ONTARIO ENERGY BOARD

FILE NO.: **EB-2007-0673**

VOLUME: **Stakeholder Consultation**

DATE: **August 6, 2008**

BEFORE:	**Paul Sommerville**	**Presiding Member**
	Paul Vlahos	**Member**

EB-2007-0673

THE ONTARIO ENERGY BOARD

3rd Generation Incentive Regulation for Electricity Distributors

Proceeding held at 2300 Yonge Street,
25th Floor, Toronto, Ontario,
on Wednesday, August 6, 2008,
commencing at 9:40 a.m.

Stakeholder Consultation

BEFORE:

PAUL SOMMERVILLE	Presiding Member
PAUL VLAHOS	Member

A P P E A R A N C E S

LISA BRICKENDEN ALLAN FOGWILL MARIKA HARE BILL COWAN	Board Staff
JAY SHEPHERD	School Energy Coalition (SEC)
RANDY AIKEN	London Property Management Association (LPMA)
BILL HARPER	Vulnerable Energy Consumer's Coalition
MAURICE TUCCI DR. ADONIS YATCHEW	Electricity Distributors' Association (EDA)
PAULA CONBOY	
SUSAN FRANK	Hydro One and Coalition of Large Distributors (Enersource Hydro Mississauga Inc., Horizon Utilities Corporation, Hydro Ottawa Limited, PowerStream Inc., Toronto Hydro-Electric System Limited and Veridian Connections Inc.)
JULIE GIRVAN	Consumers' Council of Canada (CCC)
JULIA FRAYER	London Economics Group
JUDY KWIK DR. FRANK CRONIN	Power Workers' Union (PWU)
PETER THOMPSON	Canadian Manufacturers & Exporters (CME)
DR. LAWRENCE KAUFMANN	Pacific Economics Group (PEG)
DAVID MacINTOSH	Energy Probe Research Foundation

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

E X H I B I T S

Description _____Page No.

NO EXHIBITS WERE FILED DURING THIS PROCEEDING

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

Description	Page No.

NO UNDERTAKINGS WERE FILED DURING THIS PROCEEDING

Wednesday, August 6, 2008

--- Upon commencing at 9:40 a.m.

MR. SOMMERVILLE: Please be seated.

Good morning, everyone. Thank you.

This is the second day of the consultation dealing with the total factor productivity, the stretch factor and the capital module threshold. When we left off yesterday, Mr. Shepherd had just concluded his questions of the panel and we are now proceeding down the line to others in the room. All of the others in the room or any of the others in the room who wish to question the panel?

Mr. Thompson, you are looking expectantly and I take it you are next?

PRODUCTIVITY FACTOR

QUESTIONS/DISCUSSION (RESUMED)

MR. THOMPSON: Thank you, Mr. Sommerville.

I will refer you to as the panel, but, witnesses, for those of you who don't know me my name is Peter Thompson and I represent the Canadian Manufacturers and Exporters. They have about 1,400 members in Ontario, and the bulk of them are manufacturers with employees of 500 or less, so the interests that I am representing is generally a ratepayer interest and primarily a general service ratepayer interest.

I have a couple of questions of a general nature, and then a few questions in four topic areas. And let me just say at the outset the questions are intended to be of a clarifying nature and not to prompt debate between the

three of you on your differences.

I will just give you the topic areas that I want to ask about. One is data availability. The second is methods of calculating inputs and outputs. The third deals with this issue of weighting a portion of a statistical sample. And the fourth is this selection of the appropriate sample period, the start point/end point debate.

So with that, let me just turn to my general questions. Am I correct -- well, let me ask this: Is the exercise of determining a reasonable estimate of historic TFP growth essentially a statistical analysis exercise? Do all of you agree with -- the answer to that question is "yes"?

DR. YATCHEW: It is an analysis of data, and there are various ways that you can analyze that data and various techniques, but it is fundamentally a -- it is fundamentally a statistical exercise.

MR. THOMPSON: Okay.

MS. FRAYER: The only thing I would note is, just for layman's terms, again, sometimes when somebody says it is a statistical analysis, they think of regression analysis right away. And, in fact, the TFP analysis that I have done, the TFP analysis that Dr. Kaufmann has done is using index methods. It is a different numerical technique.

DR. KAUFMANN: I would just call it empirical analysis as opposed to statistical.

MR. THOMPSON: Empirical, okay. That is even better.

So just moving on, then, if each of you use the same data sets and the same sample periods and the same methods of calculating inputs and outputs, would each of you come up with the same number or approximately the same number?

DR. KAUFMANN: I think under that scenario, the only way the numbers could differ is in terms of the start and end point of the sample and what you are using to measure the trend. Otherwise, the numbers that would come out of the analysis would have to be the same.

MR. THOMPSON: Okay. Well, I classify the start and end point debate as a sample period. So if you all use the same approaches, you should end up with the same number. Okay. Thanks.

Now, let's move to my first topic, then, data availability.

Here, again, I am trying to focus on where we've got consensus and where we don't have consensus, but am I correct that -- well, first, let's start with the Board report. The Board summarizes data availability at pages 13 to 16 of its report, and do each of you accept that summary as a reasonable description of the data availability?

To put it more specifically, are there any points there that you suggest that are wrong in this summary that the Board has provided?

DR. YATCHEW: Thirteen to 16?

MR. THOMPSON: I have it pages 13 to 16 under productivity factor where they summarize the data.

When you read it, did you see anything there that

caused you concern, in terms of its description of what each of you had said?

MS. FRAYER: No. The one thing I would add is that since the Board report was issued, 2007 Ontario data has also become available.

MR. THOMPSON: Right. Okay. Do I -- am I correct that each of you considered data for 2007? I know you did, Ms. Frayer, and I believe you did, Mr. Kaufmann. Did you?

DR. KAUFMANN: Actually, I didn't, because at the time we made our recommendations only 2006 data was available.

MR. THOMPSON: Okay. So Ms. Frayer is the only one that has used 2007 data; is that right?

DR. KAUFMANN: Well, we have updated the -- we have updated the benchmarking analysis to include 2007 data. So that does have an impact on the stretch factors, but we're talking about the productivity factor here.

MR. THOMPSON: All right. That's what I understood from your material, that it did have some 2007 numbers in it. Am I correct?

DR. KAUFMANN: On the stretch factor, yes.

MR. THOMPSON: All right.

Now, am I correct that none of you considered data prior to 1988?

DR. KAUFMANN: Yes.

MR. THOMPSON: Is that right? Okay. So that the maximum sample period that we have here in the data is 20 years, '88 to 2007; is that right?

DR. KAUFMANN: That we have available at the moment.

MR. THOMPSON: Right, okay. But for this case, the maximum period is 20 years?

MS. FRAYER: Yes.

MR. THOMPSON: That's right? Now, in terms of the available data, the Board report describes three sets. One, we have US data, as I understand it, for the complete period, '88 to 2007; is that right?

MS. FRAYER: No. US data is only through 2006.

DR. KAUFMANN: That's right.

MR. THOMPSON: Okay. And then we have -- so turning to Ontario, we have Ontario data '88 to '97; is that correct?

DR. KAUFMANN: Yes.

MS. FRAYER: We don't actually have the data, per se, as much as the actual results of the TFP analysis done to cover that data.

MR. THOMPSON: Is that not data?

MS. FRAYER: Well, the results.

MR. THOMPSON: Results, okay.

MS. FRAYER: The results from the Cronin and King study.

MR. THOMPSON: Then there is a gap '98 to 2001; is that right? Then we have Ontario 2002 to 2007; is that right?

MS. FRAYER: Yes.

MR. THOMPSON: Is that correct?

DR. KAUFMANN: Well, we have two sets of Ontario data. We have 2002 through 2006, which I calculated, and 2002

through 2007, which Ms. Frayer has calculated using alternative methods.

MR. THOMPSON: Okay. Do I understand that this gap in Ontario data is temporary and will be filled by the time of the next case?

DR. YATCHEW: We can't answer.

DR. KAUFMANN: That's up to the Board and Staff. Ultimately, it depends on -- there would be some effort involved to develop the data and reconstruct. It is essentially a data reconstruction.

So it is up to the Staff. Staff has indicated - and that's written in the Board report - that at some point in the future they do plan to rectify -- fill in that gap and make total cost benchmarking and total factor productivity from Ontario possible.

MR. THOMPSON: So none of you is going to fill it, unless somebody retains you to do it. Is that what you're telling us?

MS. FRAYER: Well, I would update my analysis if the data was publicly available.

MR. COWAN: Sorry, I could comment on Board Staff's intention at this time, and that is that our -- the interval that Mr. Thompson is requesting about, the period from '98 through to 2001, is a period of time during which the industry was under maximum transition, the period for which, at this time, we do not have a means of gathering data without direct gathering from each of the 83 remaining distributors.

So we don't have a project in mind to access or to gather such data.

MR. THOMPSON: Okay, that is helpful. So in terms of the witnesses, I took it from what was being said yesterday and I may have this wrong, that there was a consensus that each of you agreed that if all of the Ontario data was there, it should be used as opposed to US. Did I understand that correctly?

DR. KAUFMANN: If all of the Ontario data was there to calculate TFP in a rigorous way, yes, it should be used.

DR. YATCHEW: That's not to say that US data might not inform --

MR. THOMPSON: But it would be the check?

DR. YATCHEW: The Ontario data would certainly be preferable.

MR. THOMPSON: Okay.

MS. FRAYER: I would add a little bit of a caveat on this, and that depending at what point we start the analysis, the current analysis I have done has used conjectures or estimate that Pacific Economics Group put together on the missing years. To the extent we needed to rely, again, on some element of conjectures for some small portion of the period, I would prefer to do that than to rely solely on another jurisdiction's total factor productivity estimate.

So, again, I would like to be able to use Ontario data, as we keep saying warts and all, as best as possible.

DR. KAUFMANN: Can I make just one statement regarding

the Ontario data which may not be clear, but what is reflected in the TFP estimates that have been done and put forward as Ontario TFP estimates, they really are constructed from three different separate sets of estimates done by three researchers using three different techniques. There is the '88 through '97 estimates. There are the fill-in-the-gap estimates that we did, and -- which are based on a type of conjecture, and then there are the estimates that we've done and that have been recently put forward for the -- past 2002.

So I think it is important to keep that in mind when we talk about the Ontario data, that there is no consistency between the results, between those periods.

So that there can be a lot of -- there can be a lot of jumps and gaps and inconsistencies going from one period, subperiod to the other.

MR. THOMPSON: But what I am looking out to the next case and asking, what happens in the next case when we've still got this gap unfilled? Are we still going to be tied to a mix of US and Canadian data? Or US data entirely?

Can you help me there?

DR. KAUFMANN: I think the intention is to transition entirely to Ontario data and to fill the gap.

There is some effort involved, but it can be done. There is a fairly limited number of variables that need to be -- that we need to gather information on to come up with credibility TFP estimates.

That doesn't mean we will be able to extend the TFP

estimates all the way back to '88 in Ontario. But if we need say a 10- or 11-year trend of for Ontario data which is what I think is reasonable to come up with the TFP productivity factor, then I believe that will be possible.

MR. THOMPSON: Okay.

MR. SOMMERVILLE: Given the, what was happening during the gap period, the transition of the industry, a radical transition of the industry, do we think that that information has the same relevance and coherence that we would characterize the other data as having?

Isn't this a really, truly anomalous period that ought to be discounted? Is that a point of view that has merit?

DR. KAUFMANN: I think it could. I think that's ultimately –- well, it's partly an empirical issue to see just how different those years are from the other years.

But there are precedents in regulatory proceedings for discounting periods that are anomalous for one reason or another. For example, there have been TFP trends calculated for companies immediately after privatization, companies that state-owned, and it is known those companies experienced huge productivity gains in the first few years after privatization.

So sometimes there have been TFP studies that have been estimated that eliminate those years as being non-representative of the future. So that could be warranted in –-

MR. COWAN: Mr. Sommerville, I wonder if I could comment. I believe the challenge is the degree of

difficulty of acquiring the information. And we have contacted some of the largest distributors in Ontario regarding the period in time that we're talking about, the period of absent information.

There are some major utilities that are unable to discover or find the data. So I see that the issue of acquiring that information for that period is far more challenging than a simple: Would you please provide the data to us?

Aside from the fact that it is getting to be long in the tooth data, in terms of how a utility is operating, for them to do what I have referred to as an archaeological exercise to dig out a lot of past information, when, in fact, most of them have undergone some degree of amalgamation and restructuring, is a challenge to them that would, I believe, be seen as excessive regulatory burden.

So we have walked those shoes a little bit, but then backed up to a wait and understand more fully how it might serve in terms of a value proposition.

MR. VLAHOS: Do you have a sample for that? Instead of using all of the total population?

MR. COWAN: We didn't do a rigorous, Oh, we should phone this one, this one, this one, this one. But it was done during the period of time, about a year and a half ago, and I would venture to say that I personally had contacted approximately six distributors, most of them the large ones. In my view, I didn't consider it necessary to contact smaller ones, because the probability of them

having the records was less, in my view, than those that had a more developed business system.

MR. SOMMERVILLE: Not only is the data difficult or impossible to acquire, it may not be of much value once you get it. Isn't that the situation?

MR. COWAN: It is a suspect time period and that I agree with.

MR. SOMMERVILLE: Ms. Brickenden.

MS. BRICKENDEN: I would like to ask Julia, Adonis and Larry, if perhaps -- come our next round, around 2012 we will have 10 years of data. And perhaps if we could get the capital additions data, I think Julia you mentioned it in your presentation, going farther back, say, you know, a longer period of time, 30, 40 years, I don't know what --

MR. SOMMERVILLE: Dr. Cronin's observation.

MS. BRICKENDEN: Perhaps -- what is your opinion on that? 10 years plus the capital additions data?

MS. FRAYER: In answer to Mr. Thompson's question, I have been scribbling to figure out the three-year term when that's going to expire and when we would have a consultation for 4th generation IRM.

We would probably have close to, depending on the reporting time frames, close to 2002 through 2010 or 2011 data from the triple Rs available for the LDCs. So that would, I think, give us a much vaster data set of actual data at that point in time.

Then depending on the methodology and the availability of capital additions, one could do different approaches to

quantifying the quantity of capital inputs more rigorously, especially if you have a longer term capital additions profile at that point in time.

I think, hopefully I think we do hope there will be better conditions to use Ontario data at that point in time.

MS. BRICKENDEN: Adonis?

MR. COWAN: With respect to Mr. Thompson's question, I mean this is his question and we're sort of, we're piling on in a sense. I hope he doesn't mind.

MR. THOMPSON: Pile on. I am used to that.

MR. COWAN: I think the panel needs to know and it is further to Dr. Kaufmann's observation with regard to the period of time from 1988 through to 1998, that when you made the reference, Dr. Kaufmann, to it being the data in the TFP report, I think that is an important comment or point to make.

Board Staff is not in a position to attest to the accuracy of the data that has been brought forward with regard to that TFP trend study.

We understand, and I would put some questions to Ms. Frayer about how many entities are involved in the data set that was used for that period, just to help us understand how robust it is.

MR. SOMMERVILLE: Do we need that level of detail at this stage?

MR. COWAN: Well, you may not. All I wish to do is to raise the question about how intensely we can rely on the

data from '98 -- from '88 to '98, and that question could be explored more fully if you so wished.

MR. SOMMERVILLE: You may want to address that in argument, and I think we should carry on.

Mr. Thompson?

MR. THOMPSON: Okay, thanks. So what I am drawing from this, witness, is that --

MR. SOMMERVILLE: Adonis has a parting observation.

DR. YATCHEW: I was asked whether I had a comment, and my view of it was that 10 years of good data is highly desirable and we could move forward on that, provided that the capital data goes back far enough that it will provide a good way of calculating the quantity, quality of the capital stock. Pretty much all the problems being caused here are -- perhaps I am exaggerating a bit, but they have to do with the capital data.

So it depends what you are able to do in that dimension.

DR. KAUFMANN: I would agree. I think when I said that I thought that we can transition to Ontario data in IRM 4, what I meant was that I think the worst case scenario is that we can develop a TFP trend for 2002 through 2011, assuming that we have good capital additions data. If we do that, then we can develop TFP measures that we have confidence in.

MR. THOMPSON: What I am drawing from this is the disagreements that are data related are likely to be temporary. As time passes, that stuff is going to

disappear; is that fair?

MS. FRAYER: I think that is fair. I would also add that I would like to see additional data that may not be currently available, but that's a secondary point and probably less related to historical productivity analysis for the industry, but more related to relative benchmarking.

MR. THOMPSON: Let's move, then, in terms of the recommendations and the data on which it is based. PEG's recommendation is 0.88 percent and that's based, as I understand it, on US data for the ten-year period -- is it for the nine year-period, 1998 to 2006?

DR. KAUFMANN: In fact, it is the 11-year period, 1995 to 2006.

MR. THOMPSON: 1995, all right.

Dr. Yatchew, your recommendation at the -- you have a band of between 50 and 60 basis points, as I understand it. The 60 basis point band is based on the same US data PEG uses, but you weight the last five years?

DR. YATCHEW: There are two elements going on here. One is that because of the arguments I have set forth, I believe that the earlier data from 1988 to 1996 is also informative in providing an estimate of a long-term target TFP value productivity factor.

However --

MR. VLAHOS: Dr. Yatchew, I'm sorry. I'm getting a signal from here that we cannot hear you that well, so if you can come closer to the microphone, please.

DR. YATCHEW: I'm sorry.

MR. THOMPSON: You are getting too tutorial. You have to lean forward and sit down at the mike.

DR. YATCHEW: There are two essential differences. One is that I believe that if good data are available for a longer period of time, then by all means use it.

And there is no evidence to suggest that the earlier data, prior to 1995 going back to 1988, should be entirely discarded. As part of the data that's trying to -- we're trying to estimate long-term average productivity growth from. That's one element.

The other element is that recent patterns that vary over time - and they're quite explicit in the graph that I put up - should also be taken into account in trying to determine a reasonable forecast for the upcoming three-year window. That's because there are persistent economic, regulatory and other effects that don't -- that aren't random year to year.

So just because we've had -- weather tends to be a much more random variable. These other variables tend to be more persistent, and it is useful to take these into account in trying to make a forecast.

How you combine those two deals with your question of, Well, how do you are weight those two? And that is a relatively more open question, but I think both elements need to be considered in coming up with a reasonable forecast.

MR. THOMPSON: The point I was trying to make, Doctor,

is you use US data, as does Dr. Kaufmann in coming up with one facet of your recommendation. So you are comfortable with US data for the purposes of this case?

DR. YATCHEW: I have expressed discomfort about the US data for the purposes of the US case. Unfortunately, we do not have better data at this time. We don't have better Canadian data at this time, and I gave specific institutional reasons why I think Ontario might be different from the US.

MR. THOMPSON: I understand that. I am focussing on the recommendations you made in this case.

Ms. Frayer, what you have done, if I understand it properly, is for the period '98 to '97 -- sorry, '88 to '97, if I've got this right, do you accept US data there or are you accepting Mr. Cronin's data? I didn't quite understand whether you accept US data in that subset of what you've done.

MS. FRAYER: The 1988 through 1997 annual average productivity targets during that period are based on the Ontario-specific analysis that was presented by Dr. Cronin and Dr. King in the first generation IRM. So it is Ontario-specific.

What I -- what my recommendation rests on is a synthesis of Ontario-specific elements to come up with an Ontario 20-year average estimate.

MR. THOMPSON: All right. But in that subset, '88 to '9 -- is it '96?

MS. FRAYER: '97, I think.

MR. THOMPSON: -- '97, is there any material difference between Ontario and US?

MS. FRAYER: I have not investigated Ontario and US issues for specific subsets or periods.

More generally, I've discussed where I think differences lie across the board between Ontario and US.

MR. THOMPSON: All right. Then for the missing period, you use PEI's -- sorry, you use PEG's conjectures, I think is the way you described it, and they're based on US trends?

MS. FRAYER: I don't want to speak to Dr. Kaufmann, but I used the -- I did use the conjectures that he created in his report under model II and model III, which basically fill in the missing years' period based on an analysis of US and Ontario trends surrounding that missing period.

MR. THOMPSON: You accept what he has done?

MS. FRAYER: What?

MR. THOMPSON: You accept what Dr. Kaufmann has done for that little piece?

MS. FRAYER: Yes.

MR. THOMPSON: Okay. Then for the next piece, the 2002 through 2007, you have condition your own thing?

MS. FRAYER: Yes.

MR. THOMPSON: And there, you have changed the method of calculating capital inputs in that stub piece?

MS. FRAYER: I have very specific recommendations on the inputs and outputs of the TFP calculation.

MR. THOMPSON: They're only applied to that stub.

Have I got that straight?

MS. FRAYER: They're only applied to the actual raw data, which is publicly available.

MR. THOMPSON: And the numbers that come before that, do they implicitly adopt the method that Dr. Kaufmann said is standard, the accounting depreciation method?

MS. FRAYER: Well, remember the conjectures are not based on any TFP method, per se. They're conjectures.

MR. THOMPSON: What about the numbers before conjecture?

MS. FRAYER: The numbers before the conjectures, Dr. Cronin and Dr. King's study is based on a monetary value approach of capital.

But recall my proposition is that I believe that if you have sufficient capital data, that you can make adjustments to your profile correctly, that some of the biases should be reduced.

Dr. Cronin -- Dr. King in his testimony suggested that for his first study, he had data going back many, many, many years.

So I think that there should be a convergence, if you will, of different methods to the same result, if in fact the data is available.

MR. THOMPSON: All right. This is the one hoss shay method, is it, that you have used in the stub period?

MS. FRAYER: In the 2002 to 2007 period, I used -- the one hoss shay refers to depreciation. The method itself is called the physical capital method. In effect, it is

looking at inventory of capital stock.

MR. THOMPSON: What does one hoss shay mean? Is that some Texas phrase or something?

MS. FRAYER: I wish it was. It is actually from the Oliver Wendell Holmes poem, referring to a buggy from the 1900s that would work and work and work until it didn't work anymore. It fell apart. But it is effectively, I think, the 21st-century example of the whole concept.

MR. THOMPSON: But if the Board rejects your one hoss shay approach, your number of 58, does it become about 0.72? What does it become, if we stick with accounting?

MS. FRAYER: Well, I don't know.

MR. THOMPSON: You don't know?

MS. FRAYER: I am not sure I have tested that.

MR. THOMPSON: Well it's going to go higher; right? I just assumed a 20-year average, it would get close to the 0.72.

MS. FRAYER: It's actually quite interesting if you compare the capital input quantity index that I have created and that Larry has created, in isolation and drop his in, his is growing faster than mine. So that would suggest even lower TFPs, in my calculations.

So I think that is something we could test, but I haven't done it and I think that we can't guarantee right now that it would mean higher TFPs for that period.

MR. THOMPSON: All right. So there is no evidence what yours would be if the one hoss shay method is rejected. So does that mean if the Board rejects that,

your recommendation falls by the wayside?

MS. FRAYER: Well, my recommendation is a comprehensive recommendation, and it follows through that I believe empirically, based on Ontario data, the range of total factor productivity growth historically has been from .43 to -- .42 to .73 percent. The .58 is the midpoint.

MR. THOMPSON: Dr. Yatchew, now your recommendation, you don't get into this one hoss shay business. What you do is weight the US data with giving the, I think it is the last five years, a particular weighting?

DR. YATCHEW: Yes.

MR. THOMPSON: Okay. Then you also look at Dr. Kaufmann's Ontario data for the last five years and do a weighting based on that.

DR. YATCHEW: Yes.

MR. THOMPSON: That gives you between 50 basis points and 60 basis points.

DR. YATCHEW: That's correct.

MR. THOMPSON: All right. And you give us then the midpoint of .55.

DR. YATCHEW: If I could just add to that. If we were looking at trying to set a regime that was going to last 10 years, for the sake of argument, or even longer, then of course I would put less weight on the most recent years and more weight on the longer term trend which is, I think, the point -- related to point you were trying to make earlier.

MR. THOMPSON: If the Board rejects your weighting approach, does your number become, for 20 years, .72

percent?

DR. YATCHEW: If the Board is prepared to set a 20-year target base productivity factor then our best evidence right now would be .72.

MR. THOMPSON: Okay. Dr. Kaufmann, on your data if the Board went to 20 years, is the number .72? In other words, have we got a consensus on that number on a 20-year scenario.

DR. KAUFMANN: Technically, it is 18 years, it is '88 through 2006, but .72.

MR. THOMPSON: Close enough, okay.

DR. KAUFMANN: Can I respond to a couple of statements that have been made about my work just to correct the record.

MR. THOMPSON: Yes. I am trying to avoid this.

DR. KAUFMANN: Julia said we used conjectures to fill in the '98 through 2001 period, which is not technically true.

What we did we used various scenarios based on US TFP trends which were calculated using monetary values of capital.

So in terms of your question, you were asking about whether there was an inconsistency in the capital treatment up to 2002 and post 2002, the answer is "yes".

There was a monetary valuation that was used from '88 to '97 by Dr. Cronin. Then there with a monetary valuation that we used on a different data set from '98 through 2002 and then there was a switch to the one hoss shay physical

depreciation.

You also asked about the US-Ontario TFP growth between '88 and '97 and how they compared. We presented evidence on that and the Ontario TFP grew was a bit more rapidly than the US TFP during those years.

MR. THOMPSON: Okay, thanks. Turning to the method of calculating inputs and outputs, I have already discussed this one hoss shay business.

