Okay. Thank you.

MR. MILLAR: Okay. 1:30. Thank you.

--- Luncheon recess taken at 12:43 p.m.

--- On resuming at 1:35 p.m.

MR. MILLAR: Welcome back everyone. We are back with panel 4 and we will turn to you, Ms. Girvan.

QUESTIONS BY MS. GIRVAN:

MS. GIRVAN: Good afternoon, panel. I am Julie Girvan, consultant to the Consumers Council of Canada.

This is just for Mr. Makholm. I am just trying to understand this -- sorry?

I'm here. You were looking for me? Here I am.

That's my spot so...

Anyway, just at a very high level, I am trying to understand exactly -- sort of summarizing your evidence and this is extremely high level. So the first thing you've said is -- at the beginning of your evidence when you were talking generically about X factor, you said that zero X factor means that the economy-wide inflation index is expected to fairly track the regulated firm's price inflation during the rate formula period.

From what I understand, you're saying that's the case with respect to Union and Enbridge, correct?

DR. MAKHOLM: Yes, correct.

MS. GIRVAN: And then you are also saying that you don't think a stretch factor is appropriate in this case because they've been on PBR for a long time. Is that a fair conclusion?

DR. MAKHOLM: Going back to our previous discussion before lunch, they've been through a number of these transitions and PBR as an institution is now old hat.

MS. GIRVAN: I guess my main question is: Going into this merger, we're going to have a different company. It's not going to be Union, it's not going to be Enbridge; it is going to be a combined entity.

So I'm wondering how you can take what you've said and apply that to a new merged entity because it is going to be a different company and it is going to have different opportunities for efficiencies than they've exhausted sort of from the past.

DR. MAKHOLM: Well, to be sure, yes, and they will have different opportunities. That's why there is an encouragement to do this sort of thing in Ontario.

But the regulatory regime will not have changed, and that's what the stretch factor that I define, and is generally held to be the case among people like me, refers to.

It is the regulatory regime to which you face in your business of squaring your investor's expectations with your consumers' interests that will not have changed.

Yes, the company will have amalgamated to spatially separate distribution areas and that provides, as the company has described, alternatives to economize and benefits to consumers. But the regulatory system has stayed the same.

MS. GIRVAN: I'm still struggling with the fact of why isn't a stretch factor appropriate.

DR. MAKHOLM: It is a derivative of a change in a regulatory regime, that's why.

And if the regulatory regime hasn't changed stretch, defined the way I have done so, has no place.

MS. GIRVAN: Okay, thank you, those are my questions.

MR. MILLAR: Thank you, Ms. Girvan. Tom, are you next?

QUESTIONS BY MR. BRETT:

MR. BRETT: I think so, yes. Good afternoon, panel. My name is Tom Brett and I am here for the Building Owners and Managers' Association. And if you are looking for me, I'm down at the end here.

DR. MAKHOLM: Got you.

MR. BRETT: I was displaced because of a sign that didn't work, or a machine that didn't work.

Just a preliminary question. You were involved with the AUC -- acted for the AUC in their generic proceeding. That was proceeding 566, right?

DR. MAKHOLM: Yes.

MR. BRETT: And I heard you speak, or someone speak of a second AUC proceeding. We have the material -- I have the material that you filed, the decision of the AUC in 566. Is there another decision that's been filed or was there another proceeding of the AUC since that 566?

DR. MAKHOLM: Yes.

MR. BRETT: And that was the one in 2014?

DR. MAKHOLM: I thought it was 2016, but I may have the date wrong.

MR. BRETT: Is that on the record, that one? Do you know?

DR. MAKHOLM: I don't know.

MR. BRETT: Enbridge and Union, do you know whether that's on the record?

MR. CASS: Tom, I'm not aware that it's on the record.

MR. BRETT: Would they undertake to file it, do you think?

MR. CASS: Well, Tom, perhaps Dr. Makholm could explain a little more about the proceeding. I don't think he actually participated in it, if I recall correctly. But his dataset was used in it.

But he's better to explain that than me.

MR. BRETT: All right, I took you to be saying that it was a reaffirmation of what took place in 2012. But, I mean, I want to read it basically. I'd like to get it on the record. I'd like to see the fastest way to do that.

DR. MAKHOLM: I was not in that case.

MR. BRETT: Right.

DR. MAKHOLM: But my dataset was used in that case.

MR. BRETT: Right.

DR. MAKHOLM: I was an independent expert in the first case.

MR. BRETT: I understand.

DR. MAKHOLM: And I created a dataset that I encouraged the AUC to update by itself.

MR. BRETT: Right.

DR. MAKHOLM: They didn't need me for the second case.

MR. BRETT: Right.

DR. MAKHOLM: So to the extent the air various parties used my dataset, the AUC directed them to use it over my time period and filed it -- basically, they made the companies update my dataset for the new period in the second case.

MR. BRETT: Now, you also mentioned earlier about a restarting, a restarting in Alberta about performance-based ratemaking. Are you suggesting that prior to 2012, Alberta was involved in performance-based ratemaking -- or did I not hear you correctly?

DR. MAKHOLM: You heard directly. In the 1999-2000 period when Ontario was investigating the application of I minus X regulation here, so was Alberta, and for one company which was called at that time UtiliCorp Networks Canada; now it's Fortis Alberta. They commissioned me to a

TFP study in that first initiative.

But for reasons that I don't know particularly well, the enthusiasm for that kind of regulatory practice left the province, and the companies did not pursue it.

It came back again in 2009. In 2010, when a new commission led by Chairman Willie Grieve, who had had a useful experience with I minus X regulation in the telecom industry, decided it was a useful thing to restart in Alberta. And that's where that restarted initiative came from.

MR. BRETT: Okay. And there was an EnMax case in 2009, as I understand it, that employed PBR, right?

DR. MAKHOLM: Yes.

MR. BRETT: When you prepared your materials for this case, did you consider any other Canadian provinces that were involved in PBR regimes, or just Ontario -- well, Ontario, is what we're talking about, but in addition in to Alberta? Or was it just Alberta?

DR. MAKHOLM: Just Alberta. I am familiar, to a certain extent, not firsthand, of what goes on in British Columbia. But I was involved, and centrally involved in Alberta.

MR. BRETT: And the reason you didn't look at British Columbia in detail was what?

DR. MAKHOLM: I wasn't hired to do so.

MR. BRETT: I see. Part of your mandate was explicitly to look at Alberta.

DR. MAKHOLM: I was hired as an independent expert by the AUC.

MR. BRETT: Right, but -- I see. And in this particular instance here, I was -- actually, I'm sorry I was a little bit vague. I was talking about this retainer from Enbridge.

When you received this retainer from Enbridge, what you've told me is you did you not examine the experience in B.C. in any detail. And my question to you is why not?

DR. MAKHOLM: I wasn't intimately familiar with it. I had no first-hand knowledge of it, and the experience that I had the first-hand knowledge of dominated, that is Alberta.

MR. BRETT: Okay. Now, to your knowledge -- I think you may have answered this. Are in there any other Canadian jurisdictions that employ PBR, to your knowledge, other than Ontario, Alberta, and British Columbia?

DR. MAKHOLM: My understanding is that with this -- the kind of complexity that is being demonstrated in this proceeding and that I have experience with in Alberta, not to any extent like that, no.

MR. BRETT: Okay, thank you. Now, in the U.S., you've talked a bit about the...

DR. MAKHOLM: Except for Quebec. They have done some of these -- I don't necessarily -- I had to clarify, because I know Quebec has done some I minus X regulation. As far as I know it hasn't gotten to this level of development.

MR. BRETT: And do you know offhand whether B.C. --

the B.C. Commission has imposed stretch factors in any of their cases?

DR. MAKHOLM: I don't know firsthand.

MR. BRETT: You don't know. Okay.

In the United States, the -- you mentioned in your material that there were four states, California, Maine, New York, and Massachusetts, that employ or have employed I minus X or RPI minus X models, performance-based rate-making. Are they still doing that, to your knowledge?

DR. MAKHOLM: It has ebbed and flowed. It ebbed in Massachusetts and flowed back in 2017 with the -- a case of Eversource in Massachusetts. I don't know the current state in Maine. It may have ebbed in Maine. And I also don't know the current state in California.

MR. BRETT: And what about New York?

DR. MAKHOLM: As far as I know, it is not a high-priority event for the companies in New York.

MR. BRETT: And are there any other American states that use PBR at the moment, to your knowledge?

DR. MAKHOLM: At the moment for energy utilities, I do not know.

MR. BRETT: You do not know.

So of those states that you spoke of, and to your knowledge would they have typically had positive X factors?

DR. MAKHOLM: It depends on the time period. For the last X factor approved in Massachusetts for Eversource was the negative 1.3, not positive. Going back in terms of the ten years before, I think by and large they were positive

X-factors.

MR. BRETT: What about stretch factors? Did they employ stretch factors?

DR. MAKHOLM: In some fashion they employed stretch factors, consistent with the imposition of a new regime, yes.

MR. BRETT: So in your sample that you are using of U.S. companies that you are working with, how many of them would have PBR regimes at the present time? It doesn't sound like very many.

DR. MAKHOLM: I think that's correct.

MR. BRETT: And why is that? Are the regimes primarily cost of service?

DR. MAKHOLM: Yes.

MR. BRETT: And why haven't they moved -- more of them moved to PBR? I guess, to be fair, you did explain that the British system was in bad odour, and -- but beyond that -- and I don't need to get a, you know, a long dissertation, but I would appreciate your sense of why only a few have stuck with it or adopted it in the first instance and then stuck with it?

DR. MAKHOLM: My opinion, briefly stated, is that the States have pursued I minus X regulation with the most vigour, had preceded it by doing the same in the telecommunications industry --

MR. BRETT: Ahh.

DR. MAKHOLM: -- where they found high X-factors and they used it as a bridge to competition in that industry.

Certainly that was true for California and Massachusetts, with which I am personally familiar.

Many of the other states never picked it up, because the methods they had for doing cost-of-service regulation were streamlined and regular, more so than in a typical Canadian jurisdiction which, even though it follows the same general -- same -- based on the same general foundation for regulatory purposes, may not have had the same kind of experience or regularity in the way base rate cases were prosecuted.

MR. BRETT: And in the case in the U.S., maybe just as an aside, a lot of them still use historical costs rather than forecast, rather than --

DR. MAKHOLM: For the most part they all do. Some of them have some portion of a forecast test year. New York has a fully forecast test year, but it is not so much a forecast as it is a known and measurable movement in a historical trend, not a forecast as such.

MR. BRETT: So there are differences in the regulatory regimes between the two countries?

DR. MAKHOLM: Yes, in terms of the measurement of the test year, but there is nothing that relates to a long-term forecast of costs or benchmarking or such things, because I think as I mentioned in my report they don't meet the standard of evidence required in the prosecution of rate cases under the law.

MR. BRETT: Okay. Now, I'd like you to turn up -- well, let me ask just one more sort of topological question if I can. In the United States you have investor-owned utilities, and I guess in your sample you worked with, were they all privately investor-owned utilities?

DR. MAKHOLM: Or population, for that matter.

MR. BRETT: Or population.

DR. MAKHOLM: Yes, they were all investor-owned companies.

