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New Brunswick Board of Commissioners of Public Utilities

In the Matter of an application by New Brunswick Power Corporation dated January 8, 2002 in connection with a proposal for refurbishment of its generating facility at Point Lepreau.

Delta Hotel, Saint John, N.B.
April 29th 2002, 10:00 a.m.

Henneberry Reporting Service

New Brunswick Board of Commissioners of Public Utilities

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Delta Hotel, Saint John, N.B.
April 29th 2002, 10:00 a.m.

CHAIRMAN: David C. Nicholson, Q.C.

COMMISSIONERS: Robert Richardson
Ken F. Sollows
H. Brian Tingley

BOARD COUNSEL Peter MacNutt, Q.C.

BOARD SECRETARY: Lorraine Légère

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CHAIRMAN: Good morning, ladies and gentlemen. This is the Hearing in reference to the update on NB Power's Load Forecast and I will ask for appearances, please, first from the applicant.

MR. MORRISON: Yes, Mr. Chairman, Terrence Morrison and David Hashey for the applicant, NB Power. And with us from NB Power is Mr. Ken Little and Navin Bhutani, of course the witnesses, Mr. Marshall and Mr. Larlee.

CHAIRMAN: Thank you, Mr. Morrison. The Atomic Energy of Canada Limited, they are boycotting us. They are not represented today.

The Canadian Unitarians for Social Justice, City of Saint John, I spoke with the Mayor on the way up in the elevator this morning and I said if you are going to intervene you should be here.

The Conservation Council of New Brunswick?

MR. COON: Good morning, Mr. Chairman. David Coon and Andrew Secord from Conservation Council.

CHAIRMAN: Thank you, Mr. Coon. Is Mr. Craik here? No.

Energy Probe? Rodney Gillis? IBE Local 37? J.D. Irving Limited? Have you got a mike there? Can you just tell us who is here today?

MR. WOLFE: Good morning, it is Wayne Wolfe and Mark Mosher from J.K. Irving.

CHAIRMAN: Thank you, Mr. Wolfe. Daniel LeBlanc?

MR. LEBLANC: Bonjour monsieur le Président. Je suis ici en personne. Je veux seulement peut-être vous rappelez que je vais intervenir en français ce matin pour ceux qui n'ont pas encore d'appareil.

CHAIRMAN: I didn't catch that. That is certainly understood that you will and that is why we have simultaneous translation here. The Province of New Brunswick?

MR. HYSLOP: Yes, Mr. Chairman, Peter Hyslop, Don Barnett, Marion Rigby, and Rob Murray for the Province of New

Brunswick.

CHAIRMAN: Thank you, Mr. Hyslop. Saint John Citizens Coalition for clean air?

MR. DALZELL: Yes, present. And also the Canadian Unitarian for Social Justice representative just arrived as well.

CHAIRMAN: Ms. Flatt is there as well. I see. So, the Canadian Unitarian for Social Justice, Sharon Flatt is here. Okay.

Saint John Energy?

MR. YOUNG: Yes, Mr. Chairman, Dana Young representing Saint John Energy.

CHAIRMAN: Hold up your hand, Mr. Young. There you are, sorry. You are a new face. Normally it is Jennifer Coughlan but I understand she has changed positions.

MR. YOUNG: That is correct, sir.

CHAIRMAN: Thank you. The informal intervenors, Canadian Manufacturers and Exporters, anybody here today from them?

MR. PLANT: Dave Plant, representing CME.

CHAIRMAN: Canadian Nuclear Workers Council? IBEW District 1? The Union of New Brunswick Indians, Board Staff?

MR. MACNUTT: Peter MacNutt as Council to the Board. I have with me Doug Goss, senior adviser, and Gay Drescher and John Lawton, advisers and Jim Easson, accountant.

CHAIRMAN: Well, as I think you now all remember, that when

you wish to speak you have to engage your microphone by pushing the button.

Second household key item is that the table to the left is reserved for cross-examination of the panel.

Now the Board secretary will correct me if I am doing this incorrectly. She has got her exhibits pre-marked here, so I had better mark them in the same fashion that she has them pre-marked.

As a matter of fact, would she like to come over and tell me what to do.

All right. The binder which is responses to interrogatories number 1 of 1, dated April 2, 2002 will be Exhibit A-6.

Just a note that as I believe I alluded to when I opened the hearing this morning is that the Load Forecast was originally filed at the time of the generic hearing and at the -- in the pre-hearing conference which was dated March 12, 2002, NB Power at the request of Mr. Hyslop, counsel for the Province advised that copies of the Load Forecast filed for consideration at the generic hearing which was held on June 4 to 6, 2001 could be made available to anyone who requested the same. This was due to the fact that the Load Forecast to be considered today was an update of that Load Forecast and not a new

stand-alone Load Forecast.

So Mr. Morrison, I understand that you do have copies if any of the participants need that Load Forecast as filed in the generic?

MR. MORRISON: In fact, Mr. Chairman, NB Power sent out that evidence to all intervenors.

CHAIRMAN: Okay. Thank you.

Now I would just like to clear up something. And I don't know how I am going to do it with some of them because they are not here. But during the pre-hearing conference that we gave IBEW, Mr. Matheson was here representing them, and there were two unions and they one wanted to call Professor Gordon from the University of Toronto, so we gave them a two week period in which to consider whether they wished to be full intervenors or informal intervenors. It has not been indicated to us that they wish to have full intervenor status, therefore they will be considered to be informal intervenors.

And the same was the case with Hydro Quebec and simply said you will be informal unless you get back to us and let us know. They have not, so therefore, they too will have informal intervenor status.