Now, is there anything else of a method of calculating inputs and outputs on which there's material disagreement, in other words affects the numbers? I took it this was the only major point, but my question of the three of you is: Am I right?

DR. KAUFMANN: Well, there are differences in calculating both outputs and inputs but the biggest difference by far is more the capital input, which is the biggest input in this industry.

Ms. Frayer has adopted a one hoss shay assumption, which ignores physical decay. And you get very different estimates of capital quantities, because essentially what you're doing there is you're focussing on the gross capital stock and not the net capital stock. Those are two very different numbers.

MS. FRAYER: I just want to correct --

MR. SOMMERVILLE: I think the record already shows you don't agree with that characterization.

MS. FRAYER: That's fine. One other, I think, difference in passing just -- and I think we have talked

about it in the March workshop extensively, is that I had a three output, multi-dimensional three-output definition. Dr. Kaufmann used a two-output definition, in this particular case, because of limitations of the US data.

MR. THOMPSON: Okay. Now, on the -- let's turn to the next topic then this issue of weighting. The principle I would put out for comment is this.

Do you agree there should not -- you shouldn't weight any particular component of a statistically significant time period without a convincing demonstration that is, what has occurred in that time period is unlikely to reoccur.

MS. FRAYER: Well, weightings are done for many various reasons. So I am not sure -- can you reread the question or do you want to take a crack? Because I think of weighting as, it's an empirical technique and it is done for a variety of reasons, in fact, you do weighting within statistical analysis.

MR. THOMPSON: You don't do any weighting in your sample, in your recommendation.

MS. FRAYER: I have noted that I have conservatively not weighted it, although I think based on the previous record you have, I have noted multiple times that I think that there is a need to recognize that TFP growth has been negative, in my opinion, over the recent past and that has very strong implications for a three-year forward-looking IRM, because I don't think that negative growth will, tomorrow, reverse itself to very positive large-value

growth.

MR. THOMPSON: Well let me try it this way. Would each of you agree that to the extent you weight a portion of a sample, you distort the results of the sample. Do you agree with that?

DR. YATCHEW: No.

MR. THOMPSON: Pardon? You don't agree with that?

DR. YATCHEW: No, I don't agree with that it's not the results of the sample that you care about. It is, what you care about is the prediction that you are trying to make. So you're trying to make, you are assigning weights because you are trying to improve the quality of the prediction itself.

MR. SOMMERVILLE: I liked your first question better, Mr. Thompson, which was: If a set of circumstances is unlikely to repeat itself, ought it to be weighted?

I think what was your first question.

MR. THOMPSON: Yes.

MR. SOMMERVILLE: It would seem to me, you may want to lightweight a set of circumstances that is not likely to occur again. You may want to discount the implications of that period. But you certainly wouldn't want to emphasize that through a positive weighting. Is that a fair -- that makes sense to me. Am I wrong?

DR. YATCHEW: Yes.

MR. SOMMERVILLE: I am wrong?

DR. YATCHEW: No, no, no. I agree with you. I agree with what you said. But let me try to be visual about

this. In the graph that I put up last session and the one that I...

MR. THOMPSON: Move forward again, Doctor, so we can hear you.

DR. YATCHEW: Thank you. The one that I put off last session, the one that I keep going back to because I think it is, for me it is very informative, and it is the next --

MR. THOMPSON: Is this your sine graph, sine curve graph?

DR. YATCHEW: Not quite, but it does look trigonometric.

MR. SOMMERVILLE: It appears twice in your material.

DR. YATCHEW: It does, deliberately. It does deliberately.

MR. SOMMERVILLE: I thought so.

DR. YATCHEW: My mother taught me to repeat things.

What I am seeing here is that there is some systematic short-term trends, and if we're looking at the end point of the yellow curve, it is unlikely that whatever happened before that is going to reverse itself instantly and you're going to be at the top of the curve of that trend in the next year.

That's why I am more or less unwilling to take just the long-term average as my best short term predictor.

My long-term average is a good long-term predictor, but this is a short-term prediction, and so that's why I am inclined to add some weight for the short-term recent effects.

MR. SOMMERVILLE: Sorry -- oh, sorry.

DR. YATCHEW: And you did make the point about, well, should we -- is the statistical significance relevant?

And that curve is statistically significant, and I could write you down the sort of formulas and the results for that. That explains about 18 percent of the variation there.

MR. SOMMERVILLE: Part of what Dr. Yatchew said there, it seems to me, was to the effect that the fact that the -- that yellow line is downward trending coincided, to some extent, with your most recent comment, Dr. Frayer, to the effect that if you have a downward trend, it is unlikely to reverse itself instantly.

I think you said that, too, Dr. Yatchew. So that would argue -- and if we were looking at a total factor productivity for a shorter period, that would have relevance in that kind of consideration. That would not necessarily be an architecture for an ongoing TFP assessment, but maybe work like for a short -- for a short period.

Does that make sense?

DR. YATCHEW: Yes.

DR. KAUFMANN: Remember, we're talking about the US data here. What we have here, and I have mentioned this several times, that there is a very specific reason that TFP has been declining since 2002 through 2006. The biggest driver of that is the changes in pension contributions. That's also why we're seeing this upward

trend in 1997.

So you really cannot divorce -- you can't just look at a smoothing of the volatility. You really have to understand what's going on with the numbers to really assess the issue of whether this trend -- whether you have any confidence that this trend is going to persist in the future.

I don't believe -- the 2002 through 2006 circumstances that are driving that downward trend, those are specific to what's happened in those years and is a catch up. That's why I always said that you have to be very careful about weighting any observations more than others, because inherently there is some volatility within these numbers.

And what happens in certain years might be offset with what happens in later years. The Ontario data also show that. In the '88 through '97 period, there was a downward trend for the first half of the sample. That was not predictive of what happened in the second half of the sample.

So I think we have observations from both Ontario and the US which really suggest that we should be very cautious about weighting any four-year period or weighting any period more than any other period.

We have to know what is driving it. We have to know -- we have to have confidence it is going to persist in the future.

MR. SOMMERVILLE: Your colleagues are inspired to respond.

DR. KAUFMANN: That's fine.

DR. YATCHEW: My first response is that if these really are unique effects in the United States, then that drives a wedge between the validity of the use of these data, the US data and Ontario, at all.

Now, on the other hand, there have been -- there has been a decline in productivity, measured productivity, in your own documents over the last five-year period, from 2002 through 2006, quite substantial in Ontario, actually more than in the US, and consistent with that pattern in the US.

So, I mean, we can't ride both sides of the street arguing these are unique effects in the United States so they're not applicable in Ontario. Why are we using the data, then?

DR. KAUFMANN: That's not what I said. What I said -- and I do believe that fundamentally the businesses are the same. Canadian companies have to make -- they're making pension contributions, as well.

They probably -- it was a rational thing to conserve on those in the late '90s when you didn't have to make those to meet your obligations.

So what I am saying is not that this is unique to the US, but it is unique to the sample period and it is unique to factors that were going on in the first half of the period versus the second half.

So this doesn't invalidate the use of US data for Ontario. It is just a question of knowing there is

volatility and that there can be catch-up spending in a second half of the period relative to what is reflected in the first half.

Now, you made a second point, which slipped my mind.

DR. YATCHEW: Well, I guess in more general terms, the pension issue is just one of a variety of issues - others that I mentioned and we all mentioned - that we have believe have contributed towards declining productivity and they're not likely to abate, including increased regulatory requirements, infrastructure that is deteriorating, the recessionary effects that are occurring in the US and the job losses in Ontario. Those are other issues that would also likely be persistent.

DR. KAUFMANN: Well, again, that's not at all clear, in my opinion, because for the sort of increases in OM&A that we have seen, for that to be a continuing drag on TFP growth, what we would have to see is not just that the spending costs are maintained, but that those obligations and those costs continue to increase at the same rate in the future as they have in the past. That is not at all clear.

And in terms of the recession in the US, I mean, the US isn't in a recession now. It has been hit by, you know, enormous hits. It is not in a recession yet. It is not at all clear there is going to be a recession. If there is, it won't last for five years.

So I don't think you can even look at current circumstances and get a great deal of confidence on the

impact that that is going to have going forward.

Let me just mention two other things that could have implications for TFP growth in Ontario that go in the other direction. One is mergers. There have been a number of mergers, and we know that mergers are driven in part by expectations of efficiency. We're not controlling for that either, but that's a development in the industry in Ontario that could drive TFP higher in the future.

A second is smart meters. Smart meters can have -- smart meters are coming online system wide, province wide, and a number of companies believe that smart meters can lead to all kinds of operational efficiencies in terms of understanding thermal loading and optimizing the system. It gives companies much more information. That can lead to more productivity.

So we shouldn't be engaged in an exercise of trying to understand every little twist and turn and controlling for it. Rather, I think we should look at the data and see what the long-term trend is. That is our best estimate of what is going to happen in the future.

MR. THOMPSON: Time out.

MR. SOMMERVILLE: Very briefly, just to give you -- Ms. Frayer, just a very brief --

MS. FRAYER: My only question is, in terms of your mention of mergers and smart meters and other drivers of efficiency, in my understanding, they do produce efficiencies, but it takes time to produce them.

How does that fit in within the concept of a three-

year 3rd generation IRM period? You know, we're not having mergers left and right. I think last year we had a handful of mergers over 80 LDCs. That's not the entire industry merging into one amalgamation, and those synergies come over many years over lots of hard work.

MR. VLAHOS: Mr. Thompson, if I can just -- if I can be equally as guilty and take a bit of time.

We talked about smart meters, which is a physical thing. There is some expectation it will lead to productivity in a physical sense when you measure amount of output, given amounts of inputs.

But then there has been a whole discussion about pension costs, which is a more Ontario thing. I am confused as to how the two -- are the two in the same category? One measures physical things. The other one is just monetary.

So I am confused as to how pension costs may have anything to do with what we have to find here.

DR. KAUFMANN: Ultimately, I mean, what -- ultimately, it's monetary. The right data to look at are monetary data, but it is not so much physical versus monetary. What it is is you try to look to the monetary data and separate out the monetary costs into two pieces, the pieces associated with prices, so the pieces associated with the price change.

That's what should be reflected in the inflation factor, ideally, and the piece associated with the quantity change. So it is not physical versus monetary. There is

always a cost. There is always a dollar value associated with these things, but the essence of productivity measurement is not to try to come up with a physical measure, but to separate the price effect from the quantity effect and just have the quantity effect reflected in the TFP.

MR. VLAHOS: That's not in dispute among the three of you?

MS. FRAYER: I don't think so. The quantities need to be there. In effect, pension costs from an annual perspective add -- one can say they're not reflected in the price of the labour. They're reflected in the quantity of the labour.

DR. KAUFMANN: That's right.

MR. VLAHOS: So it is a kind of normalization process that one has to go through. Pension is just one example?

MS. FRAYER: Just one example. And, actually, that was one of my questions that I didn't ask, is: Is it the only thing? Are we certain that pension is the only thing that is driving that profile for the US?

I don't think it is. There is a lot of unknowns in there that is driving TFP.

MR. SOMMERVILLE: Sorry Mr. Thompson.

MR. VLAHOS: I think Dr. Yatchew has a...

DR. YATCHEW: May I be allowed one additional short comment?

MR. THOMPSON: Move forward again, Dr. Yatchew.

DR. YATCHEW: I am hoping this will --

MR. THOMPSON: Move forward to the mike. Every time you lean back --

MR. SOMMERVILLE: Different kind of progress.

DR. YATCHEW: Moving forward.

MR. THOMPSON: I didn't say be progressive, I meant move forward.

DR. YATCHEW: I think that to observe Ontario productivity rates at virtually zero over the last five years, numbers that are produced by Dr. Kaufmann, and to conclude that .88, everything is going to be fine now and .88 is the right forecast going forward, has a kind of surrealism to it.

MR. SOMMERVILLE: All right. I can see -- I can see the colour rise, Dr. Kaufmann.

DR. KAUFMANN: I won't respond.

MR. SOMMERVILLE: We take it that you don't accept that characterization.

DR. KAUFMANN: I believe there are numbers on the record that show that negative productivity growth can be followed by substantial productivity growth in Ontario.

MR. SOMMERVILLE: Thank you.

DR. KAUFMANN: So it is not surreal. It has happened. Unless you think the 1993 through '97 period was surreal in some sense, it was the reality.

MR. SOMMERVILLE: For some people it was.

MR. THOMPSON: Let's move on, gang. We are getting mired here. Now, Dr. Yatchew, at your slide 12 you tell us larger samples deliver more precise estimates. You're the

advocate for longer rather than shorter periods.

DR. YATCHEW: Yes.

MR. THOMPSON: Okay. So that raises the question, then, of what is the minimum period for statistical significance?

Dr. Kaufmann has said four years is too short. Now does everybody agree with that? Ms. Frayer is nodding. Dr. Yatchew?

DR. YATCHEW: What significance level did you have in mind when you said “statistical significance”?

MR. THOMPSON: Well, you tell me. Do you agree with Dr. Kaufmann, that four years is too short?

DR. YATCHEW: If that was all that we had, we would have to work with that. If we have better data or additional data, I would be very happy to add that in as long as it can be done in a consistent basis.

MR. THOMPSON: So what's your minimum? 10 years?

DR. YATCHEW: A minimum number of years for producing a good prediction?

MR. THOMPSON: Yes.

DR. YATCHEW: It depends on the quality of the data, even. If you're speaking of exactly --

MR. THOMPSON: Given what we've got here today.

DR. YATCHEW: Given what we've got here today?

MR. THOMPSON: Right.

DR. YATCHEW: Minimum could be as low as 10 years. It could be as low as 8 years. But that's not the best.

MR. THOMPSON: All right. Can I put you down for ten?

How about you, Ms. Frayer? Minimum of ten?

MS. FRAYER: Ten is a nice round number. But I have to make one comment that I have seen regimes set rate regimes sets in other jurisdictions with less than 10 years.

MR. THOMPSON: All right. But less than four?

MS. FRAYER: Not less than four.

MR. THOMPSON: So what's the minimum in other jurisdictions? Eight.

MS. FRAYER: I think New Zealand might have used six, or seven, I think, something like that, seven in its initial.

MR. THOMPSON: Do you have a minimum, Dr. Kaufmann?

DR. KAUFMANN: It's a rule of thumb but my minimum would be nine.

MR. THOMPSON: Okay, great, thanks. Dr. Yatchew, just a last question on this. If what happened 20 years ago was less likely to recur, instead of weighting more current period, do you agree an option is to select a shorter period that is statistically significant?

DR. YATCHEW: There are lots of options.

MR. THOMPSON: Is that one of them?

DR. YATCHEW: There are lots of options that are inferior. That would be one of them.

MR. THOMPSON: All right. Okay, let's move on, then, to the selection of the sample period and the start point/end point debate which is my last area.

Now, in terms of the theory here, as I understand it,

the theory is that you have this start point/end point to avoid statistical aberrations. You need a statistically adequate sample - or empirically adequate sample might be a better phrase - that begins and ends under approximately the same external conditions. Is that the theory? Dr. Kaufmann?

DR. KAUFMANN: The theory is that the -- I wouldn't call it a theory, but it is more.

MR. THOMPSON: Concept.

DR. KAUFMANN: The concept. The concept is what you want to do is you want to have a period that gives you a good measure of the underlying trend and I think Jay had a very good visual analogy for it yesterday was the slope, whether the slope is being distorted based on conditions that have either gone toward the front or the end point of the sample. So basically that's what were talking about. We're talking about the slope in TFP, but that slope can be distorted if you're starting at a period that is atypical for some reason. So you want to make sure those periods are comparable so that when you calculate the slope between those points you really are being picking up the underlying trend.

MR. THOMPSON: Do the others agree with the concept?

DR. YATCHEW: I gave my critique earlier.

MR. THOMPSON: You don't agree with the concept at all?

How about you, Ms. Frayer? Do you agree with the concept?

MS. FRAYER: Well my concern -- I agree with the problem, the underlying problem, if you start cherry-picking your start date, you can affect your results.

So I agree with the underlying problem that we're facing here. I am not sure I like the solution that has been offered.

MR. THOMPSON: All right. Am I right that the concept's not rooted in any sort business cycle theory. It is rooted in avoiding statistical or empirical aberrations in the results by starting at the wrong point compared to the end point.

DR. KAUFMANN: That's correct, and it is based on understanding what those aberrations are for total factor productivity change, and those are in this industry, and those are primarily weather and the state of the economy.

MR. THOMPSON: Okay. If we went to the slide that was up on the board there, this was Dr. Yatchew's chart.

This shows that, as I understand it, TFP growth, oscillates from year to year. And it has done that over the past, well, whatever is on this chart. Right? Is that right, Dr. Yatchew?

DR. YATCHEW: Yes.

MR. THOMPSON: Do we have the number for 1988? Is it below zero? Do you know?

DR. YATCHEW: For 1988?

MR. THOMPSON: For '88 over at the left-hand side, it doesn't start at the axis but I thought that number was available.

MS. FRAYER: I think...

DR. KAUFMANN: These are US rates. So the first observation would be the growth rate from '88 to '89. So the index value starts in '88 but we don't know the growth in TFP.

MR. THOMPSON: Okay. So where would the number start, at zero?

DR. KAUFMANN: No. We don't know.

DR. YATCHEW: We don't know what it is.

MR. THOMPSON: All right. Fine.

But if – well, let me ask you this, Dr. Kaufmann. When you determine where your start points are, can we do it by looking at this graph? What are the criteria that prompt you to conclude that wherever you started, is it 1988 or 1996?

DR. KAUFMANN: '95.

MR. THOMPSON: Prompt you to conclude that '95, that the externalities were comparable to 2006.

DR. KAUFMANN: Do we have my presentation available that I can pull up?

MR. THOMPSON: Just give me the short back of the --

DR. KAUFMANN: There is a visual which actually shows it pretty well. There is a slide. If you have it in your pack, the -- this will make it easier to explain. This is in the original.

MR. SOMMERVILLE: This is in the original filing?

MS. BRICKENDEN: Which slide?

DR. KAUFMANN: This is in my presentation from

yesterday. It is slide number 20.

So what we did, we said that there are three factors that can lead to temporary changes in TFP that are not representative of the long-term trend.

Two of those are related to weather, so heating degree days, cooling degree days, especially severe weather can lead to extra output, extra kilowatt-hours, extra kilowatts, et cetera. That is not sustainable going forward or it may not be sustainable for the longer term. And also the unemployment rate. The state of the economy is going to have impacts on how much customers demand.

So what we did is we said, our ending point is 2006. So what we want to do is we want to find a previous year where the conditions that prevailed for these three variables in 2006 were as similar as possible to those values.

So one of the challenges in doing that is we have three factors and we need to weight them in some way to come up with some overall valuation. What we did is -- if you see this panel below, what we did is we did a company-by-company regression of TFP growth on these factors, heating degree days, cooling degrees days and the unemployment rate.

We estimated how much each of these parameters was associated with TFP growth. And that's what we have here, the parameters, and then the T statistics, which shows all of these are significant. So what this shows is as heating degree days go up, cooling degree days go up, measured TFP

growth goes up. That is associated with extra kilowatt hour deliveries, things like that.

The unemployment rate, the coefficient is negative, which means as there is more unemployment, economic activity decreases, which means there is fewer deliveries, et cetera. So as unemployment goes up, TFP goes down. All of these are statistically significant.

What we did is we applied these coefficients. We multiplied these coefficients by the difference between the conditions in 2006 and the conditions in the previous year, and then we multiplied those together, the coefficient, by those differences, added them all up, and that's what we get in this final column, with is the percent difference from 2006 conditions.

This is a weighted average of how these three factors differ between 2006 and each of the previous years.

And what we find is that the smallest difference between 2006 and any of these sample years is in 1995.

MR. THOMPSON: All right.

DR. KAUFMANN: So 1995 is most similar to 2006. That was our starting point.

MR. THOMPSON: Did you test 1988? In other words, if the Board said, Go back to the best start point before 1995, and none of them to 1990 look very good, but did you test 1988?

DR. KAUFMANN: No. We stopped in 1990 essentially because I do think that there's a balance that needs to be -- which I talked about, in terms of having a sample period

that is -- that's not too old and that may reflect conditions that are not representative of the industry now.

So it was my judgment that what we wanted to do is we wanted to look throughout the entire '90s, and then this year, but not go back to the '80s.

MR. THOMPSON: All right. But hypothetically, if '88 was a fit and the Board said, Go further back to a better start date, then your number would go from 0.88 to 0.72; right?

DR. KAUFMANN: Well, that would be assuming that, one, it is a good fit, and, two, that we want to use -- we necessarily want to use that number as opposed to the most recent. I mean, if we came up with two numbers that were similar, I think you could still make a case, and I would make a case, that the more recent number is still better, because it reflects more recent conditions.

MR. THOMPSON: Thanks. I'm done.

MR. SOMMERVILLE: Thank you. Ms. Girvan.

MS. GIRVAN: Thank you. I will be very brief. I know we have to move on. I am Julie Girvan. I am representing the Consumers Council of Canada.

I just had a technical question, and I am struggling with this and the three of you can comment on this, if you like.

One of the things that I continue to struggle with is that in Ontario historically, and even today - I have seen it in recent applications - some of the Ontario distributors account for things in different ways.

So the example I would give is that with -- Hydro Ottawa had a capitalization policy that was quite different than some of the other LDCs.

When you are using Ontario data, I am just wondering how that comes into play and how it may affect the outcomes.

MS. FRAYER: I can take a crack at it. I think the fact that the capitalization policy is so different stresses the need to use a comprehensive approach to measure total factor productivity.

So this is probably a conversation for the next topic, but that is one of my concerns about using any type of partial productivity measures, because you are then basically ignoring one-half of the cost equation, like the capital and labour, knowingly, that there are different policies and that utilities have made intentional choices about the trade-off between capital and labour.

MS. GIRVAN: Dr. Kaufmann, would you like to comment on that point?

DR. KAUFMANN: On the Ontario data and differences in that?

MS. GIRVAN: Yes. I am just curious as to how it might affect the outcomes, because it is a reality within the context of the data. I mean, it really is. It is something that I have always struggled with just in understanding the implications of that, because you are going to have potentially two LDCs that might, you know, look the same, but essentially be very different in terms

of the productivity, depending on how they account for capital and O&M.

DR. KAUFMANN: I guess there are two -- I can just think of two issues that could be relevant. One is that what we're measuring here is an industry TFP.

So there would have to be something systematic within the industry accounting that is relative to standard, in some sense, if it is going to distort the numbers. If these are just random accounting variations that differ among companies, then random changes should balance out. It won't have much impact on the overall result.

So in terms of the industry TFP number, if it really is random, I don't know that it would have that big an impact. But the second issue is that -- and this is something that I don't know the answer to, but if an accounting system is -- in Ontario, is not bedded down, in a sense, if it is still kind of in flux, then that, to me, is an argument for not relying on Ontario data right now to set the TFP trend. You want to have more confidence in that underlying data as a basis for relying on it for the productivity factor.

MS. FRAYER: Just one question, and maybe this is kind of more general to Larry, but I understand there are different capitalization policies amongst US utilities, as well.

DR. KAUFMANN: Yes, there are, but our sample controls for that, and different capitalization policies is not necessarily a cause for concern. I mean, companies differ

in terms of where they are in the accounting cycle. The FERC accounts, there are differences, but the FERC accounts are pretty well bedded down. There are differences among companies, but the FERC accounts have been around for a long time.

There is a fair degree of consistency among companies. The ones that aren't, we look very carefully at adjustments between transmission and distribution. If companies have huge differences in allocations of cost between transmission and distribution, we don't include them in the -- in our sample.

If there are problems with distribution -- reported distribution data in a number of ways, if they seem to be an outlier, if they have much less purported distribution and transmission, then we don't include them in the sample. That is one of the benefits of having a very large sample of companies is you can pick and choose and to set the sample in such a way so that data -- potential data anomalies are not going to reflected in your sample.

MS. FRAYER: The issue of labour versus capital, the capitalization policies, I believe there are differences in the US among utilities, because I don't believe FERC accounting standards are very particular, definitive and exactly what firms need to do within a distribution business profile, leaving aside the transmission and the generation issues of vertically integrated utilities.

But within even the distribution aspect, I believe there is a lot of leeway with standard accounting policies

and even GAAP accounting, in terms of what companies can do in terms of determining whether to capitalize or to expense.

DR. KAUFMANN: There is some leeway, yes.

MS. GIRVAN: Okay. So it is an issue. I mean, it's an issue that does affect the data. I think you would probably all agree with that.

DR. KAUFMANN: Yes.

MS. GIRVAN: I just have a general sort of policy question and I will be very brief.

I see an IRM model as a package. So you have the different elements of the package. And we have been discussing these issues for a long time and we've been talking about productivity numbers for a long time.

I would like your thoughts, given the Board has defined several of the parameters and -- things like the Board has defined that there is no earnings sharing. The Board has defined that the term will be three years. The Board has defined that there will be a capital adjustment module.

I would just like your thoughts. Given that those parameters have been defined, how does that potentially impact your views on the productivity factor?

The example I would use is Ms. Frayer was saying that, you know, 30 basis points means a lot to the LDCs, you know, and I agree with that. But, also, given the fact there is not earnings sharing, how does that really impact your conclusions?

DR. KAUFMANN: I can start. In my opinion, those factors are more relevant for the stretch factor, the lack of earnings sharing, things like that, because the stretch factor is a benefit sharing mechanism.