MR. BRETT: Now, in the United States you have -- many utilities are in public ownership, as I understand it, but they are -- would it be fair to say they are either rural electric co-ops on the electric side, two or three major federally-owned entities like TBA and BPA on the electric side, some municipally-owned electric utilities, such as the City of Austin, for example, and the gas side I'm not so sure. On the gas side my sense is that almost everything is investor-owned, but I take it -- my understanding is there are some municipalities that own gas companies or have gas divisions as part of their municipal structure, Philadelphia, for an example.

DR. MAKHOLM: Yes.

MR. BRETT: Are there many?

DR. MAKHOLM: No.

MR. BRETT: How many would you think there would be in the U.S.?

DR. MAKHOLM: No more than a dozen, but I -- that's a guess. I know -- I have some personal experience with some, like the Philadelphia Gas Works or the City of Pittsburgh Gas Works, but I have never endeavoured to count them.

MR. BRETT: Right. Okay. Just to follow on something that Ms. Girvan was speaking to you about, could you have someone give you yesterday's transcript and turn up page 181, please? Maybe we could get that on the screen, if possible.

Okay. And I want you to -- there is a Mr. Rietdyk -- Middick (sic), who testified yesterday, and Mr. Culbert, he is a vice-president of what, construction and engineering, for either Union or Enbridge?

MR. CULBERT: He's at Union. It's --

MR. BRETT: And what's his job there?

MR. KITCHEN: He is vice-president of engineering, construction, and there's probably one more thing. Engineering, construction.

MR. BRETT: Okay. Now --

MR. KITCHEN: And outside management. and his name is pronounced Rietdyk.

MR. BRETT: Rietdyk. Okay. That's helpful. Thank you.

Now, I just want to call your attention to something that he said in answering a question. He said:

> "You know, there are a number of us who have long histories with both Union and EGD over the past 15 to 20 years."

I actually share that with him.

> "We work very hard to drive productivity improvements and keep rates as low as possible

while maintaining our profitability."

And in the course of that -- and this was the part I'd like you to hone in on -- what we see right now is diminishing returns on those productivity improvement efforts.

And then he goes on to say:

"If you take a look at everything we've done over the past, we are really starting to run out of ideas individually on things to do. And this framework..."

He's talking here of the framework that we are -- that utilities are now proposing.

"...affords us the opportunity to -- the next best chance to drive a step change", emphasize step change, "in productivity improvements that otherwise wouldn't be available to us."

Now, looking at that, would you give me your -- is it not the case that you could consider the step change that he is speaking about as a transition, in your terms?

In other words, the regime that's being proposed, the regulatory regime that's being proposed is vastly different from the previous experience of the two utilities.

The two utilities had five-year-performance. One of them had a five-year PBA program, as you know, Union. One of them had a five-year custom IR, Enbridge.

What you've now got is a merger regime which is saying for the next ten years, you can spend some capital on implementing the merger of these firms and you can keep all of the savings for ten years.

Does that not strike you as getting pretty close to a transition that you were talking about earlier?

DR. MAKHOLM: Not to me, no.

MR. BRETT: Why not?

DR. MAKHOLM: First of all, they can't keep everything because I know that there's an earnings sharing...

MR. BRETT: Sorry to interrupt. There is an earnings sharing, but it comes into play if the ROE has gone up 300 basis points. That's an earning sharing that you'd have to look a long time back in the history of ROEs in this province to see that come into play. But anyway --

DR. MAKHOLM: Your question is a bit like the question that I got from Ms. Girvan, which is that this is a change of regime.

And as I answered to her, as far as regulation is concerned, for my purposes, the answer is no.

MR. BRETT: Well, what I don't get is you, in your earlier discussions today, when you talked about what a transition was, you seemed to me to be describing a fairly elastic concept. You talked about individual circumstances, what surrounds the context, the history.

It's not -- whether something's a transition or not is not a -- didn't seem to me to be a very bright line. It is a more subtle concept than that. I'm suggesting to you that these two utilities are -- what Reitdyk is reflecting here is "Hey, we have a new start here. We have a new start because we somehow think -- if -- I don't want -- if we can persuade the Board to allow us to adopt what they adopted for electricity and the gas industry, if we can do that, we've got a whole new shot here at profitability and this is a new regime. This is a second -- this is a second breath for us. That's what he seems to be saying.

MR. KITCHEN: Mr. Brett, I disagree with how you've interpreted Mr. Reitdyk's comments.

First of all, what he was talking about is that in the amalgamation of the two utilities, there are savings that we can achieve, but only savings that we can achieve through fairly significant investment. And that significant investment will take place over the deferred rebasing term and the benefits will essentially accrue to the shareholder to compensate them for investing in those benefits.

What he wasn't saying is that this is somehow a new regime, a new regulatory regime that would become as a result of amalgamation.

MR. BRETT: But it actually -- would it not be a new regulatory regime for the gas industry? And let me -- let me couple that with a comment, or with a further question. What Reitdyk is saying is this afford us a new opportunity, the next best chance to drive a step change in productivity improvements that otherwise wouldn't be available to us.

And so it seems to me that he is saying that it's a new day here for us, if we can persuade the Board to go along with this.

MR. KITCHEN: What he was saying is there is a step change for the utilities because as stand-alone utilities we don't have the same opportunities that we do if we amalgamate.

MR. BRETT: Fair enough, but that's just what I'm saying. That's what I'm asking Dr. Makholm about.

You have a new range of opportunities and that ought to justify -- or it seems to me, I ask him whether that wouldn't justify using his own criteria of this distinction between transition and gradual, constant flow, if you like, if this wouldn't justify -- if this wouldn't meet the test.

DR. MAKHOLM: I have two responses, if I could. One is to say I answered that exact question that I put to myself on Q-and-A 24 in my testimony. I said, "What about the merger of EGD and Union, isn't that a transition," in quotes, "that conceptually could lead to the consideration of a stretch factor."

And I went on at length over the course of the next page or so to describe why not, why my answer was no in that instance.

Returning to a prior question of yours, Mr. Brett, you had said that this transition bit seems to be a bit vague and nuanced, not aligned; you said not a bright line. And I would suggest that that's not so because examining the transcripts and the proceedings in Alberta, that commission treated it as a bright line. And unless they could find a transitional regulatory regime element, they didn't have the basis for the stretch factor for the second period.

They realized in their first plan it was a new kind of restarted regime in the way we discussed, and they had a stretch factor associated with that.

In the second regime, they also had a stretch factor, but because they changed something. They changed the nature of the capital formula to include incentive activities in the capital formula, and they said so. And they said that the reason for their stretch factor was exactly that.

So for them, in the justification for their decision, they do treat it like a bright line, and I do, too.

MR. BRETT: That was the 216 case in Alberta that you are referring to now, is it?

DR. MAKHOLM: Yes.

MR. BRETT: Now, if I could ask you to turn up page 13.

DR. MAKHOLM: Of?

MR. KITCHEN: Mr. Brett, page 13 of?

MR. BRETT: Of the testimony, B tab 2, page...

MR. KITCHEN: Of our original evidence?

MR. BRETT: Yes, of your evidence, of Dr. Makholm's evidence. It is actually page 15, not 13. Page 15.

Now I want to ask you a bit about this. Are you -- are you aware of the details of the Ontario Electricity Act?

DR. MAKHOLM: Very generally. I haven't read it lately.

MR. BRETT: Would you be aware, for example, that under that act, the municipal utilities in Ontario are required to be incorporated under the Canadian Business Corporations statute, which is the same statute that commercial corporations are incorporated under --

DR. MAKHOLM: I'm not familiar.

MR. BRETT: -- under the Canadian Corporations Act or the Ontario Business Corporations Act, which are virtually the same. Were you aware of that?

DR. MAKHOLM: No.

MR. BRETT: Were you aware of the fact that these utilities were given a mandate to act as commercial corporations, in the sense that they were expected to earn a profit, to pay a dividend to their shareholder, to act in every other respect really as a normal corporation, a normal business corporation; were you aware of that?

DR. MAKHOLM: That would seem to flow from the last statement you made. It sounds like it makes sense.

MR. BRETT: Okay. What you have said at page 15, as I understand it, is you were reconciling your position on the stretch factor. As I understand your statement, your position -- and correct me if I'm wrong, and I'll ask you to confirm this -- you were saying here that a stretch factor may make sense in public corporations, but it doesn't make sense in investor-owned corporations, and so you proceeded from there to reason that it was okay for Ontario to apply stretch factors of 2.2.4 and .6 to their utilities and, indeed, this was not a mistake; you thought utility did -- the Board did this with very good reasons, with which you agreed, but it seems to me you're -- so you are trying to -- well, I won't -- I won't -- let me put it just this way: Why do you distinguish, given what I have just asked you. And given what I've described to you as the nature of the Ontario system with the 70 electric utilities owned by municipalities, why do you make a distinction between publicly owned entities of the sort I've just described? Not American public-owned entities, which are co-ops, or people-owned by the federal government, which doesn't save money on anything. Why do you muddy those waters that way? Not muddy the waters; why do you draw that distinction? That seems me to be an American distinction more than a Canadian distinction. In any event, why do you draw it?

DR. MAKHOLM: I appreciate the question, but I don't agree.

There are plenty of municipal distribution arms of utilities that look just like the municipal distributors in Ontario, and just because the law in Ontario says that they should act like companies, it means nothing with respect to the sources of capital and the way they have to deal with the capital markets.

Municipal utilities don't go to Wall Street to get their funding; they go to the municipality for funding, and that --

MR. BRETT: They to go Bay Street to borrow it.

DR. MAKHOLM: That means everything. The thing that's most distinguishing about investor-owned utilities is they have to have credit all the time in order to make the investments they need to make in order to serve the public.

That connection between investor-owned companies and the capital markets is distinctly investor-owned territory. It does not apply to municipal utilities or state-owned utilities or anything else that goes to a different source of capital funding, despite what the law says.

But let's get back to the other part of your question, because you asked a multiple question, with respect to muddying waters --

MR. BRETT: On that part, or do you want to finish -- you finish up --

DR. MAKHOLM: No, let me finish. I don't want to delay things, but I think -- you said page 15. I think we only went to page 13. I think you were originally right. You were talking about page 13.

MR. BRETT: I can't see very well here. It is 13 --

DR. MAKHOLM: And as we -- as I talked about this morning, I think it was a misuse -- a terminological misuse to use stretch factor for two entirely different purposes.

The way in which stretch factor has been applied by consensus amongst the experts in the field and is recognized by the AUC has to do with a transitionary device, as I talked about with Ms. Girvan.

The way in which stretch has been used for the 70 municipal distributors in the electricity business that the OEB has to oversee is a statistical econometric benchmarking regime where companies are sorted out according to the model that's maintained by PEG, and separated according to their measured areas of productivity.

Nothing like that looks like what I've done here or what the various consultants, including PEG, did in Alberta. That is a different pursuit with different kinds of data, with different practices and different outcomes. They shouldn't have called it a stretch factor. They should have called it something else, and we wouldn't have this confusion.

MR. BRETT: Let me ask you this then: Are you aware that some of these municipally owned utilities in Ontario regularly access the capital debt markets? Are you aware of that? They raise money on Bay Street with bonds, debentures, and the like.

DR. MAKHOLM: I'm well-aware of municipal bonds.

MR. BRETT: You're aware, so that you -- it's not correct to say, is it, that they don't have any involvement with the capital markets? They do have involvement with the capital markets.

DR. MAKHOLM: They issue bonds, yes, municipal utilities all over the country, your country and mine, issue bonds, but they don't go to the capital markets for equity, and the -- the reason why the payment of interest on bonds is something that no one ever hires an outside expert to do because it is so elementary is that there is no contention involved. The contention surrounding investor-owned companies has to do with the return on equity, and how you pay equity investors for devoting capital to public services. That's where the difference lies. I appreciate your pointing that out.

MR. BRETT: The -- let me just -- I sort of lost my trend here. Sorry, you -- what was your second part of your response? Your first part was about capital markets; what was the second point you went on to make? That's why I wanted to ask you right away, because I have a -- I think I've missed -- let me just -- let me pass over it --

DR. MAKHOLM: I got up earlier than did you this morning. I can't remember.

MR. BRETT: You might have -- yeah, the -- I know what I was going to ask you, and I suppose I'm pointing -- this is probably a counter-productive question, because you are going to go and read this and then come back in the argument and deal with what I say, but are you aware of the fact that in British Columbia in the most recent Fortis Gas case that was decided about two years ago, that the BCUC did -- they did place a stretch factor as part of their decision and an X-factor, and in B.C.'s case, as you know, they have been on PBR for many years, perhaps not quite as long as Ontario, but for many years. There wouldn't have been anything, as far as I can see, like a transition in that case.

If I can just add a slight caveat -- not a caveat, a slight side point, you seem to be basing an awful lot of your argument here or your evidence on one jurisdiction, on Alberta. I think I can understand that, because you were a key player there, and you were asked by the regulator to set things out. You weren't -- you weren't, shall we say, representing a specific proponent. Nonetheless --

DR. MAKHOLM: Any proponent.

MR. BRETT: Hey?

DR. MAKHOLM: I wasn't representing any proponent.

MR. BRETT: I agree.

DR. MAKHOLM: And it was a generic case.

MR. BRETT: Well, that's what I said, but I'm saying that you seem to be placing an awful lot of weight on that case, and yet you haven't looked at B.C., where they did something quite different.

DR. MAKHOLM: The reason I place weight on that case is not just because I was in it, although that helps, not just because on every other main parameters of how to structure an I minus X plan the AUC took my recommendations, which helps too; but that it was the most fully litigated, most completely argued I minus X case ever in North America. I was on the witness stand for three-and-a-half days. And the other witnesses were similarly subject to long cross-examinations from numbers of parties, and I think that that revitalizing and reinvigorating I minus X in that province was done for a purpose. And the record in that case is a splendid record, and it allowed the AUC to be able to take the pulse of the experts in the field and name certain accepted principles, like the stretch factor.

I can't explain why BCUC did what it did, but I know exactly why the AUC did what it did, and I would support that as indicative of the generally accepted purpose of a stretch factor.

MR. BRETT: I think I'm over my time, am I not, or am I? I think -- so I am aware of that, and I just am going to look quickly and see if there is anything here that I've missed that is important. There are lots of things that I miss, but I always judge the time wrong. I think there is nothing here that's that important to pursue. Thank you very much. Those are my questions.

MR. MILLAR: Thank you, Mr. Brett. Anyone else for panel 4? You, Dwayne? I'm sorry, yes.

QUESTIONS BY MR. QUINN:

MR. QUINN: I raised my hand higher.

Thank you, Mr. Millar. Good afternoon, panel.

As I mentioned earlier, Dr. Makholm, my name is Dwayne Quinn, and I represent the Federation of Rental-housing Providers of Ontario. I know that some of my colleagues know an awful lot more about this stuff than I, but I don't know too much about it so I'm asking you keep things simple. I'm an engineer quite normally working for municipal utilities. So that maybe gives you some of my background to help you with -- if you can keep the answer to a fairly simple level.

My understanding is the data that you have used in Alberta that is imported in this proceeding, you've looked at productivity for electric and combined electric and utilities; single individual utilities and their productivity aggregated into a big pool of data. Do I have that right?

DR. MAKHOLM: Their productivity growth, the change from year to year.

MS. GRICE: I'll continue to use the word growth, to keep this in the same vernacular.

My question is along the lines of Ms. Girvan's, but I am looking at that time somewhat differently. Have you studied utilities that are going through a merger process to see if there is a different result in total productivity growth for the combined utilities versus what they were as individuals?

DR. MAKHOLM: No.

MR. QUINN: You haven't studied that?

DR. MAKHOLM: No.

MR. QUINN: So if that's the case, and we're in this proceeding with clearly two utilities who had historic growth, but now are going to be merging, how is your work then directly applicable without any kind of adjustment to their situation?

DR. MAKHOLM: Well, look at it this way: We are trying to discern what an industry productivity growth level is over time.

And we know generally -- we all know because we've been around and we've looked at companies, that there has been a combination of companies, electrical utilities as measured by this dataset, over the course of time.

A number of them have combined. The industry productivity numbers do reflect that general nature of the activity.

I had 72 companies in 2010, and I have 65 companies now.

There are a number of reasons why companies have done that; restriction on combining are lessened, foreign investment in American companies, Canadian and U.S. companies, have -- has been a bigger factor. But there have been noteworthy combinations in companies that were once separate and are now combined.

Therefore, the productivity target that's out there in the world that we are trying to discern with the measurement, the data that we've got, does reflect the productivity associated with a combination of companies. It's not separate from that; it is imbued and embedded in the data that we are using.

MR. KITCHEN: I'd like to add one thing. I think one of the things that I'm seeing is there seems to be a -- I don't know if it's confusion or if it's a misunderstanding, but by are applying to amalgamate under that MAADs policy and part of that policy is the choice of a ten-year deferred rebasing period under an earnings sharing mechanism.

And over that ten-year period, the expectation is that we will make investments in order to provide savings.

That's the -- the productivity that we are going to achieve, that productivity as a result of the synergies goes to pay off those investments and ratepayers ultimately get the benefit of it.

MR. QUINN: I think I understand that partly, Mr. Kitchen, and we can debate during the hearing when the ratepayers will get some of the benefit.

But going back to what I understood Dr. Makholm to say regarding -- you had 72, and it is now 65; do I have the numbers right?

DR. MAKHOLM: I think that is right.

MR. QUINN: You had 72 utilities and now there are 65, so there were 7 utilities that were somehow absorbed, amalgamated, or brought out in some way, shape or form.

DR. MAKHOLM: In some fashion. Some were there and some weren't -- yes.

MR. QUINN: Has anyone asked to you study those utilities and the subsequent company that they became part of, to look at their productivity before and after?

DR. MAKHOLM: I'm not aware that any scholar -- not someone stuck in the middle of a contested proceeding with an interest at stake, but somebody who is disinterested who is doing this for the purpose of scholarship, has ever done such a thing in a way that's credible.

And it goes back to what I was saying at the beginning. The data on individual companies is notoriously unstable. You can view this by looking at the data tables in the back my thesis, which is on the record because I've provided it, and you will see from year to year the data goes up and down as people report data maybe in December, maybe in January. There are notoriously unstable aspects of particular companies that only are solvable by satisfying large averages, which is why we took the largest dataset, the most companies in our population over the longest period because that is the best way to tamp down the individual volatility of individual company data.

And it is for that reason, given that the data that we isn't perfect, it is good enough for a productivity growth study. But as far as I've ever seen in terms of scholarship and the use of these data, it is not good enough to discern the effects of mergers as such, because every merged company is unique. They are idiosyncratic and how you would pick apart that effect from others in a scholarly sense, not in a contested proceeding sense, is something I've never seen done.

MR. QUINN: You continue to use the scholarly sense, and I respect that you have a vast knowledge of what's out there. But in where we are, in a regulatory context, has there ever -- to your knowledge, has there been a submission of some evidence, some data that looked at productivity before and after the merger in a way that assisted the regulator with establishing bounds between the investor and the customer?

DR. MAKHOLM: No.

MR. QUINN: You are not aware of any proceeding that had that type of data or evidence?

DR. MAKHOLM: That's correct.

MR. QUINN: Okay. So in this case here, and Mr. Kitchen laid out what their proposal and their application to this Board is under a policy, we saw the Board's decision on the issues list. The Board has discretion as to what would ultimately be approved for these utilities.

So if the Board were to order the utilities to develop a custom IR construct for setting rates for the transition, would your work on productivity be an appropriates starting point for expected productivity of the two utilities becoming one?

DR. MAKHOLM: I don't know. I mean, the parameters of what the -- the Board has great power to do various things within limits, but I don't know. It would depend. I just don't -- that is too general a question for me to respond to.

MR. CULBERT: Dwayne, if I might jump in? I thought I heard you say if the Board ordered to us file a custom IR; is that what your question was?

MR. QUINN: I am just trying to create a hypothetical, Mr. Culbert, in terms of trying to say -- to try and understand Dr. Makholm's opinion on the applicability of his productivity study to the nature of what is currently occurring with these -- with your utilities.

MR. CULBERT: But was your question if the Board ordered us to file a custom IR application?

MR. QUINN: I used that as a hypothetical, yes.

MR. CULBERT: Okay, I was just wondering. The Board can't order us to file a custom IR application.

MR. QUINN: In Dr. Makholm's words, they have great discretion. We don't know where it's going. I was just using that as a hypothetical.

I think I've exhausted my ability to converse with our expert witness. Thank you for your time and your indulgence.

MR. MILLAR: Thank you, Mr. Quinn. Anything more for panel 4? Okay, thank you very much.

Anyone on the phone? Just double-checking. Okay, thank you very much, panel. That's been very helpful.

We are going to take a short break because we have to get the new panel up, and we need to get the names and the order and everything. So let's take our 15 minutes approximately now, get the new panel up, and I think -- did Kitchener want to go first with panel 3?

Okay, we'll start with Kitchener. Thank you.

--- Recess taken at 2:25 p.m.

--- On resuming at 2:40 p.m.

MR. MILLAR: If I could ask everyone to take your seats we will get started again.

We are into the home stretch for the day. It has really warmed up, so I do invite people to take off their coats if that helps.

We need to finish by about 4:00 today, so I ask people to keep that in mind, and with that, Mr. Cass, perhaps you could introduce or have the panel introduce themselves.

ENBRIDGE GAS DISTRIBUTION INC./UNION GAS LIMITED - PANEL 2

Mark Kitchen

Kevin Culbert

Dave Charleson

Jim Redford

Anton Kacicnik

Amy Mikhaila

Wendy Zelond

MR. CASS: Yes, thank you, Mike. So as everyone will see, we have three witnesses who have testified before, Mark Kitchen, Kevin Culbert, Dave Charleson.

Perhaps the other four witnesses could introduce themselves, just name, position, and whether Enbridge or Union. Thank you.

MR. REDFORD: I'll go first. My name is Jim Redford. I am the vice-president of business development, storage, and transmission for Union Gas Limited.

MR. KACICNIK: I am Anton Kacicnik. I am manager of rates with Enbridge Gas Distribution.

MS. MIKHAILA: Hi, Amy Mikhaila, manager of rates and pricing at Union Gas.

MS. ZELOND: Hello, I'm Wendy Zelond. I'm the vice-president... I'll try again. Hi, my name is Wendy Zelond. I'm the vice-president of finance for both Enbridge Gas Distribution and Union Gas.