So since that's the only benefit sharing mechanism within this plan, the fact that there is no earnings sharing mechanism does have implications for that value.

I don't think it has any implications for the productivity factor. The productivity factor, in my opinion, should be objective. It should be the best objective measure of the baseline TFP growth going forward.

It should be independent of decisions on the other elements of the plan. Just in terms of that 30 basis point issue -- well, I will leave that to the side. I won't get into that, but...

MS. FRAYER: I do think that to some degree, the other components of the IRM have impacted some of the analysis we have been making and have definitely impacted the objectives on how we look at the empirical analysis.

For example, because it is a short term for 3rd generation IRM, I think it is important to be realistic and pragmatic about what is achievable. That is actually the words I think from the Board report. They want the productivity target to be achievable by LDCs, so that is something that was consistently in the back of my mind, and that is the reason that I have also focussed on incorporating the fact that Ontario LDCs have observed a very negative TFP growth in the recent years and they need

to recognize and that and incorporate that into a productivity target going forward.

So it definitely has, I think, impacted the conceptually that paradigm.

DR. KAUFMANN: I think that does raise the question, though, of what you mean by pragmatic.

I think the way I would look at that is that you have to make pragmatic choices on data, things like that, to come up with the most objective measures that you can make for the productivity factor. So there are pragmatic decisions to be made, but still you should be driven by the goal of coming up with an objective measure, the objective measure of what is achievable. I'm not saying that this is a measure, you know not trying to, I don't know, come up with some pragmatic judgment that's outside of what should be driving your focus, which is on coming up with a very objective measure.

You shouldn't derive an objective measure and then apply pragmatism. The pragmatism should be focussed on what you have to do to come up with the most objective number.

MS. GIRVAN: Just one final question for you, Dr. Kaufmann, in terms of your outcome, your .88 percent. With respect to that recommendation, how does that compare to what you have scene in terms of your studies of other jurisdictions and what's been defined, in more recent IRM plans?

DR. KAUFMANN: It's on the low side. It would be one

of the lowest approved productivity factors anywhere. The most productivity factors are one percent or higher.

MS. GIRVAN: All right. Thank you. Those are my questions.

MS. FRAYER: In what context, is it for utilities that are starting anew?

DR. KAUFMANN: No.

MS. FRAYER: Cost-of-service?

DR. KAUFMANN: No.

MS. FRAYER: Are they utilities that have been under de facto price caps since the 1990s over 15 years.

DR. KAUFMANN: Yes. There are plans San Diego Gas & Electric have been under a form of PBR for years. For its first comprehensive price cap, the plan was approved. The productivity factor there was .92, almost the exact same.

MS. FRAYER: But there are --

DR. KAUFMANN: Much stronger much stronger and much more explicit PBR plans that have been the case here.

MS. FRAYER: There is also examples of other IRM mechanisms in other jurisdictions where it's been the reverse. In the last, I think, UK distribution utility review, they have actually allowed prices rates to go up.

DR. KAUFMANN: Well, that is, the UK companies were privatized in 1990. There have been three reviews, there have been four reviews since then, or four different sets of price cap plans. The reviews in 1995, 2000, and 2000 [sic], so I guess there have been -- they're in their fourth plan. The first two reviews reduced prices by about

50 to 60 percent. So that is true. There are -- prices are down essentially flat after productivity gains and price cuts in the UK for distribution. For some companies they're equal to 60 percent. So you have to keep that in mind.

Sure, I mean you can't -- you know, once you have cut prices 60 percent, the potential to continue to cut prices is pretty limited. But, that is the context for the UK decision.

MS. FRAYER: And you have to agree with me starting position matters, so the UK starting position is quite different from the Ontario starting position.

DR. KAUFMANN: Yeah. No one here is advocating 60 percent price cuts.

MS. GIRVAN: Thanks. Those are my questions.

MR. SOMMERVILLE: Mr. Harper. Let me just indicate it is my intention to continue with this subject matter to its conclusion before our break, and hopefully get to Mr. Shepherd's presentation on stretch factor also before the break.

So that's not intended to -- no, Mr. Harper seriously, no, no, that's not intended to...

MR. HARPER: I know you're working on the fact I usually speak very fast.

MR. SOMMERVILLE: Not at all. I'm giving you sort of parameters. If it's not so much the questions that cost us time. It is the answers. And we're happy to have that happen. But just so that you have sort of a general sense

of architecture here. Ms. Girvan.

MS. GIRVAN: Can I ask one question. You referred to final argument. Could someone just help us with what the next step in this process is?

MR. SOMMERVILLE: Well, there are submissions planned for tomorrow, that was -- that is part of this picture. So that we have discussion and then we have final submissions, which is part of our agenda for tomorrow. Is that catching everyone by surprise?

MS. GIRVAN: I read it on the sheet, but I hadn't seen it before and I don't know that...

MR. SOMMERVILLE: There is no obligation to provide that.

MS. GIRVAN: Okay.

MR. SOMMERVILLE: We are gleaning from the questions, tone, and body language, the general direction of the submissions, but there is provision for it within our agenda.

MS. GIRVAN: Okay. But that is the final stage of this process and then the Board will make a determination.

MR. SOMMERVILLE: Yes, yes.

MS. GIRVAN: Okay, thanks.

MR. HARPER: Thank you. I would like to start with Ms. Frayer. Actually, if I look at slide 6 of your presentation, this was where you were going through the development of the TFP growth for 2002 to 2007.

You actually had, I guess, five different scenarios laid out there. During your presentation, you indicated

that you gave -- I wasn't too sure most weight or all of the weight to scenarios 2 and scenario 5 to some extent because they discounted the megawatt hour, excuse me, the megawatt or demand value relative to the other two output values.

MS. FRAYER: Hmm-hmm.

MR. HARPER: Is that fair? I was trying to understand when I look at those two numbers, one was minus .5, the other was minus 1.05. If I do a very simple average, I come out somewhere around minus .75 as being the average of the two.

If I look at your 0.58 as being the total productivity factor over those 19, 20 years that you calculate, is that based on an average productivity during those last 2002 to 2007 years of about minus .75?

MS. FRAYER: In effect, the midpoint between them. Not the average but the median. Because what I did, I had instead of averaging the numbers from the start, what I presented was different potential trajectories because I also was not confident, you know, about exactly what happened in the missing years. So we had two different conjectures on that as well.

MR. HARPER: The reason I was looking at it from this perspective is, I was trying to in my mind, at my kitchen table last night, trying to figure out, to some extent, the difference between your 0.58 and Dr. Kaufmann's 0.72.

During that same period, 2002 to 2006, I guess Dr. Kaufmann for Ontario came up with a productivity factor, it

was virtually zero, plus .01 if I recall. You can correct me if I am wrong, Dr. Kaufmann

DR. KAUFMANN: That's correct.

MR. HARPER: Something in that order there. If you were having something around minus .7, minus .8 for that period and he was having zero, that in my mind would almost count entirely for the difference in your average TFP calculated over the entire period, even though he was using US data and you were using a combination of Ontario and US data. So that to some extent, the differences were really resided in how we looked at the last five, five years of the period as opposed to, you know, what data we chose to use for the first 14 or 15 years of the period.

I just wanted to see whether that was a reasonable characterization. Was the difference in your numbers was, to a large extent, how we looked at and how we calculated the last five years?

MS. FRAYER: There are definitely differences in observed TFP growth in the previous years, but they're probably not of the same significance level as the last five years, because really I think the .72 was based on US data and the US data is .4 percent positive TFP growth between 2002 and 2006.

My analysis observed a negative TFP growth for Ontario LDCs over that period and I am also including 2007.

MR. HARPER: Okay but I was trying to at a high level, rather than nitpicking each individual year, trying to understand what was the key difference between the two.

What I wanted to look at, and I just want to confirm you were suggesting that you gave greater weight to scenario 2 and scenario 5 because they tended to discount the weight less the peak demand measure of output, at least that is what I understood you to say during your presentation.

MS. FRAYER: The way that I -- I didn't want to -- we had five scenarios here. Then we had two different scenarios with respect to the conjectures. That would make ten different lines on that graph.

For purposes of conservativeness and also for clarity, I felt we should limit ourselves to a narrower, what I would say, set of potential ranges, and that's why I chose scenario 2 and 5.

MR. HARPER: I took it from your presentation that one of the reasons you were choosing that was you were trying to address this concern about lack of weather normalization, and, to some extent, if we gave less weight to peak demand, that would to some extent help sort of address or sort of moderate to some extent sort of the fact there wasn't weather normalization going on.

MS. FRAYER: Well, it does moderate the fact that we are putting less weight on the one measure of output that is most sensitive to weather, but it doesn't necessarily -- my opinion is that you do want to have TFP estimates that incorporate the effects of weather.

So I don't want to eliminate -- I don't want to weather-normalize the TFP estimates. That would not have

been my recommendation.

MR. HARPER: That is where I have a fundamental problem in two senses, because one is the scenario still includes a fair amount of weighting on throughput. Would you agree with me that megawatt hours are also weather sensitive, as well as peak demand being weather sensitive?

MS. FRAYER: They are, but less so. I think much less so than summer peak demand.

MR. HARPER: But they are weather sensitive?

MS. FRAYER: Yes. Again, my ultimate recommendation for total factor productivity analysis is that I don't want to weather-normalize the data. I want to be able to present TFP estimates based on actual operating conditions and incorporating actual weather conditions, and then be able to interpret that and understand whether there's trends from year to year that are driven by weather.

MR. HARPER: Right. But to some extent, I understood you as using peak demand, your view is sort of -- if I understood your materials correctly was that the best choice of output would be something like carrying capability of the system or something like that, and to some extent we were using megawatts and throughput as proxies for the carrying capability of the system.

I guess what I was struggling with was the carrying capability of the system is, to some extent, designed around probably what does the system -- what's the load likely to be in sort of a really hot summer if you're -- summer peaking utility or a really cold winter. To some

extent, it has been normalized either for extremes or normalized for averages.

So I was having real difficulty with your suggestion you didn't want to weather-normalize when, in my mind, that would be a fundamental criterion you would want to take into account ideally.

Maybe you could just respond to that.

MS. FRAYER: Well, the utilities construct their systems and the service they provide that -- the access they provide to the distribution networks is based on being able to operate under any -- well, almost any weather conditions.

So the idea is to then look -- when we are looking back historically, we want to be able to show whatever the weather conditions were. So that is my particular professional view on why I didn't want to weather-normalize the data, because the weather normalization would eliminate that component.

MR. HARPER: Okay. At least I understand your perspective there.

Maybe -- Dr. Yatchew, you were talking to some extent about -- I think, in general, talking here about how TFP is, in your mind, affected by certain factors that are cyclical, like business cycles, and also affected by certain factors that are not cyclical, whether it be pensions, regulatory, weather.

So there is a -- I guess the idea, what you're trying to portray in your graph, is there is wide fluctuations

probably because of non-cyclical factors, and then there are some cyclical factors going on, as well. Is that fair?

DR. YATCHEW: Yes. That does seem to be the case.

MR. HARPER: I guess one of your complaints about Dr. Kaufmann's approach on the start date and end date analysis was that it was only appropriate if it reflected a full cycle, if I can sum it up.

You had to look at more than the start date, the end date. You had to ensure you were encapsulating a full cycle or complete cycle in the analysis. Is that a fair summary of your concern?

DR. YATCHEW: That's part of my criticism, but not the fullness of it.

To the extent that there are cyclical components in TFP or driving TFP, like business cycles, you would want to capture as much of one or more business cycles as possible.

But my fundamental critique was the verbal one, and that says that by focussing on finding a year that is as similar as possible to the most recent year, that that's the wrong objective.

The right objective is to try to find a period of time that is representative of what you think will happen in the future. There are lots of other things that can go wrong aside from not picking the right points on the cycle.

MR. HARPER: Assuming we're uncertain as to what is going to happen in the future, I guess which comes to Mr. Thompson's view about trying to pick a period that is long enough that it is fully representative of what types of

things -- the reason it could have happened in the past, what I was struggling with was whether or not -- I mean, at a theoretical level, whether or not you - and I would like Dr. Kaufmann to comment on this, as well, afterwards - whether you looked at the sample period he picked, the 10 years and the TFPs, to confirm whether, in your mind, or not, it did not capture a full cycle.

Like, did your -- did the problem that you we're enunciating theoretically actually exist with the data period that he picked or not? Did you actually do that analysis?

I guess, Dr. Kaufmann, after having heard Dr. Yatchew's concerns during the initial meetings, whether you looked at your data over that period to reflect on whether or not you felt it fully reflected a full and complete cycle. Maybe if each of you could give me your perspective on that, it would be helpful.

DR. YATCHEW: Let me repeat the critique is not just based on the absence of capturing a full cycle.

MR. HARPER: I would like you to focus your response on that particular issue.

DR. YATCHEW: If I could focus on that in particular, then as Mr. Sommerville pointed out, I repeated the graph, twice, in my presentation. And the second time, at slide 13 that same graph appears, and immediately following, the slide states that:

> "The early 1990s were a period of relatively higher unemployment, which arguably should not be

excluded precisely because the subsequent years enjoyed higher unemployment levels and are therefore not likely to be representative."

Neither the raw US data depicted by the volatile line nor the estimated trend model would suggest the data prior to 1995 should be excluded.

If we go back to the graphic slide, 13, you can see that by beginning in the mid 1990s you are omitting that earlier part of that TFP trend.

So if you were really speaking of the possibility that this is a cycle, cycle in the sense of repeating itself in TFP, you are leaving out the part of the cycle that has lower TFP trends, TFP patterns, on average.

MR. HARPER: Dr. Kaufmann, do you have any wisdom to add to this?

DR. KAUFMANN: Let me respond first to the specific point on -- I can't recall what slide that was, where you were talking about unemployment. Let me respond to that first, and then I will make just a few general points regarding his overall critique.

Professor Yatchew is saying we're excluding the early 1990s, which was a period of high unemployment, and that could be distorting the TFP results. But we're including the period of early 2000, which was also a period of high unemployment.

So there was a recession in 1988 through '91, and there was a recession in very late 2000 through 2001. So we're picking up a recession. So in a sense, we're picking

up that impact, that cyclical impact, on TFP growth. That is reflected in our number.

If we want to have a full cycle, then -- if that's the argument, then it would really make sense to pick that up only once. You don't want to pick that up twice, because then you are not -- it's kind of like when you are talking measuring business cycles. You want to measure from peak to peak or trough to trough. That's what we're going to do. We only want to pick up one trough. We don't want to pick up two.

So that's -- in a general sense, I believe our numbers do reflect -- or for that specific point, our numbers do reflect that.

On his more general point, Professor Yatchew has said he believes there are recent patterns in the data, and he also said that there are persistent economic and other effects that are driving the data.

And if we can go back to the famous slide that shows the volatility in the trend through it, I don't believe this slide demonstrates that. All we have here is one cycle. We have a lot of volatility and we have some smoothing through that cycle.

For us to have confidence that this is -- that this really does reflect the underlying behaviour in the industry, we would need to know that that cycle is repeated multiple times in the past, and that's why I brought up the stock market analogy.

There is lots of stock market data. There is lots of

volatility. There is an upward trend, and you could probably smooth that data in various ways to come up with cycles. But that's the sort of information we would need to know that we really have confidence the cycle even exists.

The second point is persistent economic and other effects. We don't know, one, what those affects are, and we don't know whether they will persist. So for this to be a viable critique, in my opinion, for whether or not we're missing something systematic, you need to know what those effects are and you need to know that they're going to continue.

That kind of gets to the more -- kind of the bottom-line concern is that we need to pick a period that reflects the future. Obviously none of us know what the future is going to be, and if we could predict, if we knew everything that was driving TFP and we knew exactly what the future was going to hold, then there would be no need to even look to history, but we don't know that. We don't know what the future is going to be, and in -- my position has been even given this analysis, my position continues to be the best estimate of what's going to happen in the future is to look to the long-term trend, which is to make sure that that long-term trend is not distorted by what you can identify as being transitory impacts that could distort that slope.

If we try to go beyond that, we're really -- we just don't have enough information to try to understand whether or not a cycle exists, what is driving the cycle, and

whether that cycle is going to persist.

MR. HARPER: You don't have to put your hand up.

MR. SOMMERVILLE: Dr. Yatchew, briefly.

DR. YATCHEW: I have reviewed the statistics literature. I will try to be...

I have reviewed the statistics literature. I have found no basis for the application of this technique, the start date analysis that is being put forth anywhere in that literature.

Dr. Kaufmann has referred to the finance literature. The finance literature is an even -- much more complicated area to try to draw lessons for trying to forecast productivity analysis. There are profound differences between trying to forecast asset prices and trying to forecast productivity levels.

I will just mention one fundamental paper in that literature. The efficiency market hypothesis essentially puts our analysis on a completely different track from their type of analysis. Nevertheless, I did go to the finance literature as well. I found no, no academic basis, no sort of peer-reviewed basis for using this kind of technique for determining start dates. The basis upon which I am relying upon is the time tested law of large numbers, if you will. Give me more data that more or less look the same, I will give you a better estimate.

I think that is a far more reliable place to start, from the point of view of the Board, in determining long-term productivity rates than to rely upon an untested,

unproven technique which actually has prima facie defects that I stated again and again.

DR. KAUFMANN: I know we're running long on time but can I respond very briefly.

This is a pragmatic technique. We did not look towards the academic literature and you can always, I suppose, criticize something on the fact there is not enough academic literature.

But the claim that this is untested/unproven is not true. We used this in other jurisdictions. It has not been disputed, it has been accepted. It was just accepted in May.

So there have been people in the industry who have been looking at those numbers and trying to understand whether or not, not from a theoretical or academic points of view whether there was support for it, but whether it seemed to be a pragmatic and reasonable model that reflected temporary impacts on TFP and their determination was that it was.

MR. SOMMERVILLE: Thank you.

MR. HARPER: Actually, the final area I wanted to ask about is, comes again to yourself, Dr. Yatchew. Anyone can kick in if they want to was this idea -- Mr. Thompson presented it to you -- was the idea of weighting the most recent years with the view that that is going to give us some reflection of what -- the most recent past is somewhat more reflective of what is going to happen in the immediate future.

During the course of the conversation here there has been reference to the immediate future, the fact there is a three-year plan. What is of concern to me -- this is a three-year plan being implemented over a three-year period. We have at least a third of the utilities in the province that won't start the plan until 2011 and then it will run for three years after that.

So that, you know, I am not too sure where the business cycle –- I'd be buying stocks if I knew where the business cycle was going to be in 2011 when this thing started. So I really question and like you comment on the fact this is not really a three-year plan for everybody but actually stretched out over more like six years of when we think it when it finally ends or something, whether that does anything to sort of, our need to sort of more heavily weight sort of the most recent past. If we are in a recession we could be out of one in two years from now. If we aren't in a recession, now we could be in one two years from now. I don't know. I'd like your comment on that.

DR. YATCHEW: That may develop well be argument to revisit these numbers or revise these numbers as each cohort comes in and there is an additional year of data to continue that curve. We may have turned the corner by then. Maybe the five-year average will be better than zero percent productivity.

MR. HARPER: So your recommendation to address that would be to establish a different set of three-year productivity factors for each of the three cohorts?

DR. YATCHEW: That may very well be an option that the Board may want to consider.

MR. HARPER: Okay. But if the Board wanted to stick with one set of productivity factors for -- we're having a hard enough time coming up with one for the first three years -- one sort of productivity factors for all 87 utilities. Could you comment on whether we should be maybe, within that context, focussing more on sort of the longer term numbers as opposed to sort of giving a lot of weight, given one-third weight to the short-term numbers.

DR. YATCHEW: These weights are judgmental and a longer time frame over which you want to forecast productivity growth, the less weight you want to put on the most recent past and the more weight you want to put on the long-term path. As we said earlier, in an extreme case if you were putting a 20 year or 10-year forecast out, use the long-term number.

MR. HARPER: Okay. Thank you. Those are all of my questions.

MR. SOMMERVILLE: Thank you, Mr. Harper. Mr. Aiken.

MR. AIKEN: Thank you. Randy Aiken on behalf of the London Property Management Association. I will try to be quick and efficient.

My first question is for you, Larry. I think you mentioned yesterday that the TFP estimates that Dr. Cronin did in the '88 through '97 period, used only one output variable and that was customers. Is that correct?

DR. KAUFMANN: That is correct.

MR. AIKEN: Okay. Then turning to you, Julia. On your slide 6, the bill was referring to where you did the five scenarios what would be your TFP estimate over the 2002-2007 period if you only used customers as an output variable to make it consistent with what Dr. Cronin did in the previous period? Do you have an idea of what that number would be?

MS. FRAYER: Generally speaking, the TFPs would all be more negative, because by customer number grows the fastest of the three output measures.

So if we put 100 percent on that and remove the others, we will have output growing even faster than inputs. Output quantities --

MR. AIKEN: So the TFP would be less negative?

MS. FRAYER: No, no. Even more negative. Because outputs would be growing -- sorry. Sorry. Less negative.

MR. AIKEN: Yes.

MS. FRAYER: The one thing I wanted to bring into, bring up a little bit. I think Dr. Cronin filed a submission in May, after the last hearing, where he talks to this issue about the sensitivity of his results from first generation IRM to the one variable analysis. And if you bear with me, I can -- I want to find it so I don't misquote him. It may take me a few minutes. Oh, let's see.

MR. SOMMERVILLE: If you wanted to find that over the break, Ms. Frayer, we could do that and you could just do that almost, by analogy, by way of undertaking. That would

be easier.

MS. FRAYER: Yes, that's fine. But I think that's also to keep in mind that I think his conclusion was that it was not substantially impacting his -- well, let me get the data and respond to that later.

MR. AIKEN: Okay. The next question is for anybody to answer. What's the difference between total factor productivity and multi-factor productivity?

Is there a difference?

DR. KAUFMANN: No. The two terms mean the same thing.

MR. SOMMERVILLE: We have agreement on that, Mr. Aiken.

MR. AIKEN: I have achieved something here today.

MR. SOMMERVILLE: You should get a bonus for that.

MR. AIKEN: I will tell my client that.

I guess my final set of questions or final question is: I am sure you are aware that Stats Canada publishes multi-facet numbers for utilities. My question for each of you is: Why don't we use those numbers?

They actually have published data back to 1961 on productivity numbers for utilities.

DR. KAUFMANN: How are they defining utilities?

MR. AIKEN: They do it two different ways. The first one is electric distributors, transmitters, generators, natural gas, water and sewer as total utilities.

DR. KAUFMANN: Yes.

MR. AIKEN: And then they have two different indexes which are more precise, and they are electric distributors,

generators and transmitters.

DR. KAUFMANN: Yes. I mean, my answer is that what we need is the TFP trend for electricity distribution. We don't want to have transmission and generation. Those are very different industries, particularly generation, very different TFP trends. If we use that number, I am sure it would be much higher.

The TFP growth in generation has been much greater than in the network.

MR. AIKEN: Would you be surprised that all three of the indexes average -- from 1961 through to their last year that they have, are all around 1 percent?

DR. KAUFMANN: I am not terribly surprised, no.

MR. AIKEN: Would it be -- this goes to Adonis's premise that the more data we have, the better. If we've got 40 years of data, and we know the investment cycle for our utilities are around that same length of time, does the fact that we now have an investment cycle of productivity numbers mean more than the fact that we're contaminating the data with transmission and/or generation?

In other words, is there a trade-off there that we could use?

DR. YATCHEW: Unpacking that would be a horrendous exercise.

MR. SOMMERVILLE: Sorry?

DR. YATCHEW: Unpacking those components and deriving the distribution-only segment would be a horrendous exercise.

MR. AIKEN: I am not suggesting that exercise. I am suggesting that we use the Stats Canada data, which is distribution, transmission and generation, which has, as Dr. Kaufmann has pointed out, this contamination, but offsetting that we have 40-plus years of data, of independent data. And it's Canadian data, not US data.

Is there any reason why the Board shouldn't consider using that information?

MS. FRAYER: I would underscore my concern that it is based on portions of the utility sector that are vastly different, completely different production-wise, completely different drivers of input and output trends.

So I would actually think that it's -- it would be a non-starter for me in that respect, but I don't think it would be relevant outside of maybe just a very distant benchmark, just like we may use somehow TFP growth in the gas distribution sector to somehow have a single point of comparison for the electricity distribution sector. It is a very different industry.

If we had nothing else, maybe we would be forced to use it, but we do have better solutions in play.

DR. KAUFMANN: Julie, there has been some discussion earlier about main sources of data versus supplementary data. I think certainly you would never want to use something like that as a main source of data, but as a source of supplementary data and the fact you have 40 years and you're picking up, as you say, something like a forward replacement cycle, I do think that is a relevant point and

that is another issue, in terms of kind of the long-run TFP trend, in making sure we have that right.

That is one of the key drivers for the utility industry is the replacement cycle. You want to get that right. You could have a good sense that you are going to get that more or less right, even in short samples, if you have good capital additions data, which is why we always emphasize the importance of that.

But I do think the fact that you have 40 years' worth of data is relevant, which is I think the point you're making, because you are picking up the full replacement cycle.

But, still, I would never rely on an industry that includes far more than the industry that we're regulating as the basis for the TFP trend.

MR. AIKEN: Then just to follow up. Julie, I think yesterday somebody asked you about the Stats Canada index you used for wages. Is that utility wages?

MS. FRAYER: Utility wages.

MR. AIKEN: How was utility defined in that case?

MS. FRAYER: I think in that case it was defined very similar to the definition you have for the TFP. So it incorporates a variety of different utilities.

MR. AIKEN: Including gas and water?

MS. FRAYER: Yes.

MR. AIKEN: Okay. Thank you. Those are my questions.

MR. SOMMERVILLE: Thank you.

MS. FRAYER: I did want to comment really quickly

back. I found the page reference. It is page 4 of Dr. Cronin's submission in the response to the May workshop. I believe it is May 20th, 2008.

He notes that if he was to have re-done his analysis and incorporate kilowatt-hour sales, which is consistent with my analysis, his TFP estimates for the 1988 through 1997 period would have been lower.

So by incorporating the TFP estimates based on his original output specification, I have been conservative, because I would have had presented an even lower 20-year average.

MR. SOMMERVILLE: Thank you. Ms. Frank.

MS. FRANK: Thank you. I have only one area I want to question, and I was hopeful it was going to be covered by Mr. Thompson. He almost got there, and Mr. Harper, but they didn't quite get there.

It relates to the stability of the productivity value. We haven't really talked much about the end period. We had a little bit of difference 2007 versus 2006. We talked a lot about start value in that.

What I want to explore is: Does the end value have an impact? And, Dr. Kaufmann, if I start with you, you indicated that you had 2007 data available, but you didn't use it to come up with your calculation of total factor productivity. If you had, how would that change your number?

DR. KAUFMANN: We didn't have 2007 data available.

MS. FRANK: So you didn't -- you used it for stretch,

but you didn't have it available for the calculation of total -- it's not available?

DR. KAUFMANN: It's not available, that's right. The 2007 data became available in June 2008. We made our recommendations on the productivity factor in February 2008. So --

MS. FRANK: You haven't updated?

DR. KAUFMANN: No.

MS. FRANK: But you could?

DR. KAUFMANN: We could.

MS. FRANK: Could you guess? What would it do?

DR. KAUFMANN: I wouldn't want to guess.

MS. FRANK: Let me take another tack. If you went back and picked 2004 - it doesn't really matter, any year - and did your analysis again, how stable would your output be with your 0.88? How consistent is it over time?

DR. KAUFMANN: Well, I am sure -- I'm not sure what you mean by "it".

MS. FRANK: Total factor productivity.

DR. KAUFMANN: Well, again, it depends. If you're talking about 2004, then you are talking about -- you are moving one date back, so you have to move the other date back.

MS. FRANK: Please do.

DR. KAUFMANN: But that depends on how far you move it back. You know, again, that is -- that gets into the start date issue.

We want to pick a period that is not distorted by

transitory impacts. If you start moving that date back, you don't know. You don't know the impact of whether those transitory effects are going to have more of an impact than others.

But let me mention something that I think does provide some evidence that touches on your point of stability. We have done some work, the sort of regressions that Professor Yatchew has talked about, where we regress TFP growth on time trends and -- different aspects of time trends, simple formulations, things like time and time squared, for example.

We also used the sine function, just for fun, just to see what would happen.

And what we found -- and then we used those parameter estimates to generate TFP predictions. What we found on the model that uses time - that regresses TFP on time and TFP on time and time squared - is a TFP prediction going forward of 0.8.

So, again, this is picking up both a linear trend and a non-linear trend. If we use the sine function, what we get is a much -- so in other words, if we have that sine wave going through the data, and that is really the underlying pattern, we get much lower predictive power on that coefficient related to the sine of the time, if I can use that term, but the sine of the time variable.

And you get a lower TFP prediction and you get a much bigger prediction error. So, in other words, if you compare actual outcomes in any given year with the

prediction, what you're getting is -- the prediction, you get very big prediction errors under that.

So I think that does provide some evidence that the 0.88 number is stable, in the sense that it's consistent with econometric estimates of what are kind of the trend variables and what's running through the data on a trend basis.

MS. FRANK: So that is actually where -- you know where I am going. I'm wondering why we're staying with a time period that's going to be quite dated by the time we're in -- at the end of the 3rd generation and why -- if this is truly just a mathematical exercise, why it couldn't be run every year for all parties. Then it would be truly current, and we just use the same methodology.

I am not at all saying that we change the methodology. I am just asking: Why wouldn't you look at it every year, take a check, is it materially different, and modify it? Just comment. Actually I wouldn't mind all three commenting.

DR. KAUFMANN: So updating, well, remember we're relying on the US data. Because the US data is, that's a continuous data series and I believe that is critical. So we would have to update not just the Ontario data but the US data as well. It can be done. I don't know whether it can be done right now but it is likely that we could do it.

MS. FRANK: Could you do it every year is what I am asking?

DR. KAUFMANN: Yes, we could. It's not a trivial exercise, but it could be done.

MS. FRANK: What do you mean by its not a trivial exercise?

DR. KAUFMANN: It costs money to update the TFP trends. It takes time and it takes money to do it well.

MS. FRANK: It would depend on how much it would vary, Dr. Kaufmann, it could be money well spent.

DR. KAUFMANN: That's not my decision. I believe -- I of course believe it would be money well spent.

[Laughter]

MR. SOMMERVILLE: On both sides of the transaction, as it were.

DR. YATCHEW: All-improving.

DR. KAUFMANN: It’s not the sort thing you could just say: Update the 2007 TFP and tell me what the number is going to be tomorrow. I mean, it takes a while.

MS. HARE: If I could interject on the question, though.

On the question that you asked, Susan, about why couldn't it be done every year, I just take you to the Board's report on page 19, where the report of the Board clearly states that the same productivity factor will be set at the start of 3rd generation and will remain fixed through the term of the plan.

So you might have been asking hypothetically: Could it be done. I just wanted to point out that the Board's already decided that, whatever the number is that comes out of this consultation, it will be the same number throughout 3rd generation.

MS. FRANK: I was raising this because of the suggestions of Mr. Harper saying could it not change for each of the cohorts over the period and my feeling was, well, if that was a possibility, then why wouldn't you just change it for everybody each year?

It was because of the kind of conversations of start date being so critical, then it seems to me end date must also be critical. So is there something that we're learning that might give us pause, was my concern. Other people worth updating? Not worth updating?

MS. FRAYER: Well, one thing I have to say is that I do think that once data becomes available, prior to decision being made, you do want to update it.

So, you know, I kind of -- this is going back to why we start of squeezed in and presented 2007 numbers within a period of about a month of the new data being released because we thought it was important to reflect the latest available information. It's kind of going back to that idea that I had suggested about being inclusive, incorporating the most robust set of data that you have available.

DR. YATCHEW: I was just going to comments on your earlier revelation that Dr. Kaufmann had done some additional modelling of these TFP patterns, including linear and quadratic terms and even trigonometric terms and that the linear and quadratic worked better than the trigonometric. I just wanted to mention that the model that I used is -- embodies all of these special cases.

This is not a trigonometric model. This is, lies in a class of flexible estimators called non-parametric estimators so it should actually be better at predicting certainly fitting the data than any of these because it can choose from them.

MR. SOMMERVILLE: Thank you. Ms. Frank, is that it?

MS. FRANK: That didn’t answer my question.

DR. YATCHEW: I didn't intend to.

MS. FRANK: You're not going to? You don't want to answer that question?

DR. YATCHEW: You mean on the preference for updating it on a regular basis?

MS. FRANK: Yes.

DR. YATCHEW: If the Board has decided, and it's that's its prerogative.

MR. SOMMERVILLE: Perhaps I can back up the question a bit, and, again, I liked your previous question better, which was: As we consider the end period, not the start period but the end period and I think this is really the heart of your concern, Ms. Frank, is the idea that should we be emphasizing the most recent data as opposed to the alternatives?

Could you answer that question?

DR. YATCHEW: Should we be emphasizing the most recent data as opposed to...

MR. SOMMERVILLE: As opposed to, should we be weighting the most recent experience, the most recent data to give it more importance in the establishment of the

number, than simply looking at the breadth of the data that we have?

DR. YATCHEW: Than simply looking at the long-term average?

MR. SOMMERVILLE: Something along the lines Mr. Thompson was getting at, at one point. Should we be weighting this most recent experience more heavily?

DR. YATCHEW: And I think that, if I have understood the question properly, I think that that has been the cornerstone of what I have been suggesting. You look at the long term. You look at what has happened recently. Look at the window and give some additional weight to what's been happening more recently.

MR. SOMMERVILLE: I think, Ms. Frayer, you made that emphasis to some extent, too?

MS. FRAYER: Yes. And the fact that you need to recognize what's happening and what has happened in Ontario recently and the fact that at least I believe that the turnaround isn't going to happen overnight.

MR. SOMMERVILLE: I think Dr. Kaufmann, if I can characterize your point of view, it is that while the recent data may be interesting, what is most important is methodologically, looking at a meaningful span of information that is corrected to eliminate anomalous circumstances that might skew the overall picture?

DR. KAUFMANN: That's right. And I believe that, as I mentioned yesterday, I think focussing on any four-year period can give you an anomalous picture of what's going to

happen in the future. If you put more emphasis on it, then it may not be a good predictor and I think it will need to more volatility if that is the methodology going forward.

MR. SOMMERVILLE: Does that answer your question, Ms. Frank?

MS. FRANK: It does.

MR. VLAHOS: My curiosity from Ms. Frank's question is this: Is the suggestion that by adding 1997 to the data set, does that, in any way, have same or less or more importance than picking 1995 as the base year?

Ms. Frank, that is what I took from where you were going with it.

MS. FRANK: Right.

MR. VLAHOS: I don't think anybody answered that.

MS. FRANK: No, they didn't.

MR. VLAHOS: In fact, one could answer that theoretically without looking at the data itself, data point itself.

So your concern is that, adding 1997, could that be as significant as having a different choice year as a starting point?

MS. FRANK: Exactly, that was my concern.

MR. COWAN: Mr. Vlahos, did you mean 2007?

MR. VLAHOS: Yes. What did I say?

MR. COWAN: 1997.

MR. VLAHOS: I'm still back then, yes.

So, if that was the intent of your question --

MS. FRANK: Right.

MR. VLAHOS: -- I don't know what the answer is.

MR. SOMMERVILLE: I took Mr. -- pardon me, Dr. Kaufmann's answer to be that would require him to restructure his assessment, because he would have to look for a year that was analogous to 2007 as to its, the employment, unemployment numbers, the cooling days, the heating days.

He would look for the same kind of comparator as he did for his 2006 assessment, which would not necessarily take him in a linear fashion back to 1996 in that case.

DR. KAUFMANN: That's correct.

MR. SOMMERVILLE: Have I got that right?

DR. KAUFMANN: Yes, that's right.

MR. VLAHOS: It is not just a question of adding one more additional data point to the -- it's a new search? It's a new search to find the equivalent or...

DR. KAUFMANN: That's correct.

MR. SOMMERVILLE: I think Board Staff -- and I really appreciate the indulgence of the court reporter who is bearing with us as we carry on what is a marathon program this morning, but we would like to conclude this portion and hear Mr. Shepherd's first presentation in the next segment. So with that in mind, Ms. Brickenden.

MS. BRICKENDEN: May I, just one summary question. Adonis, I don't like to put you on the hot seat. However, I noticed throughout this consultation, prior to even today, you have made observations on interpreting the trends appropriately, as we discussed this morning, whereas Julia

and Larry and I think Frank have put forth alternative methods of calculating or deriving TFP, doing the analysis whereas you haven't expressed strong opinions on the different approaches that have been used.

Do you have anything you could share with us, your view, on not interpreting the trend, but do you have a particular view on the methodologies that have been put forward?

DR. YATCHEW: In order for me to express a strong opinion on the methodologies that have been put forth, I would have to actually do it myself, and I have not done that and, therefore, I have reserved judgment.

Let me say that I am not surprised by some of the results, more recent results, that indicate these negative TFP growth rates in the very recent past.

My objective has been to accept, with all of its warts, the US data to try to simplify the task before the regulator, not to be over critical of the data themselves, but, let's say, going from here, a uniform data set. How can we best interpret and use these results for purposes of informing the productivity factor?

I have not focussed on differences in these approaches and the various ways of measuring capital. That is actually quite an extensive exercise.

MS. BRICKENDEN: Thank you.

DR. YATCHEW: But I feel generally comfortable with the numbers that we're looking at.

MR. SOMMERVILLE: Mr. Cowan, you have one brief

clarification question?

MR. COWAN: Thank you, yes, and it is for Ms. Frayer with regard to the slide 10 and her material, and the reference to the significance of a 30 basis point difference between the two methods.

In particular, I just wanted to see if you would agree with me that while you have characterized the effect as being 25 percent of net income, that you really ought to discount that effect for the taxes that would be taken off, thereby reducing the effect to something less than 20 percent. And the only reason I am interested in your agreement with that is that it just changes the degree of significance that appeared to come from your conclusion.

I wondered if you would agree it should be reduced by something like that?

MS. FRAYER: I agree that this was a very simplistic analysis. So I haven't -- what I was looking at is the revenues and comparing it to net income. So you do need to take into account the taxes, the interest yield or depreciation, but --

MR. COWAN: Not to worry on those. Thank you. That was my only question.

MR. SOMMERVILLE: Thank you, Mr. Cowan. That's helpful. We will close this portion, subject to final submissions. Anybody who wants to make them tomorrow, they are welcome to do that, but not obliged to do so.

Mr. Shepherd, you are up on stretch factor. Can you proceed?

STRETCH FACTOR

SCHOOL ENERGY COALITION

PRESENTATION BY MR. SHEPHERD:

MR. SHEPHERD: I only have four slides. I thank you for your indulgence, so that I can, at lunch time, go find some chicken soup.

MR. SOMMERVILLE: And you better get a lot of it.

MR. SHEPHERD: On the stretch factor, I want to talk about, a little bit about the principles, and then make a suggestion about how you get to the right numbers.

On the principles, I think Dr. Kaufmann has raised the first issue, which is: If there is no ESM, then how are the ratepayers going to get a benefit out of this?

Well, the classic way that they get a benefit out of IRM is through a rebasing benefit. That's the -- the theory is that the utilities become more productive, and then, on rebasing, that flows to the ratepayers forever thereafter.

We haven't seen that yet in Ontario in the electricity distribution industry. In fact, the process of rebasing has been a process of getting a good deal more than you would otherwise have gotten under IRM.

We have actually made some comments about that in our previous submissions, which I am sure the Board has taken into account.

So that really leaves the stretch factor as the only way the ratepayers get a benefit in all of this.

So then the question is: What are the ways that you

could make a rational decision about what the right stretch factor should be? We see there is only three possibilities. One is you could go back and empirically estimate the effect of being an IRM on productivity.

You could look back in the past and you could say, Well, let's take a 3rd generation IRM as our standard. We will go look for a bunch of them, because there are some, and then assess, Well what has actually happened? What are the results?

We don't have that data. The limited data we have is anecdotal, and Dr. Kaufmann's commented on it, that those numbers are big. They're not 0.25 percent. They're way bigger than that. Sometimes they're 5 percent in some examples.

So I am not sure that -- (a) we don't have the data, and (b) if we did have the data, I don't think the utilities would be really happy with it.

So there are two other ways that you could look at it. One is the way that number of people have considered it, and that is regulatory precedent.

What have other people used? Dr. Kaufmann has given evidence that a typical level of stretch factor is 0.5 percent. And that's -- I believe that you have said that's a standard, sort of average level that you have seen in many jurisdictions all over the place.

We see the Board's historical numbers, which have ranged from 0.25 to 0.5 percent. And so that certainly gives some indication that somewhere in the 0.25 to 0.5

percent range is what other people think is good.

But we also have evidence -- and I don't know whether it is Dr. Kaufmann that said this or whether it was his partner in the context of benchmarking, but somebody said, at some point in the past, all of those numbers have been numbers essentially picked out of the air. Other regulators have said, You know what, 0.5 looks like a good number. Let's use that.

And there isn't a lot of experience in getting a more rigorous stretch factor.

So that led to us saying, Well, is there a third way that we can assess what the right number would be?

Well, what we concluded is that the right number has to be meaningful. It has to matter to the utilities. And the Board has already made a decision in this process about how big a number matters to the utilities. The answer is 50 basis points. A 0.5 difference in revenues or expenses is -- the Board has already decided is sufficient for Z factor treatment.

That materiality test is essentially the same thing as you are doing with the stretch factor; that is, you are deciding how much matters to the utility. If half of 1 percent is what matters enough to fix their underlying revenue requirement, then half of 1 percent is also what matters enough to incent their behaviour. That just follows logic.

So what we have concluded is that the right number - that is, the difference between the midpoint and either the

bottom point or the top point - is 0.5 percent. If you have a half-percent difference between the big group in the middle and the under-achievers and over-achievers, that half a percent is, the Board has already determined, a material enough number to affect utility behaviour.

So as a result of that, we have reached the conclusion that the numbers should be zero percent for group I, because the Board has already decided it's not going to go below zero percent; 0.5 percent for group II; and 1 percent for group III.

The fact that that happens to coincide very nicely with the regulatory precedent is serendipitous, but what we're basing it on is the Board's own determination that unless you get to a half of 1 percent, it doesn't matter enough to the utilities to affect their behaviour.

That's all we have to say on this.

Do you have any questions?

MR. SOMMERVILLE: Thank you, Mr. Shepherd. That is helpful.

We will take our break now. We will resume at one o'clock. It is our hope to try to get through the stretch factor material and part of the capital threshold material this afternoon, and we will try to encourage that as we go forward.

So we will resume at 1 o'clock. Thank you very much.

--- Luncheon recess taken at 11:50 a.m.

--- On resuming at 1:00 p.m.

MR. SOMMERVILLE: Please be seated. Thank you.

Thanks. We will start this afternoon's session with the next subject matter, which is the stretch factor, and there is a batting order that has been stipulated for this, and Ms. Frayer, you're up.

COALITION OF LARGE DISTRIBUTORS & HYDRO ONE NETWORKS INC.

PRESENTATION BY MS. FRAYER:

MS. FRAYER: Thank you. It is on. Thank you. I would like to first begin by supporting, by stating my support in agreement with what I read to be the Board's objectives in setting the X factor, which is – sorry, setting the stretch factor, a little bit of a Freudian slip - setting the stretch factor to recognize from -- and reward distributors, an effective way to distinguish between what I would consider the laggards and leaders.

So I agree that there is a diversity of efficiency levels present in the Ontario electricity distribution sector. Not all of the utilities can be characterized as inefficient and of course not all of the utilities can be characterized as efficient. So what are the implications of that?

Well, I think it is important to note that the starting levels or relative efficiency levels are very important and they're important not only for classifying firms into those general buckets of who's kind of average, who is a good performer, who is a weak performing, but they're also important for informing us about the level of the stretch factors which are effectively a growth rate but

the level of the stretch factors that we would like to apply.

The reasoning is that, in effect, the good performers, the superior performers, which would be in this very illustrative bell curve that we have here on the slide, which would be located to the right end of the bell curve, those superior performers would have had a factor productivity growth historically, would have had cut costs and, therefore, at this juncture or point of time, would generally be considered to be lean and on that basis, they probably would have less opportunities, as compared to their peers to make future cost cuts. So we would expect that their overall growth in productivity would slow down.

Nevertheless, they would still be delivering -- it's not to say they would become less efficient or inefficient. They would simply be growing at a slower pace, in terms of their productivity.

It is good for us to reward them for their previous efforts to become more efficient, because, in effect, that reward is quite consistent with competitive market dynamics, a reward means higher profits and higher profits, in effect, instils the competitive drive to succeed. And that reward would come with a generally lower overall X factor.

In contrast, there are also utilities that are all the way to the left side, the poor performers. Those poor performers effectively have the opportunity, going forward, to grow at a much faster pace, in terms of their

productivity, because they haven't had to make substantial cost cuts yet. There is low-hanging fruit for them to make future cost cuts.

So the starting positions inform us of the productivity growth we want to see, the stretch factors we want to see, because we want to have those poor performers, those laggards catch up to the rest of the industry and in effect that pace of catch-up is the stretch factor level that the Board asking us to discuss.

In the Board report there was a reference made to a bell curve and that's why I have reinserted my original graphic which I originally presented back in March with the bell curve because I wanted to emphasize there is a little bit of consistency in thinking about that. The bell curve shows the distribution of performers and the relative efficiencies.

The difference, I think, between the Board's position and my original conceptual discussion of stretch factors is that in conventional statistics, the bell curve is centered around the average, the mean, and since the productivity target we were recommending is based on an industry average historical TFP growth, I had originally recommended stretch factors that would have been positive for the poor performers, so that we motivate them to catch up, we add additional productivity targets to their overall price cap. And then I had suggested negative stretch factors to the superior performers to recognize that they have maintained a high pace of growth historically that they can't maintain

going forward.

But I understand that the Board would like to have non-negative stretch factors, and so let's return to the problem here that the Board has put out for us to comment on and solve. Let's return to the idea that I had suggested before, in that you need to be able to look at relative efficiencies in order to be able to set stretch factors, to take into account the starting positions of utilities and the level of catch-up you want those utilities to achieve so that they perform better.

Unfortunately, the relative efficiency analysis we currently have in front of us, the benchmarking analysis that was done in a separate consultation, is not complete. We don't know on a total cost basis how utilities fare against each other. So we don't have confidence in what levels of catch up we want to see, what levels of rewards we want to give, to set the stretch factors.

In effect, the reason I'm talking about this just in passing is the relative efficiency effectively ignores a big component of productivity. It ignores allocative efficiency, which is the efficiency that utilities can produce by trading off between labour and capital.

So without having an understanding of what those allocative inefficiencies are, we can't really set a stretch factor that will eliminate them.

So what next, you ask? Well I would like to return, again, to the concept of the bell curve. In the conventional statistics again, the bell curve is also

represented by a normal distribution. And conceptually within a normal distribution, again, what we have is a pictorial illustration of how confident we are about some estimator or some analysis. In the middle, in the average underneath the curve part, we are very confident about the estimator that we have made, whereas in the tales we are less confident. Then the further away we move from the average, the less confident we are about our estimate.

That's the type of idea – whoops -- wrong thing -- that's the type of idea that I would like to focus on for my recommendation for stretch factor levels.

I am uncertain about the classifications of firms that will take place based on the existing benchmarking analysis. So my concern is two-fold. I want to minimize the distortions that that misclassification can create, because it ignores capital, but at the same time I want to meet the Board's objective to have an effective stretch factor that does reward and recognize LDCs.

So my recommendation is that we go back to the long-term productivity analysis, the estimate we created based on actual Ontario data, the 20-year average. You have seen this chart before from my X factor presentation. And we look -- remember my recommendation for the productivity target is the median or midpoint across a range of estimates.

So we do have effectively an upper bound and a lower bound. The upper bound is a long term productivity growth rate of 0.73 percent. And the lower bound is a long term

productivity growth rate of 0.42 percent for that 20 year average.

In my opinion, I am confident about the numbers within that range, the upper and lower bound. I am less confident about productivity estimates and applying those productivity estimates outside of this range.

So following sort of very conventional statistical logic about confidence intervals, my recommendation would be to apply the upper and lower bounds in setting my stretch factors.

Now, I understand, again, that this graph would suggest that we would have a positive, a negative stretch factor because the midpoint is in the middle, but I want to accommodate the Board's proposal for non-negative stretch factors.

So, in effect, my recommendation is that we focus on the upper bound and so that we develop stretch factors that result in an overall X factor for any given utility that doesn't exceed that upper bound, and the difference between the median and the upper bound is 15 basis points. The difference between the median and lower bound is also 15 basis points.

So my recommendation, in effect, to accommodate the Board's mandate in the Board report and accommodate my concerns about the misclassification, potential of firms and the need to do some empirical analysis to support a stretch factor recommendation is to suggest a stretch factor of 7-1/2 basis points and 15 basis points.

So in the end, what we have is the best firms getting a zero stretch factor, so getting just the overall average 20-year estimate that we propose of 0.58 percent.

Then the group that represents the average would get a stretch factor of 7-1/2 basis points, which would mean a total X factor of 0.58 plus 0.075, which yields 65-1/2 basis point X factor, 0.655.

Then the worst performers would get a stretch factor of 15 basis points, so they would end up right at the upper bound of the productivity growth we want them to achieve, based on the 20-year estimate. So they would get a total X factor of 0.73 percent.

Now, I think a secondary recommendation, but really it is not addressing the primary question that the Board had asked, is that I think we also need to work towards a better method to actually classify firms that is going to look at not just OM&A, but on a total cost basis. But to the extent there is questions, I am happy to speak to that, but I understand it's not -- it wasn't one of the primary questions.

So that's it.

MR. SOMMERVILLE: Thank you very much. Dr. Kaufmann.

ONTARIO ENERGY BOARD STAFF

PRESENTATION BY DR. KAUFMANN:

DR. KAUFMANN: Thank you. Are we getting there?

This -- my presentation here is going to follow my presentation much more closely than the presentation on the productivity factor, although the organization is a little

different than the slides that appear here, but I will prompt the audience about what slide I am on when we change.

I would just like to start with a little background, and I think this is going to be hopefully a review for everyone, but just about the nature and role of stretch factors and incentive regulation and how they differ from the productivity factor.

Obviously they're both components of the X factor, but they play very distinct roles. The productivity factor is -- it is designed to set a baseline level of productivity growth to make sure that price adjustments satisfy the just and reasonable standard. This is -- it's conventionally measured using a historical measure of TFP growth in the industry, and that's appropriate, because in competitive markets long-run price changes grow at the rate of industry price increases minus the growth in industry TFP.