MR. CASS: Thank you, Mike. So the witnesses are ready for questions.

MR. MILLAR: Thank you, Mr. Cass and witnesses.

I believe we were going to start with Kitchener.

QUESTIONS BY MR. ST. LOUIS:

MR. ST. LOUIS: Hello, my name is Greg St. Louis from Kitchener Utilities. I would like to first speak to

Kitchener Utilities, the IR number 1.

So in this response, Kitchener's design day is 2.51 cubic metres, which is higher than our contract demand of 2.35 million cubic metres; why is that? Can you provide that information?

MS. MIKHAILA: The design day demand that is shown there as 2.5 million M cubes a day is the design day demand that was used for our system planning in 2013 for purposes of our cost allocation study, and it's different than the contract demand parameter Kitchener has negotiated for billing purposes.

MR. ST. LOUIS: So is that typically higher than the contract demand day then as it is with Kitchener Utilities? Is that typical with other rate classes?

MS. MIKHAILA: The design day demand of a customer compared to their contract demand is different in, I'd say virtually almost every case.

MR. ST. LOUIS: Is it higher, typically higher, though?

MS. MIKHAILA: I can't speak to that.

MR. ST. LOUIS: Can you take an undertaking to look into that?

MS. MIKHAILA: Yes, I can.

MR. ST. LOUIS: Thank you.

MR. MILLAR: It's JT2.6.

UNDERTAKING NO. JT2.6: TO ADVISE IF THE DESIGN DAY DEMAND IS TYPICALLY HIGHER THAN THE CONTRACT DEMAND DAY THEN AS IT IS WITH KITCHENER UTILITIES.

MS. CHATTERJEE: Hi, this is Jaya Chatterjee...

MR. MILLAR: Your microphones are connected, so just turn it on once.

MS. CHATTERJEE: Okay. Jaya Chatterjee, City of Kitchener.

Can you confirm the last contract design day demand change from Kitchener? When was it changed 2.35?

MS. MIKHAILA: The contract demand, when it was last changed?

MS. CHATTERJEE: Yes.

MS. MIKHAILA: I don't have that information.

MS. CHATTERJEE: Can you please take it as an undertaking?

MS. MIKHAILA: Yes, I will.

MS. CHATTERJEE: And you mentioned that 2013 system, design day planning was as 2.5. When was it -- when was the application information kind of gotten together for 2013 rate case?

MS. MIKHAILA: The 2.511 million M cubed per day was from our winter of 2010/2011 plan.

MR. MILLAR: I just want to make sure an undertaking was not missed there.

Mr. Cass, I'm easy. we could wind that up into JT2.6. Is that -- so you will answer both those questions in that undertaking response?

MR. CASS: I think that makes sense, yes.

MR. MILLAR: Okay. Thank you.

Sorry, go ahead.

MR. ST. LOUIS: So under item 1D of that IR it states that design day demand used for the cost allocation purposes based on Union's system design and determined using regression analysis of customer's actual metered usage. How many years of actual metered usage is used?

MS. MIKHAILA: I don't know that information. We used information prepared by our system planning department for purposes of cost allocations. I do not have that.

MR. ST. LOUIS: Could you prepare an undertaking with that and the corresponding heating degree days?

MR. CASS: Sorry, I don't mean to be difficult, but I'm just not understanding what these questions have to do with the case that's before the Board. Is it possible that you could shed any light on what -- the purpose of seeking this information?

MR. ST. LOUIS: So in terms of the rate base over a ten-year period or weighting ten years, then Kitchener Utilities would not have an opportunity to review the cost associated with our rates set currently.

MR. MILLAR: So are you prepared to take that undertaking or...

MR. KITCHEN: Could you actually repeat the question to see what we're exactly undertaking to do?

MR. ST. LOUIS: How many years of data is actually metered that you've -- for your calculation? Basically I'm trying to figure out how you determine your calculation using how many years of data.

MR. KITCHEN: We can provide that.

MR. MILLAR: That will be JT2.7.

UNDERTAKING NO. JT2.7: TO ADVISE HOW MANY YEARS OF DATA IS ACTUALLY METERED FOR THE CALCULATION.

MR. ST. LOUIS: And would you be able to -- or what -- as part of that, what is the maximum usage in the last ten years, and then corresponding heating degree days?

MR. KITCHEN: Well, again, like, I'm -- I'm sort of -- I'm having difficulty understanding how this detail will even help you with what you're trying to get at in this proceeding.

What we'll do is we'll add that to the undertaking that we just took on a best-efforts basis, because I'm not sure how difficult it is to get.

MR. ST. LOUIS: Okay, thank you. Now, in this IR you reference LPMA IR 43(b). So you state that the reason for Union bringing forward a cost allocation adjustment in respect to the Panhandle and St. Clair systems project is based on the addition of those projects cause significant impact to certain rate classes and do not reflect the principle of cost causality.

Which rate classes will see some rate relief if your Panhandle adjustments are accepted by the OEB in 2019?

MR. CASS: Well, really -- and I will defer to the Union Gas representatives on this panel as to whether they want to offer up this information, but the relevance of this to the proceeding before the Board is just completely escaping me. I don't see that this is relevant at all. You are asking about another case.

FOLLOW-UP QUESTIONS BY MR. QUINN:

MR. QUINN: I think, Mr. Cass, the principle that they are looking at is equity being that they will have to wait ten years to potentially review this.

The Board has made an exception in the Panhandle case that will allow those customers who are potentially negatively impacted to have opportunity to have their case heard to see if any kind of adjustment could be made in 2019 rates so that they don't have to wait ten years for that adjustment.

I think Kitchener is relying on that as having the opportunity. The Board would be -- potentially have the discretion to allow a further adjustment to a rate class. In this case it only has one customer, and I understand respecting -- maybe you weren't aware, but the T3 rate class only has one customer, which is Kitchener.

MR. KITCHEN: Well, I guess the way I'm looking at it is that I'm not -- and Mr. Quinn I'm not disagreeing necessarily with what you're saying, but I do look at this as a cost allocation change that we'd be proposing as part of a '19 rates application that we are still in the process of finalizing.

I think that if Kitchener would like to see the impacts -- which impacts would be -- which rate classes would be impacted, I think that we could give them a reference to the Panhandle decision which shows how we propose to do it. And that would allow them to see which rate classes would be impacted.

MR. QUINN: In addition, though, Mr. Kitchen, in fairness I think he's looking for some data such that they can make their case to the Board that they have a situation that ten years of deferral is inequitable to that rate class. So in addition to relying on that principle -- and I think it would be helpful for them to see the information that you are offering -- they're also looking for the data to be able to make their own case.

MR. CASS: Well, perhaps we can -- we have the question on the record. We can take it away then. I'm not -- as you can tell, Dwayne, I'm not as up to speed on this particular issue. We can discuss it offline.

MR. KITCHEN: I think it would be very difficult. We don't have -- we are in the process of developing our proposal and we just don't have our proposal finalized. We are giving information that is just premature.

MR. QUINN: I think giving forecasting information with the impacts of the rates, maybe I understand that, Mr. Kitchen. But what Kitchener is looking in this case is historic data. And from my knowledge, Kitchener does have electronic metering. You can get an Excel table of every day of the last ten years and pick out the ten coldest days, and do a regression analysis.

MR. KITCHEN: We are not -- we didn't dispute that undertaking.

MR. QUINN: Well, you said on a best efforts basis.

MR. KITCHEN: That's because it's not my area, Dwayne.

MR. QUINN: Yes, I know that.

MR. KITCHEN: And I didn't think the City of Kitchener was your area either anymore either. But it is not my area, so I'm just -- I'm not going to promise something that I can't deliver on. So we said we'd do it on a best efforts basis.

This is different because we haven't actually got a proposal out there to provide.

MR. MILLAR: I think where we are is there's an agreement to discuss this offline. I'm not hearing an undertaking offered at this point. If it can't be resolved offline, then maybe it will have to be addressed before the Board again. But I think we probably need to move on to the next area.

MR. QUINN: Kitchener may or may not be done their questions.

MR. MILLAR: Oh, no, just with this particular question.

MR. QUINN: And just to Mr. Kitchen's point, we as intervenors work together to try to ensure equitable rates for everybody and in this case Kitchener, I think, has valid reason, in my view.

MS. MIKHAILA: I would just like to add the Panhandle project is an outstanding issue that -- a directive and commitment that we made as part of the Panhandle reinforcement project, there were no costs in that project assigned to the rate T3 rate class.

So anything regarding possible inequities, which I don't agree with for Kitchener, is not related to the

Panhandle project.

CONTINUED QUESTIONS BY MR. ST. LOUIS:

MR. ST. LOUIS: I have a follow-up question to that, then. It's reasonable to assume then the cost for the Panhandle and St. Clair system projects are removed or reduced, and those would be shifted to others such as Kitchener Utilities?

MS. MIKHAILA: We don't have a finalized proposal for our 2018 rate application, and that will come in due time. But you can see in the Panhandle reinforcement project the costs of that project, and the use of those St. Clair and Panhandle systems in that project.

MR. ST. LOUIS: Switching to IR number 5 for Kitchener Utilities, the attachment numbered 1 and 2 in your spreadsheets.

I didn't know if you wanted to move to the attachment 1, 1 or 2. And I just would like some help to understand and reconcile the figures between the two spreadsheets, if you can walk me through that.

MS. MIKHAILA: In attachment 1 for 2018, there's $1,092,000 of total capital pass-through project costs, all allocated to rate T3.

In column E of attachment 2, you can see there is 1,188,000. The difference between those two is costs that are allocated to other rates in rate T3 rather than the demand charge.

MR. ST. LOUIS: Do you mind repeating that? I didn't hear that.

MS. MIKHAILA: Attachment 1 in 2018 shows a total cost allocated to rate T3 of 1,092,000. And in attachment 2, column E, there is $1,188,000 allocated to rate T3 for capital pass-through projects.

The difference between those two numbers is attachment 2. It's specifically reconciling the demand charge and not other charges in the rate class.

MR. ST. LOUIS: Okay, thank you. As you can see, the total annual on -- for 2G is 5 million 73. And if I subtract that from then your line 1, 2,639,000 is an increase in about 2.4 million.

So of that column E, though, 1 million 188, that represents almost 50 percent of the increase in capital pass-through, is that correct?

MS. MIKHAILA: Yes, the capital pass-through projects have added $1,188,000 of costs to the demand rate T3.

MR. ST. LOUIS: And is there -- can you tell me if there's any other rate classes that experience this type of increase as you can see, 43.7 percent in 2017?

MS. MIKHAILA: I don't have that information with me here.

MR. ST. LOUIS: Can you take an undertaking to provide that information?

MS. MIKHAILA: You'd like to know the total increase by rate class?

MR. ST. LOUIS: Yes, that's correct.

MS. MIKHAILA: In 2017?

MR. ST. LOUIS: Basically complete this chart for other -- the other rate classes for attachment 2.

[Witness panel confers]

MS. MIKHAILA: We can provide the summary of the rate increases that we filed with our 2017 rate application by rate class, if that will be helpful for that.

MR. ST. LOUIS: Is it possible to get like the data for that because Kitchener Utilities, we represent 50 percent -- we had a 50 percent increase in capital pass-through and would like to see the data of the other rate classes.