Rate regulation is considered a proxy for the discipline the competitive markets would have, so it is reasonable to take a competitive market proxy and to take the productivity trends that result from that proxy and use that as the basis for the productivity factor.

In contrast, the stretch factor is a benefit-sharing mechanism. It doesn't logically depend on the TFP growth that a utility industry has historically experienced and which is the baseline for just and reasonable price adjustments. Instead, it depends on the behaviour of the utilities under incentive regulation itself, under the plan

itself.

We all know that incentive regulation is designed to create stronger performance incentives than conventional regulation, and that means that under incentive regulation, the companies are expected to increase their TFP growth relative to historical norms. This is reflected in the Board report.

The Board report says the stretch factor component is intended to reflect the incremental productivity gains that firms are expected to achieve under IR.

So incremental means in addition to or an increase in the amount of, the size of. So that is different than the TFP growth, which is based entirely -- it's linked entirely to historical evidence.

The productivity factor is linked to the expected productivity acceleration under the plan itself, and, more precisely, it is the part of the expected acceleration that is reflected in customers' prices. So it is customer share of expected TFP gains that are passed through as price reductions, rather than being retained by shareholders.

Now, just skip ahead to slide 35. There is an important implication of this, which is that when you're thinking about the values of the productivity gains, the values of the incremental -- the values of the stretch factor, the values of the incremental productivity gains, that is inherently a forward-looking exercise. It is different from the productivity factor, which is essentially a backward-looking exercise.

Appropriate stretch factors depend on the amount of TFP gains that occur after the plan is in place, and we can't observe those now.

Because of that, some commissions have actually called the stretch factor a future productivity factor to distinguish it from a more historically-based productivity factor, per se.

A wise man once said that nothing is as hard to predict as the future. You might note that that wise man is Yogi Berra, but that is what we're in the position of doing. Inherently, this is a forward-looking exercise where we are trying to make predictions of what will happen in the future.

This is -- it is an extremely difficult thing to do, and because of that, and because of the difficulties of doing this on an objective basis, I believe, in practical terms, stretch factors must ultimately be based on judgment. Again, this is different than the productivity factor where you can link the values more specifically and more explicitly to historical information. But at the same time, the judgment can certainly be informed by past experience from regulated industries.

So if we go back, now, to -- go back to 33. There are several judgments regarding the way stretch factors are going to be determined based on Staff's proposal and Board's decision about the structure of stretch factors and how they're going to apply, how they're going to be differentiated for different groups within the industry.

And this was a recommendation that ultimately came from Staff, but I support it, and which the Board adopted, which is that stretch factors are the same for all distributors within an efficiency cohort, but they differ among cohorts and they're larger for firms that are in the less efficient cohorts.

As we know, there are now three efficiency cohorts with three different stretch factors, but it's the values that we're here trying to determine.

Again, I think those values must be ultimately based on judgment, and my judgments for the appropriate stretch factor values were guided by two main concerns.

Here I am on slide 36. Those two considerations are, first, I believe the recommended stretch factors should be commensurate with our current understanding of Ontario distributors' comparative cost performance. Second, my recommendations for stretch factor values are the ones that I think are most compatible with the incentive regulation experience to date in Ontario.

So if we can go to 34, first, in terms of our knowledge of distributors' cost performance, it is noteworthy that the Board's methodology for setting stretch factor values would utilize a cost benchmarking study that was done on behalf of Board Staff by PEG. One of the strengths of that benchmarking study and the way it's been applied in IRM 3 are the controls for uncertainty.

I am not sure that this is clear to all participants, but distributors are classified into the three efficiency

cohorts based on two benchmarking evaluations. First, you are going to be in group I if you're significantly superior on the econometric cost model, and if you are in the top quartile on the unit cost index benchmarking model.

So that's the most efficient group of firms. And firms get in that most efficient cohort by having superior performance on two benchmarking studies.

Group III is the group with the least efficient firms and firms only wind up in that group if they register inferior performance on two benchmarking studies. One, they have to be statistically inferior on the econometric model, and they also have to be in the bottom quartile on the unit cost index ranking.

Now, just briefly, to explain by statistically inferior and significantly superior. That is a test. The econometric model generates a prediction for cost for OM&A costs in this model for each company.

What we do, then, is we compare that cost prediction to the company's actual OM&A cost, and the model also generates a confidence interval and the cost prediction.

If firms -- if a firm's actual OM&A cost is within that confidence interval, then it is not statistically superior or inferior. It is an average cost performer. But if costs are below the prediction and it is outside the interval, then it is statistically superior. If costs are outside the interval but they're above the prediction, then they're statistically inferior. So that is just to define those terms.

Group II is all others. So a firm is, Group II is kinds of the default average group and a firm winds up, a firm can only move out of Group II into Group I and III if it is superior on both of the benchmarking evaluations that were conducted.

In my opinion, the effect of using two separate benchmarking evaluations significantly increases the confidence that we have in the benchmarking results, because it means that the stretch factor for every distributor in Ontario is based on the coincidence of benchmarking results on two different benchmarking models.

This application of benchmarking evidence differs from the approaches that have been taken in many jurisdictions, including the UK and New Zealand which are two jurisdictions that have received a fair amount of attention here, and in both of those cases, the stretch factor goals that were reflected in rates were based completely on the results of a single benchmarking study.

If you just compare the results under the two studies, our results show that there is a very high correlation among efficiency scores on the two models. So in other words, a firm that ranks very highly and is identified as being superior on the econometric model, is -- there's a very high correlation between those firms that are superior on the econometric model and those that are superior on the unit cost indexing model.

So, again, that increases confidence in the results, and in the probability that firms are being classified

correctly.

Finally, in terms of the way these results are being applied, because the positive and negative stretch factor adjustments relative to the mean stretch factor, focus only on the firms in the tails, the sort of illustration that Ms. Frayer just presented, we're only focussing on those tails and were only identifying firms as being in the tails of the efficiency distribution on two separate benchmarking models because the actual stretch factor, the assignments into the cohorts and the actual stretch factor values depend on being in the tails on both models, rather than for the majority of firms which are going to be bunched up around the middle. That, again, increases confidence that when we're differentiating these stretch factors that we're appropriately recognizing the rewarding differences in efficiency.

So in summary, I believe that PEG's methods do control for the uncertainty inherent in benchmarking applications, and the Board's approach of relying on two separate benchmarking evaluations to identify positive and negative performers increases the robustness of the results and reduces uncertainties associated with relying on any given benchmarking study.

At the same time, it should be recognized and I think everyone does recognize, that this is the first application of benchmarking in Ontario. And our knowledge can only improve as we gain more experience.

Certainly it's going to be enhanced by the planned

transition to total cost benchmarking, which has been identified in the Board report as a project that will take place in the future.

So I think that we could have confidence, the current benchmarking results are telling us something useful about the relative efficiency of Ontario distributors, but we should also recognize that this is the first step in our understanding of distributors' comparative cost performance and right now we're considering the implications of this benchmarking research for appropriate stretch factor values.

I believe that we're more likely to promote a sustainable and effective incentive regulation framework if we take a relatively small step, and on familiar ground, when we use this benchmarking evidence to set stretch factor values.

I think that is a more prudent approach, rather than taking a leap into new territory on stretch factors that haven't been adopted to date in Ontario.

That leads me to my second criteria which is guiding my recommendations, and this is on slide 37, and that is the precedents that have been adopted in Ontario so far. There have been three explicit stretch factors approved in Ontario. There was the .25 percent value for all distributors in first generation incentive regulation. Then there were two values that were approved for gas distributors: one for Consumers, now Enbridge Gas Distribution. That value is .47 percent, and .5 percent

for Union Gas.

The Enbridge was a targeted PBR plan on OM&A adjustments. The Union Gas was comprehensive.

So if you look at the average value for stretch factors in Ontario, if you treat all of these precedents equally, you come up with an average of about 0.41 percent.

But if you – obviously, the first value applies to many more companies, and companies that are much bigger and represent a bigger share of the total energy industry in Ontario, so if we would -- and my recollection is there are about 200 companies at the time of IRM 1.

So if we treat each of those 200 observations of .25 percent, if we equally weighed all of those and look at the average then the average is very close to .25 percent.

So I believe there's value in tying our current recommendations to these precedents, and one reason is that it is clearly consistent with the Board's past ratemaking practice, and therefore, it is consistent with the objective of predictability.

In my opinion, the stretch factor values of .25 percent and .5 percent strike a reasonable balance between non-trivial benefit sharing which, again, is what stretch factors are designed to do -- and taking a relatively conservative approach, which I believe is warranted since this is the first regulatory application of benchmarking.

I also believe that relatively conservative stretch factors now will be consistent with the goal of sustainability.

Stakeholders in companies are likely to develop more confidence in our approach if we begin with relatively small steps and build on our experience, rather than implementing more dramatic stretch targets at the outset.

It should be noted that Group I, the stretch factor there is zero and that does depart from precedent.

I think that is reasonable, because these firms are already demonstrably superior cost performers, so therefore they have limited ability to achieve incremental productivity gains in excess of what is reflected in the productivity factor. And it is appropriate to recognize and reward those firms' performance which we can do by having a lower, and that is zero, stretch factor value.

This is also the one area where all parties agree. So maybe there is not that much need to have additional discussion on this point and I wasn't planning on focussing excessively on that value.

In my recommendation, skip briefly to 43, most of the companies will be in Group II and have a stretch factor that is equal to the stretch that was approved for all companies in IRM 1. So what that means is that my current judgment is tied very closely to the Board's judgment in IRM 1, but it is amended to reflect the fact that now we have benchmarking evidence on differential productivity levels and, therefore, differential abilities to achieve incremental productivity gains.

So, therefore, the -- there are -- .25 is the average and it's the stretch factor that will apply to most firms

in the industry, but there are different stretch factors for different companies based on the benchmarking evidence.

For the least efficient cohort of distributors, my recommended stretch factor of 0.5 percent is equal to what the Board has approved for Union Gas, and it's almost identical to what was approved for Enbridge.

As Jay Shepherd has pointed out, the average stretch factor in North American plans is also very close to 0.5 percent.

So, in my opinion, making the highest stretch factor in 3rd generation IRM equal to the average North American precedent, it is -- again, it is consistent with the conservative application of benchmarking, which, again, I think is reasonable given that this is the first time we're actually using benchmarking evidence to set stretch factors.

So let me circle back now to slide 39 and talk a little bit about the idea which has been discussed in this proceeding up to this point, which is that economic theory implies that stretch factors are only appropriate for firms immediately after the transition from cost-of-service regulation, and Ontario distributors have been under a form of incentive regulation for years.

I don't find this persuasive. In fact, I think it is not the case.

It is true that economic theory says that stretch factors should be imposed after the move from cost-of-service regulation, but the theory never says the stretch

factors are warranted only in one incentive regulation plan, and then should be immediately removed.

Ultimately, I don't believe that this is a theoretical issue. The issue of how long stretch factors should be in effect is ultimately an empirical one, and it pertains to how long regulated firms can register higher TFP growth rates after they become stronger to -- after they become subject to stronger regulatory incentives.

There is a fair bit of evidence on that point. For example, in the UK, there was a study that was done by a firm called Cambridge Economic Policy Associates for the UK regulator. What they found was that the British power distributors registered TFP gains of more than 4 percent from essentially flat TFP, before they became subject to incentive regulation.

They went from about zero to 4 percent TFP gains, and if you compare the TFP experience in the first incentive regulation plan, which was from 1990 through '95, to the TFP experience in the second plan, from '95 to 2000, the TFP growth was greater in the second plan than in the first.

So that's some evidence that TFP has accelerated over time when companies become subject to stronger incentives.

A second study that's recently been done was done by Dennis Lawrence, who is part of the London Economics team. That was a study that was done in the Australian state of Victoria for gas distributors.

He conducted a study of TFP growth in the eight years after those companies became subject to privatization, and what he found was that in year 7 and 8, those companies registered significantly more rapid TFP gains than they did in the first six years, on average. So, again, there's average -- there's evidence that TFP has accelerated over time. It hasn't just responded one time, and then tended to drop off. It has responded and it has continued to respond, and it has continued to go higher and higher.

A little bit closer to home, US railroads were -- became subject to a form of incentive regulation beginning in 1980, after almost being bankrupt in the '70s.

More than 20 years later -- and they developed a productivity factor that was part of the regulated services. The Association of American Railroads had a TFP study that they updated annually. So there is very good information on what happened to their TFP growth in every year under the plan.

What it shows is that TFP went from flat to more than 5 percent for more than 20 years. And if you compare the TFP experience in the '80s, which was the first decade after regulatory reform and incentive regulation, with the TFP experience in the second decade, again, it was more rapid in the '90s than it was in the '80s.

So this is all evidence that tends to support the idea that it's not necessarily the case - and we shouldn't assume - that firms can exhaust their ability to achieve incremental TFP gains in, say, the first several years

after incentive regulation. There is a wealth of information from regulated industries that that is not the case and that companies can respond very strongly to stronger incentives for long periods of time.

Now, I am not basing my recommendations on any of this evidence for a couple of reasons. One, as Julia has pointed out, the initial conditions do matter. If you start out being extremely efficient, as the UK distributors probably were, then it is reasonable to expect very big efficiency gains are possible. And the industries differ, too.

The -- railroads is a different industry than power distribution. So I think you have to be very careful about looking to the experience from another industry as the basis for incremental productivity gains, but still it is relevant that a company's ability to achieve gains on an ongoing basis for many years, there is a lot of evidence to support the fact that companies do do that after incentive regulation.

Given that, it's perhaps not surprising that regulators routinely approve stretch factors more than 15 years after incentive regulation has first been approved. We talked about the Boston Gas plans -- or the plans in Massachusetts.

I supported -- I testified in support of both the Boston Gas and the Bay City Gas plans. Those plans will subject these companies to incentive regulation for a total

of 15 years, and in both cases we came forward with positive productivity stretch factor proposals.

I am not aware of any plans that have eliminated the stretch factor, even though some companies have proposed it.

So just to summarize, my recommendations for the stretch factor are obviously based on judgment, but it is a judgment that's grounded in two considerations.

One is our current understanding of distributors' comparative cost performance, and the fact that we do know something about where distributors stand relative to each other, in terms of their efficiency, and, because of that, it's appropriate to have differentiating stretch factors as the Board has adopted.

But at the same -- it is also true that the stretch factor recommendations contain numerous controls to control for the uncertainty of our knowledge in terms of, for example, that there are two benchmarking evaluations used to set the stretch factor.

So that's all -- that all suggests that there are appropriate controls for uncertainty, but still our knowledge is -- of these comparative cost differences is really at a very early stage. And because of that, I believe it is appropriate to take a conservative approach and tie the precedents very directly to what's been approved in Ontario to date.

In the future, it may be possible to develop a more objective and data-based approach to looking at the TFP

gains that have actually been registered by these companies, and, again, we could go back to the Boston Gas case.

In Boston Gas, the company -- I testified actually on the update of their incentive regulation plan. What I did is, when it came time to recommending the stretch factor value, I looked at -- I developed an econometric model that included a variable that looked at the impact of incentive regulation on the company's TFP gains during their original plan.

What that model showed was that the company -- after controlling for the variables, the company's TFP growth accelerated by 0.3 percent per annum under the plan. Boston Gas was a very efficient company at the outset of the study and yet it still registered some TFP gains.

The commission in Massachusetts used that as the approved stretch factor in that plan.

So that is an example of the type of objective evidence that could be possible to develop and -- as we move forward and think about a more objective sort of basis for stretch factors in the future, but, unfortunately, we're not there yet. We don't have that sort of understanding.

That's it.

MR. SOMMERVILLE: Thank you.

Dr. Yatchew.

ELECTRICITY DISTRIBUTORS ASSOCATION

PRESENTATION BY DR. YATCHEW:

DR. YATCHEW: Thank you.

Stretch factors are rationalized on the basis that a utility should experience accelerated productivity growth as one transitions from cost-of-service to incentive regulation.

This is not something that I am advancing, as you have heard. This is an assertion that PEG has made in a number of places at various points in time, including in the PEG calibration where it states that a consumer dividend is also sometimes added - sometimes added - to this historical TFP trend to reflect the expected acceleration in TFP, relative to the industry's historical norms when a firm becomes subject to PBR.

I have spent some time doing a literature search trying to find arguments in support of stretch factors. This is pretty much the rationalization that exists out there, this transition from one regime to another.

I will return to this issue a little bit later.

I would like to begin with some comments on Ontario's setting, in particular.

Ontario distributors have been under a form of price cap regulation for a period of time. In some judgments, for an extended period of time. In addition, Ontario distributors have been engaged in a form of yardstick competition for many years. These two factors would seem to weaken the case for stretch factors.

Earlier, I argued -- this is in earlier submissions to this Board -- I argued that a diversity factor, which

reflects relative efficiencies of distributors, is an appropriate part of the long-term vision for incentive regulation in Ontario, and that the diversity factor should be centered at the base productivity factor, that is it should take on positive and negative values. My view has not changed on that.

However, taking as a given the Board has determined that non-negative stretch factors will be assigned, my intent is to comment on reasonable or appropriate levels.

The Board has expressed the intention to use OM&A cost data to assess Ontario distributor efficiency and to assign stretch factors.

There are serious concerns about the validity of the benchmarking analysis which focuses on OM&A costs rather than total costs.

There is substantial potential for misclassification, for example, some efficient firms with high OM&A costs but low total costs will be misclassified as inefficient and assigned an inappropriately higher stretch factor.

There are other sources of misclassification, given the apparatus and data that we have in place. The one that I have just mentioned is the first one, the use of OM&A rather than capital data or total cost data.

A second source of misclassification arises out of mismeasurement of variables, such as labour, and the absence of other variables such as the age of capital stock.

A third source of misclassification is simply

statistical error, or what we call statistical type I error. There is also type II error but I am going to describe the type I error, source.

The fourth source of potential misclassification arises out of our reliance on US distributor data, which has been well recognized here as being a less-than-perfect surrogate for Ontario data.

One might argue that misclassification error arising out of the reliance on OM&A data rather than on total cost data is likely to be minor and we could speculate on the degree of that misclassification.

We cannot conclude definitively what that degree of misclassification is going to be in Ontario, because we don't have Ontario total cost data. If we had the Ontario total cost data we would, of course, use it.

On the other hand, the US data contains both OM&A information and detailed information on total costs.

So we can conduct a test or an assessment of the degree of this kind of misclassification that would occur from just the first source, the reliance on OM&A data, by analyzing the US data set in two ways, and this is what I did.

First, I estimated the PEG total cost model for US distributors and I then ranked utilities in two efficiency quartiles.

I then repeated this exercise, but this time estimating an analogue of PEG's OM&A cost benchmarking model, much like the one that's being used in Ontario. I

estimated this and utilities were, again, ranked into efficiency quartiles.

The two rankings were then compared.

The result of this misclassification analysis was that over 30 percent of utilities were misclassified when one used OM&A model data rather than estimating the total cost model. That is 20 out of 63 utilities.

Additional specific information on this is found in the chart before you. The red boxes, shaded boxes if you are not in colour, correspond to utilities which have been misclassified.

So for example, the bottom box with a "5" in it, the bottom centre box with a "5" in it, has five utilities who were classified in the bottom quartile with respect to OM&A costs, but were, in fact, in the second or third quartiles in classified by total costs. So they would have been inappropriately penalized.

Conversely, if we take, for example, the utilities that are in the top central shaded box, these utilities were classified as the most efficient from the point of view of OM&A costs, but when assessed according to total costs, they fell into the second or third quartiles. So they would have been given a stretch factor break rather than -- they would have been assigned as zero stretch factor, rather than some positive stretch factor.

Let me say that the fact that some get assigned to a higher stretch factor and some get assigned to lower stretch factor doesn't imply that, well, the pluses and

minuses average out. Two wrongs don't make a right. And whether you are giving too much benefit of the doubt to one utility or penalizing a utility that shouldn't be a utility, those are both errors and they have to do with equity issues and they also have implications for incentives for those utilities.

A more detailed description of this analysis can be found in the fine print, the source is in a document that I submitted and is available on your website.

Now, last year when we first looked at the benchmarking analysis that was performed by, in the parallel work, and capital was entirely missing from the model, it became very clear that this was simply a non-starter for purposes of reasonable benchmarking. Since that time, PEG has inserted two capital-related variables, one that measures customer growth. The other that measures degree of undergrounding.

In my view, these do not constitute proxies for the critical variable that is absent, the quantity of capital stock, so that viewing the OM&A cost function as a conditional cost function -- conditional on capital stock -- that model has not yet been estimated correctly.

Let me turn to a second potential source of misclassification, and this is as a result of mismeasured or omitted variables.

For example, the labour variable used by PEG is an index based on Statistics Canada data. My understanding is that PEG would have preferred to use utility-specific data,

but was for one reason or another, confidentiality issues, not provided access to those data.

The Statistics Canada data do not directly measure labour utility rates, and this can have a material impact on the kinds of scores, performance scores, that a utility experiences.

Niagara-On-The-Lake provides such an example. Niagara-On-The-Lake Hydro was assigned a cost of labour index of 0.891, while a neighbouring utility, contiguous utility, was assigned a value of 1.015, a difference of 14 percent.

My understanding is that Niagara-On-The-Lake Hydro wrote to the OEB on this matter and that at the time of the communication, the line rate at the neighbouring utility was 3.8 percent higher, not 14 percent higher. It was only 3.8 percent higher than that of Niagara-On-The-Lake.

Since labour comprises about 50 percent of OM&A costs at Niagara-On-The-Lake Hydro, there is likely a substantial impact on the corresponding performance score.

Let me give you another example of a variable that might be mismeasured or even missing, and that is the age of capital stock.

Even if you have a quantity of capital in the model, the age of capital stock is found to be an informative variable. In a report I prepared and filed before this Board commenting on the PEG benchmarking study last year, I noted over 10 percent of the variation in total costs amongst Ontario distributors is due to the differences in

age, not quantity, of capital stock, and that incorrect measurement can result in performance scores that are, in some cases, in error by as much as 20 percent.

A third source of misclassification has to do with the way statistical tests are performed. Statistical tests are done with a certain probability of error. For example, even if a utility is indistinguishable from the average, if one sets a certain significance level of critical value, depending on whether you are using a confidence level or a hypothesis test, then there will be inevitably utilities are average being classified as either superior or inferior.

With the significance levels that are being used in the PEG report, 20 percent of utilities will, on average, be misclassified as either statistically superior or statistically inferior.

And the fourth source of misclassification or potential for misclassification, I would just simply reiterate that the use of US data in the Ontario setting will inevitably yield its own erroneous consequences.

Let me turn now to a second aspect of setting stretch factors based on OM&A analysis.

Regulatory focus on OM&A costs rather than on total costs has the effect of distorting incentives and can lead to over-capitalization by utilities seeking to reduce OM&A expenditures, under-spending on OM&A and suboptimal decisions with respect to own versus lease alternatives.

I think it is very helpful if the distributor

community were to be confident that we are moving towards total cost benchmarking and that that will happen in a finite time, rather than extension of the OM&A benchmarking, which would create the wrong incentives.

In any event, I am still concerned that even over the short term you want to encourage the right kinds of decisions. So given the strong likelihood of substantial misclassification and given that the Board has determined that non-negative stretch factors will be implemented, we recommend that the stretch factors be materially lower than those recommended by the Pacific Economics Group.

Specifically, I would recommend the following stretch factors: For the least efficient group, a stretch factor of 0.2 percent; for the most efficient group, 0.0 percent; and for all other utilities, 0.1 percent.

This approach reduces the risk of inappropriate incentive creation and mitigates the effects of misclassifications which will inevitably be occurring.

So let me just contrast this with PEG's productivity factors. PEG is recommending an average productivity factor of 1.15 percent, consisting of 0.88 percent base productivity factor, and then stretch factors ranging from zero to 0.5 percent. Productivity factors would range from 0.88 percent to 1.38 percent under the PEG proposed plan.

And PEG's recommended 1.15 percent productivity factor average for the industry is outside the range of observed average productivity growth rates in the United States during the entire 1988 to 2006 period.

In my view, the resulting X factors that are being proposed by PEG don't satisfy the sustainability criterion that has been widely agreed upon. Furthermore, I have some difficulty in relying upon precedents as a basis for assigning stretch factors. The existence of precedents in other jurisdictions does not constitute a justification; nor does the existence of precedence in Ontario necessarily constitute a justification.

For example, there are important differences between the Ontario electricity distribution and Ontario natural gas distribution segments. Equitable treatment of both sectors requires neither -- neither requires nor implies identical treatment.

In my view, the determination of a productivity factor should not be prejudiced by those that have been imposed elsewhere, but, rather, informed by productivity factors that have actually been observed over time, the realized productivity factors.

Let me summarize. First, the rationale for stretch factors is weak. It is certainly, in my mind, weaker than in the case where we're moving from strict cost-of-service regulation to incentive regulation. Stretch factors are rationalized on the basis that a utility should experience accelerated productivity growth as one transitions from cost-of-service to incentive regulation, but Ontario distributors have been under one form or another of incentive regulation or yardstick competition for an extended period of time.

Second, the misclassification potential in the assignment of utilities to cohorts, that misclassification potential is high. This arises out of the reliance on OM&A rather than total cost data; absence of capital data; mismeasurement of important variables such as labour rates; probability of type 1 error, which is at present at 20 percent according to the formulation that has been put forth; and of course the use of US data in Ontario; and, finally, the point that I made already about the potential for risk of incentive distortion where utilities may focus on reducing OM&A costs, at least in the short term, rather than total costs, which could, in turn, result in inefficient resource allocation.

Last slide. Stretch factors should, therefore, in my view, be substantially smaller than those proposed by the Pacific Economics Group. We recommend stretch factors of 0.0, 0.1 and 0.2 percent for the three groups, with resulting X factors of 0.55, 0.65 and 0.75 percent.

The average industry X factor would be approximately 0.65 percent, which is substantially higher than recently observed -- recently observed productivity growth rates in the US and in Ontario and, therefore, in and of itself, would constitute a stretch. Thank you.

MR. SOMMERVILLE: Thank you.

QUESTIONS/DISCUSSION:

MR. VLAHOS: Dr. Yatchew, just one question of clarification at this time.

On your slide 17 -- did you find that? Your second

bullet point where you say, "In addition, Ontario distributors have been engaged in a form of yardstick competition for many years", what did you have in mind, sir? I am not sure I am clear on this.

DR. YATCHEW: The Ontario distributor segment is rare in its structure when you look worldwide. It is not unique. But it is rare.

It is rare because we have historically had very many utilities, close to 400 not more than 15 years ago.

During the many years that there were many utilities in this province, there was a systematic process for comparing performance amongst utilities.

Utilities finding better ways to do things, that information would be transmitted to others, because there was a relative open public sector system for doing so.

That's what I mean when I say there was an informal yardstick competition.

MR. VLAHOS: It was industry-driven, I guess? Self-induced, not regulatory-induced.

DR. YATCHEW: That's correct.

MR. VLAHOS: Right.

DR. YATCHEW: But had -- if Ontario distributors were exorbitantly inefficient, the regulator would have stepped in, in all likelihood. In that case, actually, the regulator was Ontario Hydro, as I recall. But the fact that it was driven internally, that it was really spontaneous, does not necessarily detract from the possible efficiency layers.

MR. VLAHOS: That's fine. I just wanted to understand the context of this. I wasn't sure whether you were talking about OEB-driven things, but obviously you are not.

DR. YATCHEW: No.

MR. VLAHOS: All right. Thank you.

MR. SOMMERVILLE: Questions.

Mr. MacIntosh?

MR. SOMMERVILLE: Let me suggest that if the questioner is exploring an area that a subsequent questioner may be interested in, don't stand on formality. If you think the answer can be expanded to satisfy your interest, suggest that expansion of the question freely.

I don't think I said that very well. But jump in when you think your question may be covered.

Mr. MacIntosh.

MR. MACINTOSH: David MacIntosh for Energy Probe Research Foundation.

Dr. Kaufmann, would you please respond to the proposition that there should not be a lower stretch factor for Group I utilities than for group II, since a corporation has achieved superior productivity, has the management structure and management personnel in place which will allow it to achieve increased productivity.

DR. KAUFMANN: So you're saying -- it seems that your assumption is that because they have already achieved a lot of productivity gains, that we can expect them to achieve additional --

MR. MACINTOSH: It would that they might have superior

management and management structure.

DR. KAUFMANN: I would say the reason that they're in a different group with a different stretch factor is you want to reward that. There is nothing wrong with that, in fact, you want to encourage that. You want other companies to get in Group I as well. And if you impose the same stretch factor for the companies that are already doing well as opposed to the ones in the middle, then that doesn't give the companies in the middle that much incentive to get better.

MR. MACINTOSH: Thank you.

MR. SOMMERVILLE: We will go geographically, then. Mr. Thompson you are next.

MR. THOMPSON: Thanks very much.

Again, my questions are primarily of a clarifying nature and see where we have consensus and we do not have consensus. I don't expect to be very long.

First of all, am I right that each of you agree that the determination of the stretch factor for each cohort is primarily a judgmental exercise?

DR. KAUFMANN: At this point, yes.

MR. THOMPSON: Everybody is nodding. Okay. I am putting you all down for "yes."

MR. SOMMERVILLE: You get a bonus for that one, Mr. Thompson.

MR. THOMPSON: And do each of you agree that factors influencing the Board's judgment include the term of the plan, the absence of an earnings sharing mechanism, and the

capital expenditure module determinations?

DR. KAUFMANN: I do. Yes.

DR. YATCHEW: I agree those are some of the factors.

MS. GIRVAN: Can't hear you.

DR. YATCHEW: I added -- I have added some additional factors that I would hope the Board might take into consideration, the potential for misclassification being one of them, the history of rate constraints and, prior to that yardstick competition in this province.

I could provide you with statistical analysis of these utilities back in the '90s.

MR. THOMPSON: I wasn't intending to exclude anything. I just wondered if you agreed that it included those three topics.

Okay, now, do each of you agree that the issue of the number of cohorts has been decided -- at least for this case? There will be three of them: One, two, and three.

DR. KAUFMANN: Yes.

MR. THOMPSON: Okay.

DR. YATCHEW: If it's up to us.

MR. THOMPSON: Now, can someone tell me -- first of all, how many LDCs are there? Is it 83? Is that the number?

MS. FRAYER: Eighty-two.

DR. KAUFMANN: I think it is 83.

MR. THOMPSON: Eighty-three.

MS. FRAYER: I thought it was 82 as of 2007?

MR. THOMPSON: Can't hear you, sorry. Okay. How many

end up in cohort 1?

DR. KAUFMANN: There are 11.

MR. THOMPSON: Eleven. How many end up in cohort 3?

DR. KAUFMANN: Eleven.

MR. THOMPSON: All right. Thank you.

All right. Now, just to move to the recommended ranges.

As I understand it, Dr. Kaufmann, you have for cohort 1, zero; for cohort 2, 25; and for cohort 3, 50 basis points.

DR. KAUFMANN: That's correct, yes.

MR. THOMPSON: Dr. Yatchew, zero for cohort 1; 10 for cohor 2; and 20 and for cohort 3.

DR. YATCHEW: 0.1 and 0.2.

MR. THOMPSON: Okay. I'm saying basis points, but okay.

And Ms. Frayer, zero for cohort 1; 0.075 for cohort 2; and 0.15 for cohort 3?

MS. FRAYER: Yes, that's correct.

MR. THOMPSON: Mr. Shepherd is, do you understand to be zero for cohort 1; 50, cohort 2;, and 100, cohort 3?

MS. FRAYER: Yes.

MR. THOMPSON: All right. Thank you.

Now, let's then turn to this risk of misclassification that you have been discussing at some length, Dr. Yatchew. I think you were touching on that as well, were you, Ms. Frayer that was part of your --

MS. FRAYER: Yes. That is one of the biggest drivers

behind my recommendations.

MR. THOMPSON: Okay. But do we agree that the Board has directed how this classification is to be done in this case? We're supposed to use this OM&A study; right?

MS. FRAYER: I agree that it is directed, but it doesn't obviate my concerns about misclassification.

MR. THOMPSON: No. I'm not trying to denigrate them. But to the extent they're addressed, it will be in part of the continuum here, beyond this case.

The means of measuring the diversity of efficiency, that has to be change changed, it's going to be changed for the purposes of the next case, not this case.

MS. FRAYER: Well in fact, just to reiterate my view on this, I took what the Board's decisions -- all of the Board’s decisions already in the report as a given.

With that in play, the foundation that’s been given that's been decided on, I presented my best professional opinion on what the stretch factor should be, given the elements that are already fixed.

MR. THOMPSON: All right. Well, are you questioning the Board's decision or are you simply giving us some preview of how you think it should be done in the future?

MS. FRAYER: Well there is a slide in my pack that talks about what can be done to improve it, I didn't talk to it today. But ultimately my recommendation for the levels of stretch factor, for 3rd generation IRM, are taking on its basis that this is the classification that's going to happen. So with that in mind, I wanted to be -- I

wanted to have stretch factors that would minimize the distortion that's likely to occur with those given facts.

MR. THOMPSON: All right.

MR. SOMMERVILLE: Just a note of caution, Mr. Thompson. The Board report does not explicitly rule out the idea that the three cohorts may be treated absolutely equally, that you could have the same stretch factor for each of the cohorts.

MR. THOMPSON: Right. No, I understand that.

MR. SOMMERVILLE: I just wanted to make that clear.

MR. THOMPSON: You are anticipating my questions.

MR. SOMMERVILLE: I did see it coming.

MR. THOMPSON: As you always do.

Okay. Now, I just want to take you briefly to -- Dr. Yatchew, because you talk about misclassification, as well, in your stuff, but at slide -- I think it is 24.

DR. YATCHEW: That's in the productivity section?

MR. THOMPSON: Page 24.

DR. YATCHEW: Twenty-four?

MR. THOMPSON: Two-four, yes. You say:

> "Under the proposed procedure, 20 percent of the utilities, on average, will be misclassified as either being statistically superior or statistically inferior."

Do I understand that to mean about two out of eleven in category 1 don't belong there, and about two out of eleven in category 3 don't belong there? Is that what you're saying?

DR. YATCHEW: As a ballpark, I will accept that number, but I have to convince myself.

MR. THOMPSON: Well, I am just taking your 20 percent, multiplying it by 11. It's 2.2, I guess, to be precise.

DR. YATCHEW: Yes.

MR. THOMPSON: Okay. Now, you sound like a ratepayer rep, you know, when you start complaining about classification and you have fallen into the wrong box, but I will leave that for another day when we retain you.

[Laughter]

MR. THOMPSON: But would you agree with -- let me throw this out for the comments of each of you.

If there is this misclassification as between the 1s and the 3s - they may be in the wrong spot - the response to that is not to reduce the stretch factor on average, but to narrow the differences between the average stretch factor in cohort 1 and cohort 3.

So -- whereas Mr. Shepherd is 50 on average and Dr. Kaufmann is on 25 and you are 10, and Dr. Yatchew, and Ms. Frayer is 7.5, rather than going from zero to 100, if you use the 40 percent and 140 percent of average, you would have numbers like 20 and 80 in Shepherd's case; 10 and 40 in Dr. Kaufmann's case for 1 and 3; 4 and 16 in your scenario, Dr. Yatchew; and 3 and 12 in Ms. Frayer's scenario.

Could you comment on that type of response to what you call is the risk of misclassification?

DR. YATCHEW: I'm sorry, I have completely

misunderstood the question. Is it possible for you to rephrase it?

MR. THOMPSON: Well, that's too bad.

MR. SOMMERVILLE: Let me help, if I can. I think what Mr. Thompson is getting at is that the appropriate response to a concern about misclassification is to narrow the difference between the non-performers and the average performers so that you mitigate the differences between those two. So you don't punish the bad performers quite as severely and you don't -- well, punish the middle guys commensurately.

So you contract the differences.

DR. YATCHEW: When you say "contract the differences", you can contract the differences between the steps in the penalties?

MR. SOMMERVILLE: Yes.

DR. YATCHEW: That's what I have done. That's not the only response, but I thought that that is what I had done.

MR. THOMPSON: You ratcheted them all down. What I am suggesting is you don't have zero for the superiors. You have a positive number that's less than the average, and you don't have 20 for your superiors. You have a number that is 16. But you do that -- I'm not saying that is where we land, but that is the response to your -- to a misclassification concern as opposed to ratcheting everything down.

DR. YATCHEW: So you would suggest, then, that the most efficient performers would achieve -- would be

required to achieve a non -- a positive stretch factor?

MR. THOMPSON: Right, because you say that somebody in there is not a superior efficiency.

DR. YATCHEW: Right.

MR. THOMPSON: So they will drag the class, if you will, down. I have been there, done that, many times.

[Laughter]

DR. YATCHEW: What's that line? Grade 3, the best three years of my life.

Yes, there are other ways of configuring and contracting the differences so that the relative penalties are smaller, and, therefore, reducing the effect of misclassification. When you superimpose on that my initial view that the justification for stretch factors for these other reasons is not as strong as it would be had we just been entering incentive regulation for the first time, I am comfortable in assigning zero as the stretch factor for the efficient firms.

MR. THOMPSON: Well, I think you've said this. The approach that Mr. Sommerville has put to you, which is what I was trying to put to you, is an option. It is a judgment option.

DR. YATCHEW: It's an option. There is another option, another option --

MR. THOMPSON: We understand that. You were an advocate for no stretch factors at all, and the Board didn't buy that; right?

So we are now into positive ground.

DR. YATCHEW: And I need to accept that. I was in favour of diversity factors. I was in favour of differentiating utilities, but around the productivity factor of 0.72 percent or 0.88 percent, which is what Dr. Kaufmann has recommended.

So I was not in favour of completely ignoring differences amongst utilities, certainly not forever.

MR. THOMPSON: Okay. Well, let's leave it there. Thank you very much. Those are my questions.

MR. SOMMERVILLE: Thank you, Ms. Girvan. Oh, I beg your pardon.

DR. KAUFMANN: The question was directed at the three of us.

MR. THOMPSON: I didn't mean to cut anybody off.

DR. KAUFMANN: I would like to say just a word about misclassification. It has received a lot of attention.

I don't want to open up a huge new area of debate and discussion, so I am not trying to do that, but I do have to correct some statements about our work which are not true.

If we go to Professor Yatchew's slide 21, he said here that what he's done is he has taken our approach for determining stretch factors and applied it to the US data, and he has determined that 30 percent of these companies are misclassified.

I just have to point out that this is not the way we are determining stretch factors for two reasons.

One, stretch factors do not depend on any single company analysis -- company benchmarking analysis. It

depends on two. This is only one.

So this does not and cannot capture what we have done, because what we have done is we have looked at two, and we have done that primarily to reduce the extent of what's called misclassification, to increase the robustness of our results. So that is one thing. That is not an accurate reflection of the recommendations and the basis for the stretch factors.

The second thing, and I am not entirely clear what Adonis has done here, but if you just focus on the econometric model, our econometric benchmarks, the rankings there, do not depend on quartile rankings. The econometric benchmarks depend on whether companies are statistically significant, superior side or inferior side.

So what we are comparing is we are arraying companies essentially on the difference between actual costs and expected costs under the model, and then whether or not those differences are statistically significant one way or the other.

If they are, then that's where the lines are drawn, and that's -- I am not entirely sure where these results come from, but this is not what we've done even on the econometric model. The econometric model is looking at significance, per se, and that is not what is reflected in this slide.

So, again, I am not trying to be overly critical here. I think this is an interesting analysis, but this does not reflect the basis for the recommendation. Therefore, I

don't think it is an accurate reflection.

You cannot say that this -- that 30 percent will be misclassified based on this analysis.

MR. SOMMERVILLE: Ms. Frayer.

MS. FRAYER: One thing I wanted to bring up, and I don't want to spend too much time on it, but we also submitted comments on the two benchmarking techniques, even in the econometric model, since that was brought up as one of the benchmarking analyses, because utilities are ranked based on how they perform vis-à-vis a projection or an expectation, to the extent that econometric model in and of itself is not calibrated to represent all of the cost drivers for that utility, that will make it wrong, too.

I just wanted to lay out that there is a lot of potential avenues for -- by design, models are not going to be perfect. There always will be measurement error. Our concern here is that the measurement error or the potential for it is so substantial that we want to be cautious, because the distortions it creates could be quite realistic.

MR. SOMMERVILLE: I hear all of you expressing caution about the stretch factor exercise. I mean, I think Dr. Kaufmann, you have, I think, frankly indicated that you think we should be cautious about our entry into this exercise --

DR. KAUFMANN: Yes.

MR. SOMMERVILLE: -- simply because it is the first step and so on.

What I see are gradations of how we deal with that uncertainty, and I hear another one from Mr. Thompson, who is saying, you know, collapse the disparity between the classes, if you like or between the cohorts.

So I see everybody basically saying they're a little uncomfortable betting the farm on this particular generation of stretch factors. Is that a fair assessment?

MS. FRAYER: Hmm-hmm.

DR. KAUFMANN: We don't want to bet the farm but own on the other hand, I -- maybe an old cow, but...

[Laughter]

MR. SOMMERVILLE: I also hear, with the exception of you, Dr. Yatchew, I sense that there is not a sense that stretch factors are -- Ms. Frayer, you're not suggesting stretch factors are inherently perverse in the same way that I think Dr. Yatchew characterizes them.

I think he says, we really only have a role in a very particular peculiar set of circumstances, and these aren't those circumstances.

But I see you saying that you do support a, some kind of productivity spur, but that it ought to be handled carefully?

DR. YATCHEW: Who?

MR. SOMMERVILLE: I was asking Ms. Frayer if that was an accurate characterization?

MS. FRAYER: I understand the basis for how the Board intends to use stretch factors and I agree with them.

I would have had a preference for the stretch factors

to be centered around the industry average, which would produce different levels. But I also want to accommodate the Board's previous and firm decisions already.

I do have concerns that the spurt can't go on forever. In fact there is lot of precedent that the spurts haven't been 10, 15 years. There is precedence in Victoria Electricity that Pacific Economics Group actually picked up its own analysis a few years, a spurt of only four years. It is very industry-specific and I just want to be very cautious again that we are not sending the wrong message, if you will, to the sector on where we want them to be.

DR. KAUFMANN: Julia, our 2007 reports in Victoria for electric picked up another spurt. There was a big increase in productivity for electric, just, again, to set the record straight. It is not true that it ended -- that after four years in Victoria for electric.

MS. FRAYER: But the spurts are measures of total factor productivity which aren't necessarily correlated to time in that instance, they're related to all the drivers that drive TFP.

I think what you picked up was an increase in TFP growth --

DR. KAUFMANN: Sure.

MS. FRAYER: -- but it may be driven by other factors at that point in time.

DR. KAUFMANN: It could be but...

MR. SOMMERVILLE: That might be a concern more a little down the road than it is right now for what we have

to do.

Dr. Yatchew, you deserve an opportunity to comment.

DR. YATCHEW: Thank you. You are always very fair.

I would just like to take a moment to clarify my views on stretch factors, because they're not always --

MS. GIRVAN: Speak into the mike, sorry.

DR. YATCHEW: I would like to take a moment to clarify my views on stretch factors for the simple reason that in this kind of process, it is not always possible to layout every single detail.

I think the initial rationale which I read out and which is supported by my colleagues here, that stretch factor is appropriate when you move from one regime to another is the strongest rationale for a stretch factor.

There are additional layers of argument to that. Once incentives, a new incentive scheme takes effect, it may very well take time for the industry and individual utilities to restructure themselves so they're taking advantage of the new incentives that are in place.

That's part of the argument for non- -- not just one-time stretch factors, but perhaps stretch factors that tail off over time.

There is a second element there, and that is that utilities respond in different ways and at different rates to these stretch factors, and they not only take time, but there is also this sort of capital replacement process that has to take place.

So I can see the arguments for stretch factors over

some period of time. I just don't see that they are justified in these kinds of magnitudes at this point in time.

MR. SOMMERVILLE: Thank you. I appreciate that.

Ms. Girvan.

MS. GIRVAN: Just a couple of questions.

Ms. Frayer, you have on your slide 15 an analysis that basically says: We recommend basing stretch factors on applied lower and upper bounds.

I just wondered: Have you used this approach elsewhere and --- or has this approach been used elsewhere?

MS. FRAYER: Well, in effect, what this approach goes back to is a little bit of what Larry mentioned, that there is a little bit of an art to it than a science.

And it marries what regulators actually view in thinking about the art part of it, in that the stretch factor is just one of two components. There's a stretch factor and the productivity factor, and the two go hand in hand and it is really the X factor, the level of the overall X factor that regulators think quite a bit about.

MS. GIRVAN: But have you used this in any other jurisdiction?

MS. FRAYER: No. Because in our –- well, I should say yes and no, in the sense that when we have commented on stretch factors, commented on the appropriateness of stretch factors as a concept where there's been a vacuum of no information regarding relative efficiencies, it has really been in the context of, Well, okay, we measured this

point estimate of productivity but could productivity growth historically been a little bit higher or lower and in the future, could they achieve higher or lower productivity? So in one sense, yes.

In the second sense, where we have been more structured in recommending stretch factors based on relative efficiencies, we have done it and we, meaning my colleagues as well as my associative colleagues at Meyrick & Associates, we have done it on the basis of more regular rigorous relative efficiency studies.

MS. GIRVAN: Getting back to what I was asking about this morning, I guess I am looking at what Dr. Kaufmann is saying, is that you can look at this as sort of a benefit sharing mechanism. So it is a way for ratepayers to benefit up front. I think traditionally the Board has viewed it as that.

In the absence of earnings sharing, I just don't completely understand why you take exactly the same position that you did before.

MS. FRAYER: Is this addressed to...

MS. GIRVAN: The two --

MS. FRAYER: Well, in fact, I think of the benefit sharing aspect, again, to relate to the overall X factor.

So I believe ratepayers will get the benefits not just from this stretch factor, but from the overall X factor, because that is the amount by which rates will decline in real terms over the 3rd generation IRM.

So again, we can't look at them in isolation. It’s

not just, Oh, this is a stretch factor, we don't have ESM so the stretch factor alone is the only element through with ratepayers benefit. It is the stretch factor, plus the productivity target.

MS. GIRVAN: Okay.

DR. YATCHEW: Can I --

MS. GIRVAN: Dr. Yatchew it is not clear to me how you actually came up with those numbers. It looks like you have sort of accepted that the Board has defined the need for a stretch factor.

DR. YATCHEW: The Board has...

MS. GIRVAN: Defined the need for a stretch factor. The Board has determined that. I am not clear how you came up specifically with your numbers.

DR. YATCHEW: They're judgmental.

MS. GIRVAN: So you are sort of saying, If you are going to give it, give it a small amount, but that's it.

DR. YATCHEW: Small amount in order to mitigate the effects of misclassification, which can come from multiple sources, not just the misclassification potential of capital versus OM&A chart but from various sources.

Let me also, if I could take a moment to add on to the response that Julia gave you a moment ago. There is a discussion of consumer dividends and identification of consumer dividends as being the stretch factor. I agree with Julia.

The productivity factor itself, that is put into the regulatory agreement in advance before any utilities have

recognized any savings. So before even -- and in some cases they don't. And yet ratepayers are, on paper, receiving those benefits in advance.

So I really do view the entire X factor, which are ex ante unrealized productivity gains reducing the price of electricity as being a consumer dividend.

MS. GIRVAN: Okay. The other question that I have is really for Dr. Kaufmann, and you clarified this a little bit earlier, but all of this talk about misclassification. You responded a little bit, I think, to Dr. Yatchew's comments. But it kind of troubles me that your analysis is -- everybody is saying there is there is a lot of problems with it because of the misclassifications.

So what I would say is: Why would we go forward with that? So I just want you to respond.

I guess what I would say is maybe it is a starting point. This can't be perfect. So maybe we should try this. I just want you to respond, because there is a lot on the record that is saying your analysis represents a lot of misclassification, but yet some people are recommending going forward with that.

DR. KAUFMANN: Well, I agree it is a starting point and we can improve this over time.

But for the reasons I have said, I don't believe that there really has been persuasive evidence put forth that there is a great theory of misclassification evident in our study right now.

Essentially, the argument that's being made in part is

an argument you could make about any type of benchmarking study. Benchmarking will never be an exact science. Economics is not an exact science.

But that doesn't mean that we shouldn't use the best economic tools and the best benchmarking evidence that is out there.

Again, we have implemented benchmarking and recommended an approach to using that in a way that really minimizes the potential for misclassification, because of the fact that we want coincidence on two different benchmarking results.

Again, if you look throughout the world where benchmarking is used in many jurisdictions, that's not typically the way it is done. Usually there is a benchmarking study. The outcome of that benchmarking study determines the stretch goal, and those stretch goals can be 8 percent. I mean, they can be very significant stretch goals to get to -- to get companies to where regulators believe rates should be.

We are not proposing anything like that. We are taking a much more conservative approach, which I think is appropriate, and I think the methods are also appropriate.

MS. GIRVAN: Okay, thanks. Those are my questions. I think your friend wants to respond.

DR. YATCHEW: I want to respond, in addition. Dr. Kaufmann has mentioned several times that there are two measures here being used to try to assess efficiency of firms, so there are two hurdles.

What I would suggest is that those hurdles are not -- those tests are not really that independent of each other, because if I understand correctly, they both suffer from the capital measurement issue.

MR. SOMMERVILLE: That's the point Ms. Frayer was making a few minutes ago, the idea that the two measures have the same flaw, in that sense. Is that the point you were going to make, as well, Ms. Frayer?

MS. FRAYER: Yes. And I was it is hard for us to know how big of a misclassification error there is, but I think we all agree there is one. These are models by which there is always going to be measurement error. Measurement error in itself means that there is --

DR. KAUFMANN: All we know is there is a probability. We do not know that any given firm is misclassified one way or another. All we can say is probabilities. That is all we can mention.

And if we're talking about potentially two companies, two companies that -- you know, maybe there should be nine in group I instead of 11. Maybe there should be nine in group III rather than 11. I mean, that is okay. This is not -- it's not perfect.

There are so many decisions in regulation where there is not a perfect right answer, but I still think that, you know, we've gone to pains to try to control for the possibility of a bad outcome, an inappropriate outcome.

MR. VLAHOS: Sorry, just on that point, there is always -- I guess there is always a statistical source of

misclassification. I think you probably, all three, would agree with that. But is there anything specific, anything idiosyncratic to this exercise we have now for the first time, that would make that risk more troublesome for the Board? That's my question.