MS. MIKHAILA: I'm just thinking of a specific schedule we filed with our rate application, and it has each rate class and the increases contributing towards that with percentages.

QUESTIONS BY MS. CHATTERJEE:

MS. CHATTERJEE: So you are saying that there are schedules that are similar to what other rate class would be impacted -- showing the impact of capital pass-through for the last five years consolidated?

MS. MIKHAILA: We have one that we file with our rate application each year; it is not consolidated.

MS. CHATTERJEE: So can you please take it as an undertaking that would show like as it is showing here, that the T3 is getting impacted by almost 50 percent due to this capital pass-through? We want to compare it on the other rate class how we are doing.

MS. MIKHAILA: I think for simplicity this is just the demand charge. For simplicity at a minimum I think I would have to do it at a rate-class level, all components of the class.

MS. CHATTERJEE: Yes, so can you get the attachment to -- I think attachment 2 includes the big piece.

MS. MIKHAILA: The demand charge.

MS. CHATTERJEE: Demand charge, yes.

MS. MIKHAILA: But in order to complete it I would need to just roll it up to the rate-class level as a whole, because there are rate classes that don't have demand charges.

MS. CHATTERJEE: Okay.

MR. MILLAR: So I think that's an undertaking which is JT2.8, and Ms. Mikhaila, could you just confirm what you are undertaking to do?

MS. MIKHAILA: I am undertaking to summarize the drivers of rate increases in all classes since 2013.

UNDERTAKING NO. JT2.8: TO SUMMARIZE THE DRIVERS OF RATE INCREASES IN ALL CLASSES SINCE 2013.

MS. CHATTERJEE: Just to make sure that would specify the capital pass-through.

MS. MIKHAILA: It will specify the components contributing to the increases.

MS. CHATTERJEE: Okay.

MR. MILLAR: Thank you.

MR. ST. LOUIS: That's all the questions I have.

MR. MILLAR: Okay, thank you very much.

MR. ST. LOUIS: Thank you.

MR. MILLAR: Mr. Gluck, you wanted to go next.

QUESTIONS BY MR. GLUCK:

MR. GLUCK: Hi, my name is Lawrie Gluck. I'm on -- have some questions on behalf of OEB Staff. My first question is with respect to Staff 10, part I(ii), and in that question Staff asked whether --

MR. REDFORD: Can you hang on a second --

MR. GLUCK: Yeah, absolutely.

MR. REDFORD: -- while we get the reference up, please?

MR. GLUCK: Yup.

MR. MILLAR: And Lawrie, can you make sure you speak right into the --

MR. GLUCK: Yes.

MR. MILLAR: -- mic. We are having a bit of trouble.

MR. GLUCK: Sure.

Okay. So in that question, Staff asked whether Amalco will consider the conversion of the portion of Union Gas's unregulated storage capacity to regulate its storage capacity set aside to serve the need of Enbridge's legacy customers when the existing pre-amalgamation contracts expire. Amalco stated that it is not proposing to do so and that this conversion is not consistent with the Natural Gas-Electricity Interface Review decision and the framework for non-rate-regulated storage.

My question for you is, can you please confirm that this response means that even at the time of the next rebasing Amalco would not convert unregulated storage capacity to serve the needs of Enbridge's own in-franchise customers?

[Witness panel confers]

MR. CULBERT: That's correct.

MR. GLUCK: Okay, I'd like to turn to OGVG 4. Okay. In that response Amalco explains that there will be a need for Enbridge to continue to purchase market-based storage services post-amalgamation and explains how it will go about purchasing those services. The responses discuss a blind request for proposal process using an independent third party.

Staff would like to better understand the process discussed in this response. Can you explain the process and specifically advise whether in the end it is Enbridge's gas supply staff that makes the final decision as to what to contract for or if the independent third party makes that determination?

MR. CHARLESON: So under a blind RFP process we would look for the third party to solicit or collect all the bids, summarize what we received in terms of the bids, make them all anonymous to us, but then they would be provided to the Enbridge gas supply team to make the determination in terms of which bids met the parameters that best suited our needs, but, again, with no knowledge as to who the bidders were.

MR. GLUCK: So I have a follow-up question on that: So what sort of presentation of the results would the Enbridge staff get that would make it so blind that, you know, experts in purchasing storage services would not know who the bidder is?

MR. CHARLESON: So the presentation would typically be -- or what we've seen through a blind RFP that we recently ran would be, you know, a spreadsheet where you'd have, you know, company A bid X amount of capacity, here's the deliverable -- like, all the parameters that went with that and the associated price.

You know, I suppose that there's always the potential that based on certain parameters you may be able to infer as to who you believe has made that bid, but there would be nothing that would provide you any certainty, because in some cases you may be receiving bids from a third party that is holding capacity and someone else's physical storage that would have similar parameters or operating characteristics to what that party -- what the party that actually owns that physical storage may provide as well, so, you know, when we look at, you know, say the bidding that we received in our last RFP, a high number of bids, a large number of different bidders mixed between physical synthetic storage, so, again, is it -- is it impossible to prevent someone from inferring who it may be? No, but it's also, there is no certainty that your inference would be correct because of the way the storage market works.

MR. GLUCK: Okay. So just, you mentioned that you've done this once before, if I understand that correctly; is that correct?

MR. CHARLESON: Yes, just a few months ago.

MR. GLUCK: Okay. And in what context was it used?

You needed incremental storage services for Enbridge's in-franchise customers; is...

MR. CHARLESON: Yes, it was actually -- if I recall correctly, it was to replace some unregulated storage capacity that was expiring, so it's really to replace some existing storage capacity, is my recollection.

MR. GLUCK: Okay. And you mentioned you received a large number of bids; do you know how many bids you actually received?

MR. CHARLESON: I believe we received 35 bids from seven different companies.

MR. GLUCK: Okay. And this may be confidential, but can you tell me whether Union's unregulated storage ended up being the selected bidder?

MR. CHARLESON: Union was one of the successful bidders.

MR. GLUCK: Okay.

MR. REDFORD: That would be represented in our index of customers or index of storage customers, so we would be -- we would have to post that publicly.

MR. GLUCK: Okay. So you are saying in the end after the bids came in, you ended up selecting multiple bidders and Union was one of them?

MR. CHARLESON: That's correct.

MR. GLUCK: Okay, and my next question is: Would you agree that due to the merger of the two companies that with respect to contracting for market-based storage for the Enbridge rate zone there is an incentive to select Union's unregulated storage as your supplier?

MR. CHARLESON: No, I wouldn't agree with that. Our objective is to look after the interest of our customers and provide the best service and price for our customers, and if we're not doing that, then we're putting ourselves at risk of either disallowance or, again, you know, potential loss of customers over time.

MR. REDFORD: From a -- they are synched together -- from a market perspective Dawn is a deep and liquid market, so we win and lose -- Union wins and loses bids on a regular basis.

We don't get every bid that we put in so, you know, to the extent that we don't win a bid with Enbridge, we will sell that storage into the market at market rates to another party.

MR. GLUCK: Okay. So are you implying that there is some sort of reputational aspect as to why there's no incentive for you to bid for Union's storage, for Enbridge legacy area in-franchise customers to bid for Enbridge's legacy storage?

MR. REDFORD: You said there was no incentive to bid. There is an incentive to bid --

MR. GLUCK: Sorry, "bid" is the wrong word. To purchase.

MR. REDFORD: Oh, to purchase.

MR. GLUCK: Yes.

MR. CHARLESON: I wouldn't characterize it -- I suppose in a way it is reputational. If we found that we weren't doing things that were in the best interest of our customers, that obviously isn't good for market perception.

MR. GLUCK: Okay.

MR. QUINN: Are you moving to --

MR. CHARLESON: But that's just one aspect.

MR. QUINN: Are you moving to another interrogatory, Mr. --

MR. GLUCK: I was moving, yes.

MR. QUINN: Oh, may I just --

MR. GLUCK: Go ahead.

MR. QUINN: -- because I had some questions in this area also.

I appreciate -- understand a little bit more about this. Is there a pre-established matrix which allows the independent party to somehow prioritize the bids for selection to give -- you know, to weight different components of -- example, used deliverability. So how do they weight how Enbridge values incremental deliverability.

MR. CHARLESON: So there is no pre-established matrix that we would provide to the third party.

As I indicated, a large number of bids, say 35 bids from seven bidders, so you are getting multiple bids from the same bidder because there are different parameters and really you need -- you need to understand your own gas supply portfolio and how those different parameters fit within your needs, and how it's going to fit in terms of your overall gas supply plan.

So to try to establish a matrix that would consider every possible parameter -- the unregulated storage market has a lot of creativity in it. There's a lot of different types of offerings that parties will put together to try to fit what they believe was going to meet your needs.

So to try to put a matrix together that would contemplate and try to consider every possible parameter that someone may bid in is impossible.

MR. QUINN: I would tend to agree with you. I have not seen it and trying to think about how you would establish that matrix, I agree it would be difficult.

So the independent party is doing nothing in terms of qualifying or recommending. They just are a filter for providing you the parameters in some kind of anonymous way?

MR. CHARLESON: Their key role is to maintain the anonymity of the bids.

MR. QUINN: So what you see is completely anonymous. Would we be able to see that? Would you undertake to provide that so we can see the matrix that you received? It's not tied to any commercial entity so...

MR. CHARLESON: I'm still just concerned that even though there's anonymity in terms of -- you know, even I don't know who submitted what bids, other than the ones we signed up for, whether the nature and types of bids and the parameters that are in there could be deemed as being commercially sensitive by the parties that bid.

MR. QUINN: To be clear, though, I'm not asking -- and, in fact, would not expect you to say who you chose. We're just saying what is it you see in this matrix that provides that anonymity in a way that is helpful.

We have some questions that we are going to get to later on. But I don't want to go too much in-depth. I'm just asking for the sheet.

MR. CHARLESON: We would have redact the things that we believe would be commercially sensitive, which would be essentially like price, deliverability, those types of parameters, because there is an interrelationship or at least some of those that would tie the two pieces together.

MR. QUINN: I guess my concern -- and Mr. Cass, I understand that you may have concerns about this. But there isn't an awful lot on the record and we were appreciative that Enbridge did provide some storage pricing in the last -- instead of IRs, when you were doing your rates.

But in this case, for the Board to understand that the market and the public are protected during this transition to an amalgamated utility -- you are affiliates right now, and we may disagree whether there's an incentive or not, the reality is we were going to be asking for some of this data to be able to help the Board understand what's happening in the storage market and is the same market it was prior to this purchase or -- sorry, well, Enbridge and Spectra or coming together.

So this would be an element of that information that would help the Board understand the nature of the market.

MR. CHARLESON: So, Mr. Quinn, I understand what you are trying to get at. However, I struggle to understand why the commercial terms of those bids is required to help to -- again, providing the summary table that we received with commercially sensitive -- what bidding parties may have used in commercially sensitive information being redacted, I think still conveys the extent or the type of bidding that is received, but without the, like I say, commercially sensitive information.

MR. CASS: Mr. Quinn, I was going to say the same thing. Looking at it from the point of view of what I think would be helpful to the Board, I don't think the Board needs to see the commercially sensitive information.