So -- and, Dr. Yatchew, you went through four or five different potential -- at least potential sort of sources.

So would those -- would you expect -- I guess they're all here, but would you expect all of them to continue in the future or are those temporary phenomenon, to some degree?

DR. YATCHEW: First of all, statistical error is always going to be there.

MR. VLAHOS: Right.

DR. YATCHEW: The misclassification error due to capital versus OM&A models, that should improve once you have moved to total cost benchmarking.

The measurement of the labour variable should improve if you are able to get data on lineman rates. The measurement of age of capital stock, which turns out to be a very important variable, your ability to resolve that issue depends very much on whether utilities can get meaningful measures of the age of their capital stock. They did collectively in the mid 1990s. Whether that is an exercise that is going to be engaged in again, I don't know.

There are certain inconsistencies that could be resolved pretty quickly. For example, the rule that PEG

has put forth is based on -- as I read it, the implication is it is based on an 80 percent confidence interval; hence, my 20 percent type 1 error. That is not what they say they're doing in their calibration document.

The calibration document says for each model, 90 percent confidence intervals were constructed around distributors' OM&A costs, and then these were compared. OM&A costs were compared to the predicted cost in confidence levels.

So there is an inconsistency that could be resolved immediately. That would, in turn, change the proportions that are in the tails relative to those that are in the middle.

MR. VLAHOS: Right. So in the long term -- I guess in the long-term, the next generation or couple of generations, we're only going to be left with the issue of the statistical probability of being off?

DR. YATCHEW: I am sure there will be much debate about the quality of the data, but if I might just add, I think - and this is something I wrote in a paper eight years ago in The Electricity Journal - that part of the value of this process is that utilities that get -- find themselves being treated inequitably will come forth with that information and hopefully improve the nature of the entire information set.

MR. VLAHOS: So your argument, then, given this specific circumstances in 2008, you would argue for what you are arguing? You may not feel as uncomfortable I guess

the next time around when we discuss the same issue.

DR. YATCHEW: In accepting higher stretch factors?

MR. VLAHOS: Yes.

DR. YATCHEW: That would depend statistically on how we have done in the interim and whether we have under-estimated productivity growth.

MR. VLAHOS: Then the issue will turn to the actual data observed?

DR. YATCHEW: Yes.

MR. VLAHOS: Not to the potential errors of -- not potential errors of misclassification.

DR. YATCHEW: To the extent these have been mitigated.

MR. VLAHOS: All right. Thank you.

MR. SOMMERVILLE: Mr. Harper.

MR. HARPER: Maybe we could start off -- I think my questions spring out of some of the comments that you made, Dr. Yatchew, and if the other two have anything to add, I'm sure you will put up your hands and do so.

I guess it has to do -- when I first listened to the issue around stretch factors, it seemed that there were really two roles to stretch factors, and one was the one that I think was the view that under a different regime with more incentives, there may be a view that people may be able to get higher levels of productivity, and there's been some question -- there was a question to Dr. Yatchew about how long you think that could continue for.

It seems to me that the second issue that's come up within the context of this idea of having a stretch factor

is to recognize that firms have different -- are at two different points in terms of improving their efficiency, which seems to me is a fundamentally different issue than having a stretch factor just because we think everybody is going to be more incented to be able to define efficiency improvements.

If people are at different stages in improving their efficiency, then some people have more room to improve than others. It seems to me that is the second aspect that the stretch factor is trying to capture.

Does everybody agree that, you know, like, at a conceptual level, we have two things we're trying to pick up here with the stretch factor. One is, you know, sort of the change to a different regime and perhaps people would be more incented, and the second thing is trying to recognize that there is difference levels of efficiency that exist right now and, therefore, people may have different opportunities. And even it there was no stretch factor for the first reason, you could still think of having different stretch factors for the second reason, at least at a conceptual level.

Is that a reasonable way to think of that?

DR. KAUFMANN: I believe so. I think what you're saying is the first of those issues really has to do with the mean stretch factor. That is kind of what you would expect on average because of the transition.

Again, it is not -- the transition, the impact of the transition on TFP growth can persist for many years. So

that's the first issue, is the impact of that transition on the mean growth.

The second one has to do with the differentiation where you start out relative to average efficiency trends in the industry, it's going to impact your ability to achieve incremental TFP trends. So that is kind of the differentiation relative to that mean, and you can have group I, and how much different group I is relative to the mean, how much different group III is relative to the mean.

MR. HARPER: Is it fair to characterize, say, I mean you, Ms. Frayer, and Dr. Yatchew, that your sort of view of zero at the bottom and the small difference is the fact that while we're concerned about whether we're picking the mean or that's the bottom of -- and that's why you have a stretch factor of virtually zero or for them or it is zero for them, and then fairly small increments I guess in part because of the concerns about the data and being able to determine how much additional efficiency we think -- we contribute to the non-efficient utilities simply because of the quality of the data we're dealing with.

DR. YATCHEW: Yes. Then there are the other elements I mentioned, one of them being we arguably have been in a long-term regime of some sort of yardstick competition, and in addition, incentive regulation. The third element that I haven't mentioned and sort of the conceptual analysis that one might want to do is, in analyzing stretch factors, is what are the new incentives being put in place by this regime, by this particular report relative to what we had

yesterday and relative to what we have had over the last several years?

There are some new incentives or, let's say, elements that will assist utilities. One of them being a well defined three-year term. In the prior regime it was a very short term. Now at least it is medium term which allows utilities to harvest some of their gains and, therefore they have a greater incentive to define those gains

Again, returning to the conceptual question. What are the additional positive incentives in today's regime versus the flavour that we had yesterday, versus the one that we had five years ago and so on?

MR. HARPER: Well, I would like to maybe -- Dr. Kaufmann then you talked about whether it is 90 percent confidence interval or 80 percent confidence interval. What I was trying to get a handle on is you looked at what was the forecast OM&A level, then they had to be outside of the confidence level.

Now, in percentage terms, how much would have the OM&A have to have varied from the forecast OM&A in order for you to get outside of your confidence interval, whether 10 percent higher or lower than forecast, 20 percent higher or lower than forecast. In percentage terms, how much does the OM&A have to differ from the forecast number before it tripped outside of your confidence level?

DR. KAUFMANN: That differs by company.

The confidence interval is going to be specific to any given company, for example, where they are relative to the

mean. I mean as you get farther from the mean, as any given company gets more and more of an outlier the confidence levels expand to reflect that. There are a number of factors that go into the confidence interval so there is no one correct answer to that. It varies company by company.

I don't recall the exact -- I can't even give you an average figure in this particular study because this wasn't my study. I wasn't involved with the details of it.

But a typical total cost study of the type that I have done in the past it is usually about 10, 12 percent. So there's a range, you know, the confidence intervals usually range around that. If your actual costs are 15 percent below predicted, then in most cases you are going to be a superior performer.

MR. HARPER: I will tell you the reason I was asking was, we have been talking about, you know, people talking about they want to use a fairly small number because they're uncertain about what is the amount that can be achieved.

I was thinking from the other perspective and thinking, if I have a, let's say, 15 percent difference between somebody at the bottom and somebody in the middle and I take a very long-term total capital turn over 40 years, but I forget the compounding and I think if I am going to increase that difference by 15 percent over 40 years, what's that, about .25? You know, .255 a year? You know which would say okay maybe that would mean a .25

difference, but then I want to maybe conservative -- I was trying to get a sense for if I was just doing this from the other end and saying what would be the -- what would be a number you might expect if people were to move to that over 40 years being the longest time you would use, because that gives you a total opportunity to change over all of your capital, what is the upper range you would then want to maybe sort of judgmentally reduce the number by a little bit because we're uncertain about the data?

I would just like you to maybe comment on that as a perspective.

MS. FRAYER: What I wanted to -- maybe this is not answering your question, but maybe it would help me understand the question a little bit better. I wanted to give a real world example of what we're talking about in terms of the distortions.

Let's take a utility that ranks really well on OM&A study. Maybe that it is ranking really well was that utility decided that that transformer it is going to replace that transformer with a new transformer. With a neighbouring utility that has a same transformers has decided that, no, I am not going to replace it a new transformer I am actually going to refurbish that transformer so its recorded OM&A goes much higher than its neighbouring utility but that is because it made a capital labour trade-off decision, a very intentional one, that is not being represented in the model.

MR. HARPER: Excuse me. That is the reason why you

would discount and I guess all of you have said to some extent we have to discount and be conservative going forward. That is one reason you would discount. I accept that. I am trying to get a sense of what am I discounting from? If I had a perfect world like -- and I knew what that number was, and it was -- like I said, it's going to .25 or higher if I think I can get to my efficiency in more or less than 40 years, I would then discount the number down. I accept your point that is a reason for discounting. But I am discounting from something. And I guess that is what I was struggling with.

MS. FRAYER: My response is, if you had a robust comprehensive total cost benchmarking study, you would actually be able to look at the -- not just the ranking because right now all we have is ranking, we put one before the other. We're not looking at relative efficiency levels, but my response is in a future once you do a very good study you look at the relative efficiency levels and you determine how quickly you want -- the ones who are lagging behind to catch up. That's when we know the number. It is an empirical question that could be answered that way.

MR. HARPER: That’s what I was wondering. Conceptually I wasn’t thinking about the wrong way, it’s just we don't have the data to fill out the model right now.

DR. KAUFMANN: I was just going to see, I am not sure if I understand your question but let me see if I can

rephrase it to see if in is what you were driving at.

Are you saying: Is there a way that we can use the results of the -- of an econometric benchmarking study to set stretch goals?

MR. HARPER: Yes. I guess that, to some extent, is what I was trying to say.

DR. KAUFMANN: Okay. So I think the answer to that is, yes.

For example, what you could do is you could say -- and this would be a much stronger application of benchmarking results than what we had. But you could say, let's say we do a benchmarking study, total cost benchmarking study. We rank companies from top to bottom in terms of the difference between their actual and predicted costs and we have that in terms of percentage.

Let's say that what we want to do is we want to establish a standard, and we want to have an upper quartile standard so we want all companies to move towards an upper quartile standard. Let's say the upper quartile company is something like 20 percent below. So the difference between their actual cost and predicted cost is 20 percent below. Now we want all companies to move towards that standard over some number of years.

So you could actually take that result, that is your long-term standard. You could look at where companies are right now. Let's say a company's cost is equal to their predicted costs right now. You want them to reduce 20 percent from now and let's say 10 years so you could have a

stretch goal of 2 percent.

That's a big number --

MR. HARPER: Yes. If you are uncertain about the data now, you might say, Well, 2 percent is maybe a little -- this is why I was trying to get into the second round we have people here concerned about the data. That number, whatever the right number is, we will have to approach a little bit of caution and use something a little bit less than that right now because we are uncertain of the quality of the data we are deal with and issues like that.

DR. KAUFMANN: Qualities of the data is a different source of uncertainty, but the model itself can quantify -- it does pick up the uncertainty to some extent with the data. It does pick up the data variability that, is reflected in the benchmarking, that is in the confidence interval, but not entirely because you still want to get the data right.

But it does reflect that to some extent, and I think that is one of the benefits of using econometrics, is that you do get more certainty around that and you can use that as a basis for setting goals in the long run, that you have more confidence or attainable as opposed to something where it is just more, you can't distinguish between real performance gains versus random error.

MS. FRAYER: Larry, just to confirm. You said in this illustration or this discussion of illustrative numbers, what I heard, and the key for me was it was a total cost-based econometric --

DR. KAUFMANN: We all know that that is where we want to go.

MR. HARPER: Okay. Ms. Frayer, if we could go to slide 15 on yours which I guess is where you were coming up with your, using the three different -- using three different, the four different methods and coming up with a range.

Maybe I can express to you a bit some reservation I had with the approach you took and you could maybe see whether I am right or what the error is and my concern. Each of these four lines represents really a different methodology, if I could put it that way, or different combinations of methodologies to estimate total factor productivity?

MS. FRAYER: I think different scenarios primarily in the range is driven by different views on what happened in the missing years' period and different views on what's happening in the near term.

MR. HARPER: Yes. But each of those lines is really an amalgam of looking at -- it is the average over all of the utilities in each case. That line is an average. It is not an analysis over --

MS. FRAYER: Industry average.

MR. HARPER: It's industry average. I guess what struck me is that rather than comparing three industry averages, what we're trying to do with the stretch factor is identify what's the variation around any one of those particular lines. And to the extent there is a variation

around any one of those lines, going to my second view of, you know, you're trying to get people to move to being -- look like more superior performers, you are trying to get the people who are below the line and say they should be trying to move up to at least the line or above the line.

So I wasn't too sure of whether the analysis you did here was -- honestly, was telling me at all anything about what was the appropriate stretch factor to be done, which would look more at what is the variation around each of the individual lines.

MS. FRAYER: Well, we don't have any -- unfortunately, we don't have information about the relative efficiency levels, because, again, if we did -- that's the analysis that I described at least qualitatively that I would prefer we would have done.

So stepping back, my underlying concern was: What confidence do we have that we are setting -- knowing we need to set stretch factors, because that was one of the fundamental objectives and the question the Board posed to us, the next question was: What confidence range do we have about where overall X factor should lie for the future?

MR. HARPER: That really goes to -- if you go to my first question, which was there is two components that we're trying to identify in the stretch factor. What you're doing here is really just identifying what is the possible range around what's a reasonable stretch factor based on the average, not based on looking at relative

efficiencies.

MS. FRAYER: Again, it is due to the fact that we don't have the data.

MR. HARPER: Right. So to some extent, it is only giving me half of the answer, if I can talk about it that way, as opposed to the whole answer.

MS. FRAYER: Well, it's giving me -- it is looking at the final answer, the X factor that you want, which is composed of two parts, the stretch factor and productivity factor.

MR. HARPER: That presumes that the X factor doesn't take into account the fact I am trying to move the least efficient up to look like the more efficient, which is the variation around the line. I guess that is the point I was trying to get at.

MS. FRAYER: The X factor is based on an industry average by definition. So --

MR. HARPER: But the stretch factor, what we are trying to do is move people to be better than the average, I thought.

MS. FRAYER: Well, in effect, what we're saying is we are pushing people to be better than the average with the stretch factors we are recommending, but we don't want to push them too hard that we're basically running into a level of X factor that we think is just untenable, because we don't have the basic tools that we need to do a better job at classifying firms and incentivizing them.

We are more likely to do harm than good in distorting

incentives. So it is more of, like, a cautious tale, if you will.

MR. HARPER: Thanks. Those are all of my questions.

MR. SOMMERVILLE: Mr. Aiken, how long do you think you might be?

MR. AIKEN: Zero minutes.

MR. SOMMERVILLE: Zero minutes? That is genuinely efficient.

[Laughter]

MR. HARPER: Cohort 1.

MR. SOMMERVILLE: Are there other questions on this subject matter?

MR. VLAHOS: Dr. Kaufmann, could you just clarify? I know you spoke to this before, the other day, but I guess slide 34, when you -- you described group I as significantly superior, and then group III as statistically inferior.

It's not a typo, is it? You spoke -- I think you spoke to the difference in those two.

DR. KAUFMANN: Those are -- it is a typo.

MR. VLAHOS: It is a typo?

DR. KAUFMANN: Superior means statistically --

MR. VLAHOS: Okay. So I should change to what? Statistically, I guess; right?

DR. KAUFMANN: Yes, statistically.

MR. VLAHOS: I would appreciate the views of all three presenters. I know Mr. Shepherd is not here to answer this question. On my notes, he had noted in his presentation,

in support of his recommendations for the stretch factors, he linked the materiality under the Z factor to his recommendation for a stretch factor, i.e., 0.5.

My note here was the materiality, with respect to the Z factor, is an exogenous factor and has little to do with incentive that the stretch factor purports to attain.

So do you have any comments on that, any of the three of you?

DR. KAUFMANN: Yes. It is -- his argument was that we -- ultimately, what you want to do is you want to get the company's attention. You want this stretch factor to be big enough to motivate real changes in behaviour.

He is saying there is some evidence in the IR decision about how big that number has to be for something to be worthwhile of special management attention, I suppose is the way he put it. I think that is an interesting argument, but I do think the difference -- that there really is a difference between the costs -- the way I see it, that materiality threshold is really designed to reduce regulatory costs and reduce burdens on staff as opposed to something that's focussed on management attention, per se.

So I think that it does serve a different purpose, and it is not really linked directly to getting management's attention to change operations. It is more just to prevent frivolous violence and the costs associated with it.

MR. VLAHOS: Ms. Frayer, you want to say something?

MS. FRAYER: What I wanted to -- it was interesting when Jay was speaking, I was thinking through about this,

because I understood the precedent from the Z factor perspective. But I think a couple of points here need to be made that distinguish this apples and oranges comparison, the first point being that the Z factor is supposed to be representing uncontrollable costs.

MR. VLAHOS: Right.

MS. FRAYER: What we're talking about here is setting an overall X factor for costs that management can control. So really it is apples and oranges in terms of comparison.

The other point to make, also, again - and it is kind of a theme now from the last 30 minutes of conversation - is if point 5 percent is supposedly the right number, well, then it should be 0.5 percent as the X factor that is the right number, because the stretch factor is just one component of X factor.

So the stretch factor is just a component of the X factor. You also have to consider there is that productivity target. So I think, again, it is an apples-to-oranges comparison, because the utilities will be working towards the overall productivity factor -- sorry, the overall X factor that it set. They will be trying to achieve that.

They won't just be achieving the stretch factor or, in that regard, the productivity factor. They will be trying to meet the overall productivity objectives the Board sets for this.

DR. KAUFMANN: Can I respond to that, because this is an idea that is really central to incentive regulation.

I think you are confusing the role of productivity factor and the stretch factor. It is a fundamental tenet of setting the terms of incentive regulation plans that what you're doing is you're departing from conventional cost-of-service regulation, which is cost-based, and the idea is that if you want to put a company on automatic pilot, in a sense, where their rates are going to be set by a formula rather than cost, you have to satisfy the just and reasonable standard.

The productivity factor is designed to satisfy that standard. It is not designed to be a benefit-sharing device. So it has not traditionally or conventionally been interpreted as something that shares benefits. It is something that is used to adjust rates in a manner that is just and reasonable without having cost reviews year by year.

The second component is designed to reflect the expected acceleration relative to history. So I think it is important not to confuse those issues. I know I differ with my colleagues on that, but, again, you can look at almost any incentive regulation decisions that have considered this in any detail and I think they spell out that framework and the paradigm pretty clearly.

MS. FRAYER: But in the end, you still want just and reasonable rates. Just because you are adding a positive stretch factor doesn't mean that you are going to be departing from just and reasonable rates.

DR. KAUFMANN: No.

MS. FRAYER: And to keep in mind, the utilities aren't just going to worry about the stretch factor or the productivity factor. They're going to be trying to achieve productivity gains on the overall X factor so they get back to their allowed rate of return, because, in effect, if they're just focussing on one component, they are not going to achieve their allowed rate of return.

MR. VLAHOS: I think we're moving away from the intent of my question. I just wanted to give some reason for Mr. Shepherd to make his submissions tomorrow so he won't be surprised if there is opposition to his proposal.

So I think we accomplished that.

MR. SOMMERVILLE: We will take 15 minutes at this point. When we come back, we will start presentations on the capital module threshold and we will start with you, Dr. Kaufmann, when we come back.

We will reconvene at 25 minutes after 3:00.

--- Recess taken at 3:05 p.m.

--- On resuming at 3:25 p.m.

MR. SOMMERVILLE: Thank you.

Thanks. Just a little announcement. It looks as though we will have no difficulty in wrapping this up by noon tomorrow. So those of you who have travel arrangements to make, can make them confidently, with the noon departure in mind.

To that end, we need to move on now to the capital module threshold and, Dr. Kaufmann, you are leading that off.

DR. KAUFMANN: Thank you.

MR. SOMMERVILLE: I beg your pardon. Mr. Cowan, you are leading that off.

MR. COWAN: Yes, indeed. Thank you, that will give Dr. Kaufmann something to refer to in his remarks, in a moment.

The question, as stated in the material in the Board's report is: What is an appropriate capital expenditure to depreciation threshold value to determine materiality?

So I propose to walk through this, from the perspective of establishing some ranges of possibility in order to try to illuminate what Board Staff sees as some of the dimensions that need to be taken into account.

I propose to do that by addressing four things as explained on this particular frame.

Page 3 of the material, and hopefully put a bit more flesh on the bones of what a materiality threshold might look like.

We will look to some of the background material, explain some components in the staff analysis that we have done, and perhaps provide an illustration then of how those components might be applied showing the implications of choosing a threshold at various selected levels in order to give the panel something to work with.

The next frame being slide 4, goes through the background and quotes, although a little bit in abbreviated form, what was stated in the Board report.

"The Board has determined that there will be an

incremental capital module in 3rd generation incentive regulation. For incremental capital expenditures to be considered for recovery prior to rebasing, amounts must satisfy the eligibility criteria set out in table 5...”

Which is actually provided on page 5 of this material for your reference. I won't go through those in detail. But then going back to page 4, the third bullet:

"The eligibility of a distributor to apply for rate relief through the module will be subject to a materiality threshold. However, the Board would be assisted by further consultation on the appropriate materiality threshold..."

So the key here is that once a utility passes some eligibility criteria, in terms of a threshold, it would be then in a position to apply for rate relief with respect to capital expenditures.

The last bullet here: “The Board has also determined that there will be an annual reporting on actual capital spending and a prudence review at the time of rebasing."

So on page 6, we have taken a few moments to characterize what we see as the potential major components in calculating a threshold.

The items A and B under the "materiality threshold" are two numbers that are needed for this particular illustration to work.

Item A is the average of the three most recent fiscal years' actual net capital spending, and to be specific, it

is the addition to in-service property plant and equipment, minus third-party capital contributions.

So that's what we mean by "net capital spending" averaged over the three prior fiscal years.

The second number that is required is the most recent year's depreciation expense.

Then item A is expressed as a percentage of item B; in other words, the average capital spending is expressed as a percentage of the depreciation expense, and that, then, results in item C under the materiality threshold.

That percentage is then compared to some threshold number which we have used X for purposes of this illustration, and if the percentage C actually exceeds the threshold X, then the entity is eligible to apply to the Board.

In the application that that party might well make, one would expect that they would demonstrate that the criteria in table 5, previously referred to, were met, and that the incremental revenue requested would not be recovered through other means.

That is not spelled out in the table, but I think it goes without saying that you do not want the utility to be double-counting.

And sources that might give rise to other means of recovery would be such things as customer growth or potentially capital contributions from third-party developers.

So on the next slide, page 7, the components that seem

to us to logically relate to being included in some way in the materiality threshold are basically, we have attempted to list them here. And we have started with a base number of 100 percent to represent the fact that there is already a depreciation value in the revenue requirement that has been established in the rebased year for the entity.

So if one regards that number as the starting value of 100 percent, then we are suggesting that there are two or maybe three -- but two clear, to us -- two adders that need to be considered.

You will see a little asterisk at the bottom that suggests that customer growth would be considered separately and I will comment on that more fully in a moment.

Let me zero-in on items 2 and 3 here for a moment. Double X percent, which is intended to be -- to recognize that whatever IRM 3 escalator is chosen for a particular utility, if that amount is positive, it will automatically provide new money that could be used to fund incremental capital expenditures.

So by virtue of there being, say, an amount, I am going to use an illustration in a moment of a 1 percent escalator after we go through all of the productivity and stretch factor calculations, if the resultant number after taking inflation into account came out at 1 percent, we will have a look and see what the effect would be, and what we're suggesting here is that there is automatically some number that will be derived from that that will be

available for funding the return on and return of new incremental capital.

So that's what item 2 is all about, and we will illustrate the math for that in a moment.

Item 3, the inflation adder. This is to try to recognize the fact that depreciation represents the allocation of costs that were incurred in many cases a long time ago, so the dollars of those years are not representative of what it would cost if one were trying to use the depreciation number as any sort of proxy for what it would cost today to replace an asset.

So if one was to attempt to find a reference number, a threshold above which you could say that a utility was experiencing excessive or unusually high capital expenditure demands, you would want to try to bring the dollars into the dollars of the year as opposed to accepting the depreciation number as anything more than a incidental piece of information.

So to make it useful, one needs to bring it into dollars of the year.

I will comment on ZZ, item 4, "other" shortly. So let's zero-in for a moment on the XX factor here, item 2, and determining that particular value.

So as I said before the IRM 3 escalator already provides dollars to fund new capital expenditure, because depreciation and return on rate base are already in the base year costs.

I have pulled here for you numbers that are the

summary numbers, the provincial totals for all of the electricity distributors as recorded through the RRR and posted on the Board's website and contained in the statistical yearbook that I think has received a fair bit of currency over the last couple of years.

In particular, from the year book, you would see that the total depreciation expense in 2006 for all Ontario distributors was $676 million.

You would also be able to determine that the approximate weighted average cost of capital return, if you like, at 7 percent, could be applied to the rate base number, the proxy value that we have used, and we drew this also from the statistical year book by saying, Well, what is the net book value of the property, plant and equipment, as reported?

Add that up for all of the utilities. It comes to 9.5 billion, and then apply the weighted average cost of capital that was approved for 2007 as an approximate value of 7 percent.

I can decompose how we got the 7 percent, but just suffice it to say we used 8.57 percent for the return on equity, and an equity thickness of 40 percent equity and 60 percent debt, with 4 percent of that attributable to preferred shares.

So if one applies 7 percent to the rate base of 9.5 billion, you can see that in the underlying revenue stream that has gone to the utilities, 667 million of it can be attributed to the returns that would have earned on their

rate base.

The tax effect of the equity component of that return is a further 144 million. If you add those three numbers together, you will find that it comes to -- and I apologize for not having put a little line in there to show it is a total, but the figure 1,487 million is the total of those numbers above.

And if you look at the total revenue in -- the distribution revenue in total in Ontario, you will find that that represents more than half, 57 percent of the total distribution revenue.

As an aside, this is an interesting affirmation that total cost -- total productivity analysis has -- definitely the right way to think about the utilities, because capital costs are a dominant component of what appears in the actual costs of operating a utility.

So that's an aside. Perhaps we can ignore it, but the next point, then, is if the IRM 3 escalator is 1 percent, as I suggested might be a possible number a moment ago, there will be automatically $15 million more to fund new capital-related costs. And I get that by taking 1 percent and applying it to the 1,487 million that we determined a few moments ago.

And then one can say, Well, how much -- or ask the question: How much would that incremental $15 million support by way of new capital expenditures? And you can get at that by saying, Well, all right, let's work backwards. The average depreciation rate is 4 percent, and

that is supported from the statistical year book, and actually I show the detail of how the 4 percent arose on the next slide.

But if you just take that as given for a moment, then that, plus the weighted average cost of capital of 7 percent, means that $15 million of new money in rates would support $136 million of new capital expenditures. At 15, I show how the division works there to give you the $136 million.

Now, if you step back and you say, Well, all right, so we have given ourselves a calculation that shows that a 1 percent increase would produce -- support potentially 136 million of new capital expenditures, that can be observed to be approximately 20 percent of the annual depreciation that we were referring to earlier, simply by dividing 136 by 676 million for the depreciation number.

So there is not a control link between these. It is an observed statistic simply to say that when all is said and done - and I have summarized it at the bottom - a 1 percent IRM 3 escalator provides enough new money in rates to fund new capital expenditures equivalent to about 20 percent of depreciation expense.

Now, if the escalator were 2 percent, we would find ourselves able to fund approximately 40 percent of new CAPEX to the extent of approximately 40 percent of the depreciation amount.

So I am going to move us now, if I could, a few slides ahead to number 11, which is the illustrative application

of the components, just so we can keep track of what we are -- or what I am describing here.

You will see on this table that I have started with a base value of 100 percent, and then I have shown ranges of potential values and I am building it up. We will talk next about the inflation factor of 50, but you will see here that the amount arising automatically from the IRM 3 escalator is -- at 1 percent is 20 percentage points associated with the base depreciation.

At 2 percent IRM 3 escalator, it would be a 40 percent equivalency with regard to the underlying depreciation.

So let's go back again now, and we have finished describing the IRM 3 escalator on frame 8, and I propose just to walk through some analysis that we have done to attempt to proxy value the depreciation by bringing it into dollars of today.

This is on page 9. So the inflation adder here has taken into account the notion or the observation that the average age of the property, plant and equipment in Ontario is 25.3 years. That is derived, again, from the statistical year book that shows that the total gross plant, property plant and equipment is 17-and-a-bit-billion dollars.

We know that the total depreciation expense is $676 million. So one can then conclude that that $17 billion worth of property, plant and equipment is being burned off annually through the depreciation expense at the rate of 676 million a year, and it will take 25 years -- 25.3 years

to fully retire it at that rate.

One could express that as a percentage, and it is just under -- and I rounded it to 4 percent depreciation per year.

So you will recall in the previous slide that I had asked you to take on faith the notion that the average depreciation rate is 4 percent, and I would suggest that this introductory piece that I have just given you here gives you the reason that we used 4 percent.

Now, just to re-emphasize the point, though, the second bullet says that the depreciation reflects the dollars of the years the assets were placed in service, not current replacement dollars.

So we have made an effort to try to bring the value of those historical dollars into current dollars and done it this way.

If you assume that the utility asset base is relatively stable, which is not a terribly precise assumption, but I think reasonable for purposes of what we're doing here. If you assume it is relatively stable - in other words, new assets are being added at about the same rate that old assets are being retired - then at any given year in a stable environment such as that, any particular asset that you might choose is likely 50 percent consumed at any point in time.

So that would suggest that the average asset is, therefore, at its half life or 12.6 years old. And I have taken 25.3 and divided by two to get 12.6.

So that is to say that if you are going to replace the average asset, that perhaps the way to bring the dollars to the dollars of today is to inflate them at CPI over a period of years. The question then is: Well, what period of years?

So what we did is we obtained the information, the CPI change, Canada and Ontario, over 25 years from Stats Can, and I have given the table, I think, on page -- yes, page 13, where I have quoted the data points that came to us from Stats Can.

If you look quickly at page 13, the first two rows of data are the ones that came from Statistics Canada.

And if you then express the growth over that period as an index, you find 233 and 237.6 percent respectively for Canada and Ontario. And then if I could spell equivalent correctly, please insert an "I" in there, but the equivalent annual compound rate that would give you 235 percentage points over 25-1/2 years is 3.25 percent. That's the compound rate underlying that rate if you were to assume linearity in terms of the rate.

If you then -- I am suggesting that that is a reasonable approach to take, because any given asset is somewhere on the curve from time zero or the first year, 25 years ago, somewhere on that curve, and so I have suggested that a linear compounding is as reasonable as one could probably justify.

If you begin at the 12-and-a-half-year mark and inflate at three and a quarter percent per year, you hit

49.1 percent as that effect of a 12-1/2 year compounding at 3-1/4 percent.

So if I can take us back for a moment to page 9. You will see that on the second last bullet, that I am suggesting that if replaced today, inflation at CPI would have eroded the purchasing power by 49.1 percent over 12-1/2 years of a 25-year time span which is equivalent to approximately 49.1 percent.

And then, in the final bullet, that escalation of depreciation today by approximately 50 percent would bring -- or 49.1 if you want to be more precise -- would bring the depreciation value to an approximate current dollar value.

This is how we derived the number that appears on slide 11 for the inflation adjustment.

I will just go back again, now, to slide 10 because we did comment earlier that there could be other factors and uncertainties that affect the calculation of the threshold based on historical costs.

Those include such things as the accuracy of an assumption that the escalation factor will be about 1 percent.

You will recall that I showed what the effect would be if it was 2 percent, the accuracy of the other estimates that are in here. The assumption of stability and a stable utility environment where the rate of retirement is approximately equivalent to the rate of addition of new assets. The historical uplift in the prices for capital

works, in addition to inflation; in other words, there's market forces that apply to the price of steel, the price of copper, that go beyond simply inflation. This methodology doesn't attempt or doesn't factor those in. Nor does it recognize that the manufacturing techniques for building transformers or lines or poles may well have advanced over a period of 25 years, such that hopefully the more efficient processes are in place.

Hence, in our table right at the beginning we have said: Leave room for ZZ "other." We have not found a way or a means by which those could be particularly quantified.

So from Staff's analysis perspective, we see that it is easy to speak to a range of values that we believe are characterized on slide 11 of the order of 170 percent of the depreciation would be a threshold beyond which one could expect a utility to be in a position to argue that it had unusually high demands for capital and, therefore, ought to find a way to come before the Board to seek relief through the capital module. 170 I picked, but I could easily have said 190.

Indeed, in the remaining frame, you will see that we have done some analysis of what the implications would be as to how many utilities would be captured under three different levels of this threshold, whether it was chosen as more than 200 percent, more than 180 percent, or more than 150 percent, the numbers of utilities that would, in fact, be eligible if we were to apply the little math that we suggested right at the beginning, which is to take

three-year average in the one case -- which is the middle column -- three-year average capital expenditures compared to depreciation, and in that middle cell it says ten that would have capital expenditures that exceed their depreciation by more than 200 percent.

It happens to be the same number -- although different utilities -- that would be triggered if you were to use single year capital expenditures, namely 2006.

The "ten" distributors out of a population of 83 is credible, that you would -- I don't want the numeric illustration here to overwhelm the idea about trying to choose the threshold using a rational approach I am simply attempting to illustrate what the implications are about making the choice.

We have also noted there are four of those utilities that have a customer growth rate greater than 2 percent.

The particular utilities that are affected and are the ones that are driven into these numbers are listed on page 14, although it is a little hard to read here, but we have provided you with the reference data that we used to do the count.

So back again on page 12, just let me conclude by completing the illustration of this table to say that if you were to work with a threshold of 180 percent, which happens to be midway between the 170 and the 190 on the illustration, you would see that it would increase the number of utilities that would be triggered from the threshold perspective using the three-year average to 13,

five of whom have customer growth greater than 2 percent.

The significance of the customer growth greater than 2 percent is hinted at in a note at the bottom, “Customer growth provides incremental funding for new capital.”

In other words, if there was no change in the rate from one year to the next, but you added new customers, you would add new revenue. Some portion of which could be used to fund capital expenditures.

MR. SOMMERVILLE: So would you be normalizing your assessment through customer growth?

MR. COWAN: Our suggestion, using this frame, is that the utilities test themselves against the hurdle without including a determination of how much is funded by growth but then come back and ask themselves: If, while they may pass the hurdle, the threshold, whether they really should take the time and energy of the Board by making application when it can be demonstrated that a significant component of their funding is already provided through customer growth.

Rather than make it an explicit element in the test -- and I think some of the alternative methods that are going to be suggested may suggest that this growth be embedded in the threshold, our view is that perhaps that adds a dimension of complexity that makes it difficult to apply.

As the descriptions the others may make come forward, Mr. Sommerville, it may become clearer whether it is complex or not. But we decided to leave it out of the actual threshold calculation.

You can see that if the threshold were at 150 percent

instead of 180 or 200, that the number of utilities that would be drawn or captured under either the one year or the three year would be considerably larger, and it would start, in my humble opinion, to become more than the exception circumstance that I think the intent of the capital module was aimed at capturing.

So having said that, the only remaining comment that I have is with regard to using a single year versus a three-year average CAPEX.

We note that depreciation is a blend of data from -- covering a period of, on average, of 25 years' worth of additions to the property, plant and equipment, so therefore has already automatically included a natural averaging. It's smoothed because it is the full file of 25 years' worth.

If you were to add new capital in any new year, it is unlikely it would disturb the total depreciation expense in that year by huge amounts.

Whereas if one is looking at capital expenditures, perhaps it makes sense to take a three-year average as opposed to a single year of capital expenditures, which could be a particularly anomalous year and therefore not necessarily as fair a representation of normal business.

So we thought that this illustrative material would perhaps be helpful for the panel in understanding some of the linkages between depreciation and the potential capital spending that might be instructive.

MR. SOMMERVILLE: Thank you.

MR. VLAHOS: Mr. Cowan, just a minute. I may have a question at this stage.

Yes. Can you just clarify for me, when you look at the average of three most recent fiscal years, just for the purposes of meeting that threshold -- and that's a calculation done by the utility; right?

MR. COWAN: That is -- we actually did the calculation using the RRR reported data provided to the Board.

MR. VLAHOS: But the anticipation is the utility will do the calculation before it endeavours to come before the Board?

MR. COWAN: Yes, sir.

MR. VLAHOS: But the number of -- the CAPEX number that would be requested, do I see that anywhere here?

MR. COWAN: No. That would be their forecast of what they anticipate to spend in the year that they wished the rate adjustment to be applied to.

MR. VLAHOS: So this exercise, then, is just a qualifier?

MR. COWAN: Correct.

MR. VLAHOS: It doesn't speak to as to whether I want $100 million or $300 million, which may be twice or five times what I may reflect in my rate base?

MR. COWAN: Correct.

MR. VLAHOS: Okay. Thanks for that clarification.

MR. SOMMERVILLE: Mr. Aiken. We will break at 4:30 today, which may require us to hear a couple of presentations first thing tomorrow.

I don't think that compromises our 12 o'clock departure promise. So, Mr. Aiken.

MR. AIKEN: Again, I will try to be quick and efficient.

MR. COWAN: Can I enquire, Mr. Sommerville? I think -- are we asking Mr. Aiken if he has any questions of what I was saying or asking for his presentation?

MR. SOMMERVILLE: He is scheduled to make his presentation.

MR. COWAN: I wonder if the other half of what we have from Board Staff would be complete if we had Mr. Kaufmann say his remarks at this point?

DR. KAUFMANN: I have very little to add.

MR. SOMMERVILLE: Well, for the sake of completeness, go ahead.

DR. KAUFMANN: Yes. This is one issue where we didn't make any recommendations and didn't undertake any independent analysis.

However, a point that I have made in several instances in the proceeding is that there is an implicit adjustment for capital expenditures that exists in the price adjustment formula, and that's because a historical level of CAPEX is built into the productivity factor and if you have more CAPEX, you are going to have lower TFP growth, all else equal, and that means more price escalation.

I don't have the clicker here, but if we can go to the next slide?

Explicit -- and another point is that there are --

explicit and additional adjustments for CAPEX are relatively rare in price indexing plans because of that. Most plans just allow the implicit recovery through the productivity factor to be -- thank you -- the main factor.

However, adjustments could be warranted if, for whatever reason, a company's future CAPEX differs in a significant way from what's reflected in historical industry-based trends.

But even if that is true, we have to be careful that if there is going to be an adder or some adjustment to the formula to pick that up, then any additional CAPEX adjustment does not allow double counting, because, again, there is this element that some of it has already been recovered through the formula.

While -- while I didn't undertake any independent examination of this, I have looked at Staff's submissions. I was in contact with them while they were preparing it. And I do believe that this is an adequate control for the double-counting issue. I think it has a very transparent and objective empirical foundation.

As Bill mentioned, you can make this more complicated to perhaps deal with the customer growth and other issues, but I think this is transparent and objective, and it is also administratively simple.

So for those reasons, I think there is significant merit in the Staff's range for the materiality threshold. It strikes a good balance between being empirically founded, controlling for the issue, the main issue of

double counting, and being simple. But I haven't evaluated any other proposals in any significant degree, so even though there is merit, it shouldn't be interpreted as necessarily an endorsement of the Staff proposal as opposed to any other.

MR. SOMMERVILLE: That point is taken. Thank you.

Mr. Aiken, you are up.

MR. AIKEN: Thank you. What I have attempted to do, I think, is very much along the lines of what Board Staff has presented. It is an approach to see what level of CAPEX can be funded through the price cap, as well as load growth, and then anything over and above that could qualify for the capital module.

So the premise of the formula that I am going to present is that the approved base year revenue requirement covers the OM&A costs and the rate base costs, and those rate base costs are depreciation, interest on debt, return on equity and the associated taxes.

Similar to what Mr. Cowan indicated, the revenue generated under a price cap plan automatically generates more revenue for capital investment.

What I have said here is the revenue generated under a price cap plan is equal to the approved revenue requirement from the last rebasing year adjusted for the price cap index, as well as load growth. I will explain load growth in more detail later on.

So then on average -- and we have got to remember this is a broad-brush approach to aid some utilities, but, on

average, if the OM&A expenses are managed based on the price cap and the load growth, then the revenue generated under a price cap would cover rate base related costs in the same proportion. In other words, they would be reflective of the price cap and load growth. And I think that is similar to what Staff has been saying.

So I have just identified the definitions of the variables I have used, and it basically comes down to two equations, equations 1 and 2.

I will start with equation 2, because it is the simpler of the two. That just shows that the rate base is basically last year's rate base, less depreciation, plus any CAPEX in the current year.

The first equation is how much rate base can be funded, and that is equal to last year's rate base increased for the price cap and increased for any load growth. And I might point out the load growth could be positive or negative.

Then what I wanted to do was solve for the CAPEX how much CAPEX makes this work. So equation 3 had to set the two equations equal to one another. Equations 3A, 3B, 3C you can ignore. That's just going through the math.

So you get to equation 3D, where the CAPEX is equal to the depreciation, plus the rate base, times a multiplicative growth factor that has growth of revenue in the utility, growth due to the price cap, and the multiplicative effect of the price cap and the growth.

Then in equation 4, all I have done is divided by the

depreciation to get the ratio the Board was looking for. So the ratio is one plus rate base divided by depreciation, times the multiplicative factor that reflects growth and the price cap.

I will just follow on down from that. This ratio could be used as a materiality threshold or as a base from which a threshold would be calculated.

What I mean by that is instead of just relying on that number, whatever that number works out to be, the Board could easily decide it should be that number plus 25 basis points. So if the calculation comes out to be 125 percent, or the Board may want to give itself essentially a dead band and say it is 125 for that utility, but we're adding a dead band of 25, so the threshold would then be 150 percent.

The values for the depreciation, the rate base and the load growth could all be taken from the Board-approved base year rate decisions because all of that information is either directly available -- including the rate base and the depreciation -- or it can be calculated and that would be the load growth.

Essentially the load growth would reflect either the Board decision in rates applied to the bridge year, so that you have the same revenues. Then the load growth would be the weighted average of the customer charge, the demand charge, all of the distribution revenues.

So that information is easily provided.

The value of P, the price cap, is going to depend on

the inflation rate, the common productivity factor and the specific stretch factor applied to the distributor.

We already know there is going to be three different price caps, essentially, applied to the 80-some utilities, and so this approach takes that into account because it is utility-specific.

That is my last point, is that the materiality threshold would be different for each distributor. This would reflect their diversity and their different positions in their asset replacement cycle.

And to illustrate that, if you go to the next page, I put together two quick examples from some of the filings and some of the utilities I had worked on in the 2008 rebasing.

To illustrate the difference, if you look at utility A and B under the base column in both cases, these are the rate base numbers and their depreciation numbers that they requested. The growth rates I have calculated based on their evidence and I have assumed a price cap of 1-1/2 percent.

In utility A's case, the CAPEX over depreciation ratio is 145 percent, whereas in utility B, it is much lower, at 123 percent.

And that reflects two things. One is the difference in the depreciation compared to the rate base between the two utilities. They're in different stages of their investment cycle as well as the difference in the growth rates. One has a growth rate of .4. The other has no

growth rate.

The utility A, the base versus the growth. The only difference there in the assumptions is that the growth rate I have increased from .4 percent to .9 percent just to show the sensitivity of what the CAPEX, the depreciation ratio would be so that raises it from 145 to 157 percent.

The price cap is the same as the base case, except I have increased the price cap by 1.5 to 2 percent, again to show the sensitivity.

Then the final column, the cycle, the only difference between that and the base case is that the rate base is higher, so in this case, the utility under the cycle column would be what you would call a newer utility. It has newer average assets.

And under the same growth and price cap scenarios, their CAPEX-to-depreciation ratio would be higher as a threshold to meet, because they're essentially a newer utility and they don't need -- or if their capital expenditures can be higher.

Then I have just shown for simplicity as well the actual CAPEX dollars that each of those ratios corresponds to.

Then the approach would be that if a utility came in, for example, utility A came in and had a CAPEX forecast of two and a half million dollars, it would be the difference the two and a half million minus the 1.35 million that they could be allowed to recover through the investment module.

So as I said, I tried to be short.

MR. SOMMERVILLE: Mr. Aiken, did you develop your methodology independent of the Board?

MR. AIKEN: Yes. I should have stated at the beginning, I have developed this based on the comments that Mr. Shepherd sent in a few months ago. I reviewed his methodology, didn't like parts of it, liked other parts of it, and then struck out on this approach.

MR. SOMMERVILLE: Would you characterize your methodology as being resonant with the methodology that Mr. Cowan was expressing?

MR. AIKEN: I am not positive. Maybe I can ask Mr. Cowan a question.

Would your numbers be calculated by individual utilities? Or is there one number that you are going to propose that all utilities would be?

MR. COWAN: Our suggestion is that the panel adopt one number for use by all utilities, and that the growth would be dealt with in their individual case. I see the most significant difference between what you have proposed and what we describe is that you haven't addressed the question of inflation effect on the comparison of the depreciation dollars that you have used with the fact that the CAPEX is in dollars of today.

So I don't -- I would ask you how you see that being addressed.

MR. AIKEN: As I said earlier, this approach was a broad-brush, and you are right, the depreciation is probably the major category where this may have problems or

your approach may have problems.

I say it is a broad brush, because it would apply to different utilities differently. If a utility had capital expenditures that were driven by expansion, then the depreciation or the increased depreciation expense could be more of an issue than for a utility who was replacing assets, because those gross assets would be written off and then the new capital expenditures added.

So the depreciation expense would still go up, but it may not go up to the same extent because there would be assets written off that would no longer be depreciated.

MR. VLAHOS: Mr. Cowan, can I...

If one were to take the -- if one were inclined to find that there is merit in this proposal by Mr. Aiken, to the extent that one is able to set sort of rates on a utility-specific basis or the threshold would be on a utility-specific basis, how would you accommodate, in this formula of Mr. Aiken's, your own analysis or proposal regarding the currency of the depreciation?

MR. COWAN: One could adopt a standard adder to be included to reflect the impact of the industry average adjustment factor, such as the 49.1 percent that I described. Or, attempt to develop an individual one, which I think would be rather difficult, in that it would require the application of the Statistics Canada tables to each and every utility, a Series of calculations that would be rather painful, I think.

So off the top, my response would be that if the Board

was comfortable with a standard adder to reflect industry average depreciation -- industry average inflation adjustment, then I think that would be the most practical way to allow this formula to then be applied with, on an individual basis.

MR. VLAHOS: So practically, how would this work? Would I take Mr. Aiken's formula and say, you know, I'm utility A --

MR. COWAN: Right.

MR. VLAHOS: -- and I calculate 145.1 percent as being the CAPEX depreciation ratio, that's the threshold that I have to meet, plus an inflation factor. So I would have to add that. Now how would that be derived? I mean it would have to be a Board number.

MR. COWAN: It would.

MR. VLAHOS: Right. So the Board would probably turn to you.

MR. COWAN: Well, to the extent that I have tabled a proposal of how to calculate that adjustment --

MR. VLAHOS: So it is already there?

MR. COWAN: Yes, I believe so, and the specific number would be 49.1.

MR. SOMMERVILLE: So you have looked --

MR. VLAHOS: 49.1 of what?

MR. COWAN: It is not clear in my mind as to whether it would be multiplicative or additive. My first reaction is that it would be additive. So you would take Mr. Aiken's 145.1 and add 49.1 to it, and you would get 194.2.

That is subject to check as to whether additive is the right way to go. And that would then be the threshold beyond which the applicant would apply.

Now, I heard Mr. Aiken say that the amount of the application, in his illustration, would be the difference between a $2 million CAPEX plan and the 1.375 that was here.

I hadn't, in the model that Board staff drafted, felt it was necessary to restrict the eligibility of the amount. In other words, once you pass the threshold, you are in and you are able to then make your case to the Board for incremental revenue requirement or an incremental adjustment to rates to help you with the extra capital expenditures you have, without putting a restriction that it should be the difference between the threshold amount and whatever amount was being sought.

MR. VLAHOS: I wasn't testing that, whether there should be the difference only, but rather, how the threshold of Mr. Aiken's could be modified to address your -- I guess the other variable that you have introduced.

MR. COWAN: Do you feel that I have sufficiently answered your question?

MR. VLAHOS: You have answered my question. I am not sure what the solution is, but you have answered the question, that Mr. Aiken's model does not incorporate this and it has to be incorporated -- it has to be done by the Board itself, and it's a question of how it is done and what it would represent.

Also, it sounds to me, if it was additive, 145, in the case of that scenario, plus 49, that brings you closer to 200 points.

MR. COWAN: The difference then between Mr. Aiken's method and what I would suggest is simply that he has included the load growth factor in the analysis. That would be the only difference between what I had otherwise tabled and what he has tabled.

MR. VLAHOS: I do have a question on the load growth, Mr. Aiken. I guess that would be a percentage.

Is it a customer growth? What do you mean by load growth and how would you calculate it on a utility-specific basis?

MR. AIKEN: It is not customers. It's basically a weighted revenue growth using the same rates between the Board-approved test year revenues and the bridge year, revenues calculated at the test year rates.

So the rates are the same, but then the customer growth, the volumetric growth, the peak growth, all of the different contributors to distribution revenue, would automatically be appropriately weighted using the same revenues.

MR. VLAHOS: So you are looking at one year change?

MR. AIKEN: Yes.

MR. VLAHOS: Just one year, not three years, not historical. Just one year change?

MR. AIKEN: Yes. Everything would be based on the Board-approved numbers, with the exception of the load

growth, which would include the bridge year filing.

MR. VLAHOS: Just lastly, you mentioned many times the amount of rate base or capital expenditures that can be financed or can be carried, whatever words you used. Is the issue here one of what can be funded or what can be viewed as a return on certain investments that could be made with other companies being worse off?

MR. AIKEN: I viewed it as how much the rate base can grow based on a price cap and growth in the specific utility.

MR. VLAHOS: Right. Without compromising the return on the investment?

MR. AIKEN: That's correct.

MR. VLAHOS: Not necessarily only being able to fund. In other words, going to the bank and borrow the money?

MR. AIKEN: No, no.

MR. VLAHOS: Mr. Cowan, I believe your assumption is the same, is it?

MR. COWAN: Yes, it is.

MR. VLAHOS: Okay.

MR. SOMMERVILLE: We will return tomorrow to -- there will be an opportunity for further questions on the other proposals, as well as these two proposals.

So we will break until 9:30 tomorrow morning, at which point we will take up with you, Ms. Frayer, and we will continue. Thank you very much.

--- Whereupon the proceeding adjourned at 4:25 p.m.