If the Board can see the template of the document and enough to understand how the document works, I don't see that the Board needs the actual pricing information or deliverability.

MR. QUINN: I'm going to give this some consideration, Mr. Cass, and I'll come back on Tuesday and we can have this discussion again. But for Enbridge's and your consideration, I would ask the question differently then. What evidence does the Board have? Mr. Redford saying that Dawn is a deep and liquid market, many bidders. But where would the Board get comfort in the evidence in proceeding to see that?

And so that's where I'm coming from. If you want to give consideration -- I don't want to take any more of Mr. Gluck's time. You can give consideration over the weekend and we and we can talk again on Tuesday.

MR. CHARLESON: As I've said, Mr. Quinn, providing a table that would list out 35 different bids but just with the commercially sensitive information redacted I think would provide that clarity to the Board, and I don't understand why it wouldn't.

MR. QUINN: Maybe, if possible for Mr. Cass, if it could be provided for Tuesday, we could take a look at what you're talking about and what you've removed and that would help us to understand what the Board might see.

MR. CHARLESON: I'll consider it.

MR. QUINN: Fair enough. We'll talk to you on Tuesday. Thank you, Mr. Gluck.

MR. GLUCK: I'm going to move into a slightly different area, but still on storage.

There are a few different places in the IR responses where rate-regulated and non-rate-regulated storage capacity owned by Union and Enbridge are discussed, and I'd like to understand -- to ensure that I understand these numbers correctly.

So can you please confirm that Union has 100 pJs of storage capacity set aside for enfranchised customers?

MR. REDFORD: Union is required to set aside 100 pJs of storage capacity for enfranchised customers, and to the extent that we don't use that capacity or need that capacity, the excess is sold in the short-term market.

MR. GLUCK: Does Union have another incremental 80.9 pJs of non-regulated storage capacity? This is in SEC.3, if you need a reference to it.

MR. REDFORD: That's correct.

MR. GLUCK: Can you please confirm that Enbridge has 99.4 pJs of storage capacity set aside for enfranchised customers?

MR. CHARLESON: Actually, Enbridge has 91.3 BCF of storage set aside for -- in the end-year decision, Enbridge's storage capacity was done on a BCF basis as opposed to an energy content basis.

MR. GLUCK: And that 91.3 BCF, can you please advise why that amount selected in that decision? Is it because that was all the storage capacity that Enbridge had at the time?

MR. REDFORD: That represented the physical capacity that Enbridge had at the time. They were purchasing services in the market for incremental storage to meet their needs.

The Board at the time said that any incremental storage that was developed would be developed under market-based rates, or under forbearance. So effectively, that capacity was frozen at the time of the NGEIR decision, similar to how 100 pJs was set aside in the NGEIR decision.

MR. GLUCK: Does Enbridge now have an incremental 19.4 pJs of non rate-regulated storage?

MR. CHARLESON: Yes.

MR. GLUCK: So is there any incremental …

MR. REDFORD: Let me just correct you. That's correct, that capacity is -- Enbridge has -- Union has contracted for that capacity, that full capacity So we operate that as part of our unregulated portfolio.

MR. GLUCK: For Union-contracted Enbridge's non rate-regulated storage, and Union sells it? Is that...

MR. ROSS: We took assignment of the existing customers and as that capacity comes off or as those contracts end, we re-sell it back out into the market.

MR. GLUCK: Okay. Are there any incremental amounts to add to that value? So I calculate about 300 pJs across both utilities, rate-regulated an non rate-regulated, are there any incremental affiliated amounts that would added to that?

MR. REDFORD: I think the affiliated amounts you would have to add are for market out partners Canada, and I'll have to -- it's in one of the IRs. I'll have to look it up.

MR. GLUCK: It might be in SEC.23, page 2.

MR. REDFORD: There is another interrogatory response that actually lays this right out. I'll have to find it, but it is -- it's within the -- it's within the interrogatory responses.

MR. QUINN: Mr. Redford, just to be helpful, is it FRPO 6?

MR. REDFORD: It might be. I just saw that, thank you, Dwayne. Yeah, FRPO 6, thank you, Mr. Quinn.

Market Hub Partners says 4.2 pJs of storage.

MR. GLUCK: Okay. So that's the only number I would add to it? Or is that 2.9 -- no, AltaGas is in use, so 4.2 is the number.

MR. REDFORD: For Union, Enbridge, and affiliates?

MR. GLUCK: Yes.

MR. REDFORD: That's correct.
MR. GLUCK: Thank you.
MR. QUINN: So the 2.9 is in the affiliate number? I think this is what Mr. Gluck was asking.
MR. REDFORD: That represents Alta Gas's 50 percent ownership of the Airport pool, the Sarnia Airport pool.
MR. QUINN: And Union owns the other 50 percent, or Enbridge Inc.?
MR. REDFORD: Market Hub Partners owns the other 50 percent.
MR. GLUCK: So it is -- the 4.2 includes all of that --
MR. REDFORD: No, the 4.2 includes 50 percent of the Sarnia Airport pool that is owned by Market Hub Partners Canada.
MR. GLUCK: Okay. So is it 304.2? Is that the number?
MR. REDFORD: I'd say subject to check, but...
MR. GLUCK: Somewhere around there?
MS. GIRVAN: How do you convert the 91.3 BCF to pJs?
MR. REDFORD: It converts to 99.4 pJs.
MS. GIRVAN: Okay.
MR. GLUCK: Okay. So can you please provide or tell me the total amount of storage capacity that is located in Ontario and provide the percentage of that amount that is owned by Union and Enbridge?
MR. REDFORD: Yes.
MR. MILLAR: I take it that's an undertaking, so

that's JT2.8.

MR. REDFORD: We can. I don't have that at fingertips.

MR. MILLAR: Andrew, where are we? 2.9, my apologies.

UNDERTAKING NO. JT2.9: TO PROVIDE THE TOTAL AMOUNT OF STORAGE CAPACITY THAT IS LOCATED IN ONTARIO AND PROVIDE THE PERCENTAGE OF THAT AMOUNT THAT IS OWNED BY UNION AND ENBRIDGE.

MR. GLUCK: I have more questions on this.

MR. QUINN: Yes, you go ahead. Let me know when you're done. I'll...

MR. GLUCK: Okay. And then I just want to go to -- this is just for my understanding. It is at SEC 23, page 2.

There is some language in there that talks about total storage capacity and total working gas capacity. I am just trying to understand, all the numbers we just talked about, is that working gas capacity?

MR. REDFORD: That's working gas capacity.

MR. GLUCK: Okay. Perfect. Because then the numbers reconcile with this table if we're talking about working gas.

Okay, go ahead Dwayne.

MR. QUINN: Thank you, because I was going to ask for a similar undertaking, Mr. Gluck, as opposed to getting a separate one. I just don't understand, Mr. Redford, you said the 4.2 represents the 50 percent ownership of the -- on the Sarnia Airport pool; does that mean there is a total of 8.4 or they own 50 percent of 4.2?

MR. REDFORD: No, so the 4.2 is made up of 2.9 pJs of the Sarnia Airport pool. The remainder is from the St. Clair pool, which MHP owns in total.

MR. QUINN: So in totality there is only 4.2, which includes both Market Hub Partners and Alta Gas at storage.

MR. REDFORD: No, if you look at the non-Union and non-EGD-owned it would total 7.1 pJs. Hopefully I got that right. 2.9 plus 4.2.

MR. QUINN: Yeah, I think your math is correct.

So I know you're going to do this by undertaking, but if you can qualify or at least demonstrate what is non-Union-owned and whether it connects into -- sorry, non-EI-owned or affiliated ownership, what connects into Dawn, what is the total amount that connects into Dawn?

MR. REDFORD: Within Ontario?

MR. QUINN: Yeah.

MR. REDFORD: Or within a geographic market?

MR. QUINN: Let's say directly into Dawn. If it is coming through Vector Pipelines from Michigan that's not what I'm talking about.

MR. REDFORD: Well, I mean, my view is...

[Witness panel confers]

MR. REDFORD: I think all of this is connected to Dawn that's in FRPO 6. That is not a representation of the market -- the storage that's available in the geographic market.

MR. QUINN: No, I'm speaking specifically of into

Dawn. Is there any other entity besides the ones that are identified here that has storage connected directly into Dawn, Ontario-based storage?

MR. REDFORD: No, not to my knowledge.

MR. QUINN: Okay. That's what I was trying to understand. Thank you very much. Thank you, Mr. Gluck.

MR. GLUCK: Okay. I am going to move into the area of storage requirements, and using what I think Amalco has advised at the most recent information, so I'm looking at Energy Probe 6, part C, and I think this is what you said is the most recent information you have about storage requirements.

So my first question is: Can you please confirm that Union's most recent storage requirement for in-franchise customers, 93.2 petajoules -- and this was entirely met with Union's rate-regulated storage?

MR. REDFORD: That's correct.

MR. GLUCK: And with respect to Enbridge, the storage requirements for in-franchise customers is 125.8 pJs, which will be met with 99.4 pJs of Enbridge's own rate-regulated storage and 26.4 pJs of capacity that has been contracted from third parties?

MR. REDFORD: Yes.

MR. GLUCK: Can you please advise whether there is any storage capacity that is used to meet in-franchise customer demand that is located outside of Ontario?

MR. CHARLESON: You mean out of that 26.4, is any outside of Ontario?

MR. GLUCK: Yes. Yeah.

MR. CHARLESON: I'd have to check. I know some of it is synthetic storage as well. It is not all physical storage, so it is going to be a mix, and so synthetic is hard to characterize as to whether that's being done in Ontario or outside Ontario. All we know is that someone's providing storage-like service.

MR. GLUCK: Okay. Can you provide that amount, including synthetic storage? That is, not Ontario-based physical storage, I guess is the question.

MR. CHARLESON: Yes, we will do it on a best-efforts basis.

MR. MILLAR: JT2.10.

UNDERTAKING NO. JT2.10: TO MAKE BEST EFFORTS TO PROVIDE THE AMOUNT OF STORAGE CAPACITY, INCLUDING SYNTHETIC STORAGE, USED TO MEET IN-FRANCHISE CUSTOMER DEMAND LOCATED OUTSIDE OF ONTARIO.

MR. GLUCK: Can you please advise whether there is any storage capacity that is used to meet in-franchise customer demand that is located outside of Ontario?

MR. CHARLESON: Sorry, can you --

MR. GLUCK: So is there -- including non-rate-regulated storage, you have enough storage capacity to serve all of your in-franchise customers.

MR. REDFORD: I think the math works for that, but, you know, suggesting that would be -- would actually work against and be inconsistent with the Board's NGIER decision.

MR. GLUCK: Okay. Assuming the allocation is approved is it fair to say that there will be a situation whereby Union's legacy customers would be provided all of their storage services at cost-based rates while a portion of the storage services provided to Enbridge's legacy customers will be provided at market-based rates?

MR. REDFORD: Repeat that again. I just want to make sure I get all of that.

MR. GLUCK: Sure. Yeah, yeah, yeah. Is it fair to say that there will be a situation after amalgamation whereby Union's legacy customers will be provided all of their storage services at cost-based rates while a portion of the storage services provided to Enbridge's legacy customers will be provided at market-based rates?

MR. REDFORD: I'd say yes.

MR. GLUCK: And can you provide me some rationale why it would be reasonable to treat in-franchise customers of the amalgamated company differently with respect to the provision of storage services, when you have capacity available?

MR. REDFORD: Okay, I'll start with that is not the proposal that we have. The proposal is to continue on the same path that we're on today.

But I'll just point out that in the NGEIR decision, the OEB stated that retaining a perpetual call on all of Union's current capacity for future enfranchised needs is not consistent with forbearance.

So as we answered in those IRs, that is not consistent. That is not consistent with the Board's decision and I would suggest that -- you know, we've spent money, and both Union and EGD have invested resources to grow our storage portfolio on the basis of the NGEIR decision, knowing that we would get market rates in return for the risk that storage development brings with it.

So I would say that while the math might work, I don't think that that's -- we don't support that proposal and I don't think it's consistent with what the Board has said in the past.

MR. CHARLESON: Under that premise, it would also suggest that say legacy Enbridge should be converting its unregulated storage to serve its enfranchised regulated customers, which again is inconsistent with the NGEIR decision.

MR. GLUCK: I really don't want to debate the decision too much right here, but maybe I will ask one question on it. The Board's decision in some ways speaks to -- at least with respect to Union, because they did have enough storage to put it -- they had enough storage to provide, at the time of the NGEIR decision, both storage service to enfranchised customers and also unregulated storage when the decision was made.

And there is a statement as to the -- I mean, the selection of 100 pJs was based on growth and the enfranchised customer base. So there was some thought that there would be growth in enfranchise requirements and that was considered as part of the NGEIR decision. Would you agree?

MR. REDFORD: I agree that 100 pJs was set aside and there was a component of growth within that number.

MR. GLUCK: Okay. So I just want to ask you, and I know this is not your proposal, but as a practical matter, if the OEB were to make a determination that a portion of the available non rate-regulated storage should be converted to rate-regulated storage, could a narrow rebasing application be filed to deal with only the storage issue, or would have to form part of a full rebasing application?

MR. KITCHEN: Could you maybe give us an idea of what you mean by a narrow definition of rebasing?

MR. GLUCK: I would mean that the unregulated storage assets form part of base and then are allocated across the two utilities' legacy enfranchised customers in a reasonable way.

[Witness panel confers]

MR. KITCHEN: Just talking amongst ourselves here. I think that what you are proposing sounds relatively simple but I think it is much more complicated than you might know.

So I would say that we know -- I know that you know it's not our proposal, and I know that you put this to us as a hypothetical. But I'm not sure quite how it would actually work and I'm really not in a position to comment any further on that.

MR. GLUCK: That's fair. One last area of

Questioning, and this is Staff 10 (c) -- I'll wait for it to open.

In that response, Amalco stated that the average cost for the 26.4 pJs of market based storage services that are purchased for 2018 is 68 cents a gJ. It then compared that cost to the equivalent Enbridge 325 cost based storage rate of 35 cents a gJ.

On that basis, Amalco noted that the current unit rate that the market pays in cost-based storage is about 33 cents a gJ, which is effectively double the price.

I would like to be able to make a comparison relative to the Union enfranchised storage cost, if that's materially different than the Enbridge rate 325 cost-based rate.

MR. KITCHEN: We'd have to do a bit of math, but we can provide you with the cost-based storage rate that appears basically on the T1 and T3 rate schedules.

MR. GLUCK: Is that in dollars per gJ, so I can...

MR. KITCHEN: We'll convert it. We'll use that as the basis.

MR. MILLAR: That will be JT2.11.

UNDERTAKING NO. JT2.11: TO PROVIDE THE COST-BASED STORAGE RATE THAT APPEARS BASICALLY ON THE T1 AND T3 RATE SCHEDULES, AND TO ADVISE THE FULL CYCLE COST OF STORAGE FOR THE RESPECTIVE UTILITIES

MR. McGILL: I appreciate that's the undertaking. We were going to ask similarly what Union's cost base rate is. In providing that information, Mr. Kitchen, would you be table to break out any other allocations that fall into those rate classes that are not comparable to what is in Enbridge's rate of 3.25?

MR. KITCHEN: Do you have an example?

FOLLOW-UP QUESTIONS BY MR. QUINN:

MR. QUINN: I'm trying to think of what the example would be. But T1 and T3 storage rates would have to be, as part of your study, attracting other costs like indirect costs, administrative, general, those types of things.

MR. KITCHEN: They would be and maybe I should perhaps let the --

MS. MIKHAILA: I would suggest, although there may be indirect and administrative cost with it, there is still what we would consider a cost-based rate.

MR. QUINN: Maybe I'm going to request a different undertaking, and I can do it now or I can do it Tuesday. But in the NGEIR proceeding -- and Mr. Redford will remember this -- there was what the full cycle cost of storage was for the respective utilities. That was on the record in NGEIR.

I don't think that was a cost that was part of a rate that would attract other costs, like Mr. Kitchen is -- what I'm concerned about may be included in a T1 or T3 rate class.

So I'm trying to compare apples to apples, and I thought that Union would have what the underlying cost of the storage is before it ends up having additional allocations through your cost allocation process.

[Witness panel confers]

MR. KITCHEN: We'll take that away, Dwayne. Why don't we just add it to the undertaking.

MR. MILLAR: Mr. Gluck, do you have more questions?

MR. GLUCK: Yes, I have more questions. Are you done, Dwayne?

MR. QUINN: Yes, I just wanted to get the undertaking down, thank you.

CONTINUED QUESTIONS BY MR. GLUCK:

MR. GLUCK: So I'd like to briefly discuss Union's excess utility storage space, and I'm defining this as the amount that is the difference between the 100 pJs set aside for enfranchised customers in the Union forecast that its enfranchised customers will customers require in a given year.

Is it fair to say that while the amount varies year to year, and in each year ever since the Natural Gas-Electricity Interface Review decision, there was some amount of excess utility storage space available?

MR. REDFORD: That's correct.

MR. GLUCK: Is it also true under the previous IRM term, Union marketed the excess storage space on behalf of its enfranchised customers and shared the net revenues received, with 90 percent going to the benefit of its enfranchised customers?

MR. REDFORD: That's correct.

MR. GLUCK: Can you please discuss whether the excess utility storage space could be used to serve Enbridge's enfranchised customers at cost based rates, if it were not marketed for sale on -- at market-based rates and discuss whether Amalco believes that this would be in accordance with the Natural Gas-Electricity Interface Review decision?

[Witness panel confers]

MS. MIKHAILA: Currently in Union's rates there is a benefit to customers of $4.5 million related to that storage space, the difference between the cost and a market price associated with that space.

MR. GLUCK: Yeah. So I have a question on that, and maybe I'll just go there first, even though I didn't really get an answer.

So what I'd like to know is the actual amount that was shared with Union's ratepayers related to the sale of services that relied on the excess utility storage space in each year during the past IRM, so if you give us the 90 percent -- the 90 percent ratepayer share of the net revenues, which would be the revenues minus the cost for each year from 2013 to 2017?

MS. MIKHAILA: Would you like it right now?

MR. GLUCK: If you have it.

MS. MIKHAILA: Yes.

MR. GLUCK: Sure.

MS. MIKHAILA: In 2013 there was 2.8 million share.

MR. GLUCK: Yes.

MS. MIKHAILA: In 2014 there -- now, this is -- sorry, I should qualify, this is the amount shared as part of the short-term storage and balancing account.

MR. GLUCK: Yes.

MS. MIKHAILA: In 2013, I think I mentioned 2.8 million. In 2014 there was 1.3 million. 2015 there was 4 million. 2016, 6.8 million. And we haven't filed for a 2017 deferral balance --

FOLLOW-UP QUESTIONS BY MS. GIRVAN:

MS. GIRVAN: Could I just follow up on that? That's an additional to the 4.5 embedded in rates?

MS. MIKHAILA: No, this is the actual amount shared. There is 4.5 million embedded in rates ,although there is a deferral account that trues up to actual.

MS. GIRVAN: Okay, both -- it goes both ways?

MS. MIKHAILA: Right, so the 4 -- in 2013 there was 2.8 million shared. There was 4.5 million in rates, so we collected the difference.

CONTINUED QUESTIONS BY MR. GLUCK:

MR. GLUCK: Okay. So I guess on that topic, just so I know, in -- is there any amount in base rates associated with these excess utility storage space, or is it all calculated through that account? Is that whole offset -- the whole cost offset in that account, is that all the costs of the assets?

MS. MIKHAILA: Yeah, there is a $4.5 million benefit to customers that's built into base rates. There's -- in that 4.5 million is calculated as 10.4 million revenue minus 5 million in costs -- or 5.3 million in costs.

MR. GLUCK: Right. So it is a revenue offset to the revenue requirement and it includes all the forecast revenues and the cost?

MS. MIKHAILA: That's correct.

MR. GLUCK: Okay, and the other side of this analysis that I wanted to do is making the assumption that the available excess utility space could have been assigned to Enbridge's in-franchise customers in each year during that 2013 to 2017 period. I'd like to know the variance between the cost to Enbridge's customers if they applied cost-based charges in the same manner as Union's in-franchise customers for that capacity and the amount paid for the same amount of capacity at the actual average market rates for storage in those years? So it's a variance analysis between what Enbridge's customers did pay for, let's say, in, you know, 2016 you had 6 pJs of actual utility space, so what they paid markets on that, versus what they would have paid at Union's in-franchise rates if they were to apply that instead?

MR. CASS: So Lawrie, there was a lot in that question, and I'm sure I didn't absorb it all --

MR. GLUCK: Yeah, that's fair.

MR. CASS: -- but it sounds to me like you're -- this is a calculation you want to do looking backwards.

MR. GLUCK: Yes.

MR. CASS: And I'm just wondering where that would be taking us. Is it like --

MR. GLUCK: Where it will be taking us is --

MR. CASS: -- an assumption that somehow this was made available to Enbridge customers in the past?

MR. GLUCK: Where it's leading me is I am -- I've asked a question whether Enbridge would -- Enbridge believes or Amalco believes that it would be in accordance with the Natural Gas-Electricity Interface Review decision to use the excess utility space for Enbridge's in-franchise customers.

So that's the starting premise. And then I want to figure out the math on it. Does it actually on a global basis benefit customers across both utilities? Basically, is the net revenue that's created through the marketing of those assets, is that a higher value than the savings Enbridge's customers would receive as between the difference between the market-based rate and the in-franchise cost.

MR. CASS: Speaking for myself without knowing the perspective of the witnesses on this, if that's where you want to go, I would prefer that the witnesses address that rather than some specific question that in their view may not get to what you're looking for, if you understand what I'm saying.

MR. GLUCK: That's fair.

[Witness panel confers]

MR. KITCHEN: Sorry, I guess we were conferencing, obviously, while you were talking, Lawrie, so I apologize for that. But could you just -- in terms of the -- are you still looking for the undertaking right now at this point? And if so, could you give us the question more slowly?

MR. GLUCK: Sure, sorry about that. So the question is if, during those years, in each year between 2013 and 2017, if Enbridge's in-franchise customers were applied a cost-based storage rate that is equivalent to what Union's in-franchise customers would have paid, what is the amount of that cost applied to using -- sorry, using the excess capacity that was available in each of those years on an actual basis.

So that's step 1. And then step 2 is what did those customers pay for the same amount of capacity, let's say 6 pJs or whatever it was, excess utility space, and what they would have paid on an average basis at the market rate.

MR. CHARLESON: So when you talk about at an average rate, are you asking us to use a hypothetical cost of storage --

MR. GLUCK: Well, I think it -- sorry, I think it's similar to what you provided me in Staff 10, part C. You told me in 2018 your average market-based storage services is 68 cents a gJ, so I don't know why you couldn't do that for each historical year and give me that number and apply it to whatever the excess utility storage --

MR. CHARLESON: I'm just trying to get --

MR. GLUCK: Yeah.

MR. CHARLESON: -- clarity on what --

MR. GLUCK: Yeah, sorry.

MR. CHARLESON: -- you asked, because, you know, you're looking for -- it is what level of precision are you looking for around this, because if you are using an average blended rate, that doesn't reflect, say, contracting we may or may not have done during those years that would have -- because are you shedding your highest or lowest price storage contracts. So again, that's why I suggested, you know, the average is a bit of a hypothetical cost.

Again, for the purpose of this IR response we provided the blended average cost for that, but if we are talking about displacing some of the storage capacity that we've contracted for then it is, what are you shedding.

MR. GLUCK: Okay. So maybe could you tell me, is there a better way to do it than the weighted average cost?

MR. CHARLESON: Probably have to take a look at how we've contracted for the storage during those years and what -- potentially could we look at what we would have decided differently. We'd have to take it away and take a look at it.

MR. GLUCK: Okay. If you would be willing to do that.

MR. CHARLESON: Yes. Hang on.

MR. MILLAR: You already said yes.

[Witness panel confers]

MR. REDFORD: I just want to make sure we are comparing the right thing, so we started talking about the values that the excess utility storage gets.

I think, would we not be comparing the cost-of-service rate against that revenue, because what you're -- those are different services than what the 68 cents a gJ average would be. Those would be long-term storage deals. These are all -- the excess utility storage is short-term storage. So I think that's the -- I think that's maybe a better comparator, what did we get in the marketplace for that short-term storage versus a cost of service rate.

To Mr. Charleson's point, I don't know how you parse out using the average cost of long-term storage against that.

MR. GLUCK: You see, the only -- I think you're probably right. But the problem I have with that is you may not have sold all the excess utility storage space in a year. And in my construct of this analysis, it would be assumed that Enbridge's enfranchised customer got all the benefit of the entire excess utility storage space amount.

MR. REDFORD: I mean, we can --

MR. CASS: Again, Lawrie, you've told us the overall proposition that you are wondering about here. Can we not take that away and think about, you know, what we think would be the best way to try to look at the numbers with a view to the proposition that you're interested in?

MR. GLUCK: Yes, that's fine by me. And if maybe in that you could also answer the question as to whether this would be in accordance with the Natural Gas-Electricity Interface Review decision using the excess space -- and I'm not talking about going backwards; I'm talking about going forward. I'm just using backwards to give the numbers as to whether this makes any financial sense on a global basis, ignoring inequities between two sets of customers.

MR. MILLAR: I am seeing some nodding there, so I am going to give that and an undertaking number.

MR. KITCHEN: Well, you can. But I'm going to add to our undertaking, I think -- which I normally would never do, because it sounds like, Lawrie, your focus is on the impact on the Enbridge EGD customer moving, right? Have I got that right?

MR. GLUCK: I understand that there would be an offset to Union's customers.

MR. KITCHEN: All I'm saying is I think what we'll do is we'll also, in providing the answer, we'll provide that as well.

MR. GLUCK: That would be great.

MR. CHARLESON: Just to be clear, going back to 2013 and no further back than that.

MR. GLUCK: I think the last IRM period is reasonable, because I want to compare it to the market revenues that were shared with the ratepayers over the period.

MR. MILLAR: Well, I don't know what this is going to look like on the transcript, but we're going to call it JT2.12, and I think it is agreement as to what it will be.

UNDERTAKING NO. JT2.12: TO DETERMINE THE VALUE OF UNION GAS MARKETED REGULATED STORAGE VERSUS EGD'S CONTRACTED REGULATED STORAGE AND ITS FINANCIAL IMPACT

FOLLOW-UP QUESTIONS BY MR. QUINN:

MR. QUINN: And I'd like to, Mr. Millar, and I think this is going to be helpful if Union could put in there what is the amount of excess storage that is in base rates, and you've provided a number, Ms. Mikhaila, a number in terms of the revenue component and the cost. But what is the storage attributable to those revenues and costs in base rates.

I know that on an annual basis, it adjusts how much is available. But there has to be a number that you started with in base rates.

MR. KITCHEN: I think that's assumed in the question That Lawrie asked, because he acknowledged that it would change from year to year.

MR. QUINN: And so if you could display what that number is, that would be helpful then, because we've got $5.3 million of cost for storage divided through by the pJs, and then you get a number.

The challenge you are going to have, Mr. Kitchen, with your IR is while there is non-utility storage that might be in the order ever 6 pJs or whatever, that is not always just sold as short-term storage. Mr. Redford, that's correct, that you are going to have park and loan services, you are going to have different services you are going to bring to the market by using those 6 pJs. It's not going to be 6 pJs in one contract sold short-term.

So how do you either disaggregate that or at least put in your assumptions as to how you came up with what is done that with storage. I think that is important also. Do you agree, Mr. Redford? I saw you nodding, but for the record.

MR. REDFORD: Yeah, I think -- no, it's fair. I think when we look at the answer to this, we'll have to take all factors -- all cost factors that apply and include them.

MR. QUINN: Okay, thank you.

MR. MILLAR: Lawrie, how are you doing?

MR. GLUCK: I have no more questions.

QUESTIONS BY MR. GARNER:

MR. GARNER: I would just ask Lawrie if maybe I could just jump in, because after of this, I think they're trying to value something and I'm just trying to make sure I get the concept completely clear.

There's 100 pJs of Union storage regulated. There's 100 pJs left, just under of Enbridge storage. You don't utilize all of the storage in Union and sometimes, most times, you sell some of it on a 90/10 basis, right, or get a valuation from it.

Lawrie's question was how is that consistent with NGEIR. My question is a little bit different, but it is the same point. As you bring two utilities together, you are proposing not to run the storage system as two systems of one utility. As I understand it, your proposal is to run two separate storage facilities for basically two separate franchises within the company, isn't it, because you're not going to use 200 pJs, basically is what I'm saying, to serve all your customers. Or are you going to be using 100 for the Union franchise and the 100 or slightly less than for the Enbridge franchise?

I just want to understand what's being done physically in this situation.

[Witness panel confers]

MR. REDFORD: That's probably a level of detail that we have not got to. However, the proposal going forward is that Union's customers would get what they needed -- the Union south and Union north customers would get storage that they need to serve their needs and Enbridge would use the, you know, 99.4 pJs to serve their needs.

MR. GARNER: But there is no Enbridge after this, right; there is Amalco. So you are saying Amalco is going to run two franchises, one for the former Enbridge and one for the former Union. Is that -- there's only one company now. There is no Enbridge and no Union in this post world, right?

MR. CASS: Well, Mark, there is one company, but there are rate zones; there will be three rate zones.

MR. GARNER: I think we are asking the same question, Fred. So you are going to zone-out some of the storage; is that what you're...

MR. REDFORD: That's correct.

MR. GARNER: And partly because that's a cost allocation issue that you entered into putting together.

What -- other than maybe a preference to sell some storage you might or might not have, what impediments are there to putting together 199 pJ of storage and running it as an Amalco storage facility and utilizing it the best way you can for all of your franchise customers, no matter where they are?

MR. REDFORD: I'll start. I think there are two concepts here operationally and there is how costs are allocated and, you know, I don't know that we have really thought too much about how the system will operate, whether you will operate it as, you know, 200 pJs or operate it separately.

I think at some point it would make sense to move towards operating on an integrated basis. But, you know, I think out of the gate, I don't know that we've made that -- made that decision. But from a cost allocation perspective, we've tried to keep the Union south, Union north, and EGD zones whole to where they are today.

MR. KITCHEN: And I'll just add, when Mr. Redford says "whole", I'm really thinking about the no harm test and the fact that the three rate zones will continue to receive the same level of service that they receive right now.

MR. GARNER: Sure. I think I understand. As I said, there is a cost allocation issue which you would have to deal with as a physical operational issue that you are grappling with because you are going to do that.

Now, when you put together Amalco, was there any other asset that you are putting in this combined company that will operate, or potentially operate in the way you are talking about with storage, where there will be a legacy issue where the asset remains, in a sense, allocated or maybe -- maybe looking at -- maybe they're all like that, because you are not changing the cost allocation. On a cost allocation basis, everything is basically stuck in time on an asset basis because that's the way the cost allocation shows it. Is that what happens, so to speak?

MS. MIKHAILA: Yes, there will be no changes to cost allocation as a result of this.

We are maintaining the separate rate zones and the costs that were allocated to those.

MR. GARNER: So over time, what happens operationally. If I understand what you're saying, with storage being the best example of this, there will be a disjoint happening between the reality of the operation and the construct of the cost allocation?

(Panel confers)

MR. KITCHEN: It is getting late in the day.

MR. GARNER: So that is my last question, and my only question right for now...

MR. KITCHEN: I wonder if you could just repeat the question.

MR. GARNER: I hadn't really thought about it a lot, but storage certainly seemed to bring the issue to bear, and it is a big issue, and it has been dealt with, and it has some financial issues, as Lawrie is trying to understand is what's the consequence of those, but it occurred to me as we were talking about storage is it will not be the only -- it is certainly one that has been identified today as a major asset that its cost allocation will depart from its operational concepts, and pretty soon as I hear from you, depending on what you do right out of the gate or shortly out of the gate you will operate storage as an integral part of the utility. You will not operate them as two storage operations.

MR. REDFORD: No, I think out of the gate we are going to have to figure out what we do with it. I don't -- we really haven't --

MR. GARNER: Fair enough.

MR. REDFORD: -- we haven't put our mind to how that will operate, and so when I say out of the gate we are going to have to look at that, yeah, we'll have to look at how the system operates.

QUESTIONS BY MS. GIRVAN:

MS. GIRVAN: So rates will be based on the historical cost allocation, but operationally it may be very different or different to some extent?

MR. KITCHEN: Rates will be set by the price cap, right? So they will be escalated --

MS. GIRVAN: Based on the historical cost allocation.

MR. KITCHEN: Correct, right, but what -- basically what happens as you move -- once you amalgamate, and this happened with Centra and Union -- when we operate as two separate companies there was a stage where in the Union cost study, Centra still existed at their existing capacities. Right?

As we merged and as we went through future costs, the rebasing proceedings, those -- those things that were kept separate in the cost study eventually became integrated into the whole. Right?

Same thing will happen with EGD and Amalco. But we are proposing again to defer rebasing, and rebasing will happen in 2029.

MS. GIRVAN: Yep.

MR. MILLAR: Okay, I think that's it for today. It is just after four o'clock, so thank you, everyone. I guess we will be back Tuesday, 9:30 -- continuing with this panel -- okay. We will be continuing with panel 3.

Thank you everyone. Have a great weekend.

--- Whereupon the hearing adjourned at 4:03 p.m.