One informal intervenor who is here today is Canadian Manufacturers and Exporters Association, it is Mr. Plant

who is representing them, and the next thing I had on my item was that normally what we will do with informal intervenors who wish to address the Board, we will set aside a time to do that so they don't have to attend throughout the entire hearing process.

My suggestion is since we just have this room and for the next two days is that we wait until later on in the hearing to set that time as it may well turn out that we would have time and could do it on Wednesday morning at the Board's premises without the necessity of having this room. So we will wait until that time to set them.

The applicant has provided all parties with the witnesses' C.V.s and I understand that if you don't have those or didn't get a copy, you can get those from NB Power.

To the best of my knowledge, no-one has indicated from the intervenors that they wish to provide evidence or a witness. If that is not correct, please let me know right now.

On the 19th of April, the Board Secretary sent out a letter to the NB Power with copies to all intervenors indicating that this panel wanted the witnesses of NB Power to address certain subject matter and we have copies of that letter if any of you in fact don't have them.

Mr. Morrison, I saw you going for your switch.

MR. MORRISON: Yes, Mr. Chairman. It would be my intention to have that April 19th letter of the Board marked as an exhibit and entered.

CHAIRMAN: Sure.

MR. MORRISON: Because the witnesses will be addressing the questions or issues that were raised in that letter.

CHAIRMAN: All right. Do you want -- will you do that or would you rather I have Mr. MacNutt do that?

MR. MORRISON: I was intending to do it. I have the copies ready, Mr. Chairman. Also as was the case in the Coleson Cove hearing, NB Power made a very brief presentation and I believe at the generic hearing -- or the pre-hearing conference, it was the direction of the Board that if NB Power intended to make a presentation at this hearing, that the slides be sent to the intervenors a week in advance.

We have done that and I would like to have those slides marked as an exhibit as well, Mr. Chairman.

CHAIRMAN: Okay, fine. I will get to you in a minute, Mr. Morrison, I still have -- Mr. MacNutt assisted me so it is a very thorough list that I have to go through this morning.

The Board would like to have a heads-up, if you could,

before close of business tomorrow and I will ask you to do it now if you know, whether or not anyone wants to have the Motions day which is tentatively set for this Thursday in reference to matters dealing with other than confidentiality issues if you want to have it go ahead. In other words, are any of the intervenors planning on coming and presenting a motion to the Board that the applicant should answer any questions in the interrogatories that they have not, do you know at this time?

MR. MACNUTT: Just by way of clarification, Mr. Chairman, you are talking about the Point Lepreau hearing when you --

CHAIRMAN: Yes, I am. Thank you, Mr. MacNutt. That's the Point Lepreau hearing. Mr. Coon?

MR. COON: Yes, Mr. Chairman. It's a little difficult because we haven't seen the responses to the supplementary interrogatories yet to know whether or not that Motions day will be required today.

CHAIRMAN: When are they due? Okay. Well you have the right to reserve until tomorrow close of business. By the way, we close at 4:30, not 5:10. Okay. But no, close of business tomorrow. But if anybody knew that they were going to do it and could say so right now, I wanted to

know.

So that's a maybe from Conservation Council, I guess.

Mr. MacNutt, do you see anything I have missed? I shouldn't have said that. There are a couple of items that I made a management decision to leave out, but --

MR. MACNUTT: You addressed the informal intervenors time of presentation. I'm not sure if you addressed the presentations for the formal intervenors, Mr. Chairman.

CHAIRMAN: No. That's going to depend upon when we finish the testimony and cross-examination, that sort of thing. We will set that probably tomorrow afternoon is what we will do.

All right. Mr. Morrison, back to you, sir.

MR. MORRISON: Thank you, Mr. Chairman. I would propose first to have the presentation slides entered as an exhibit, and copies have been sent to all the intervenors and the Board. And I do have copies here for the Board members but I will have one marked as an exhibit now.

CHAIRMAN: Thank you. That will be A-7.

MR. MORRISON: Mr. Chairman, there will also be a correction to the evidence and there are documents here that Mr. Marshall will be addressing in his evidence correcting the pre-filed evidence. I believe those should also be marked -- this package of documents should also be marked as an

exhibit, and I will have them distributed at the same time.

CHAIRMAN: All right. I want to give the -- I wanted to get the exhibits in and so -- and then I will look to the intervenors if any of them have any matters they want to bring up. And then we will go to your panel. So if you could put in the exhibits, which include the corrections of the evidence if you want to. Go ahead, Mr. Morrison.

MR. MORRISON: Okay. Thank you.

CHAIRMAN: The two page document headed Screening of Demand Side Management Options dated January of 2002, replacement page 53 is A-8.

MR. MORRISON: Mr. Chairman, at this time I would like to enter the Board's letter of April 19th as an exhibit.

CHAIRMAN: That will be A-10.

MR. MORRISON: I believe that should be A-9, Mr. Chairman.

CHAIRMAN: I beg your pardon. I had written it down in anticipation. You are absolutely right. It is A-9.

Madame Secretary, would you bring that exhibit back.

I believe I marked it incorrectly. I did.

MR. MORRISON: Mr. Chairman, the Board's letter raises potentially three issues, and there are documents which the witnesses will be referring to in response to those three issues. And I'm going to enter into evidence a set

of documents which responds to the first issue and distribute them to the intervenors at the same time.

CHAIRMAN: Please do, Mr. Morrison. The three page document, the title page is called Issues From PUB Letter, April 19, 2002, Issue 1, Econometric Model, will be A-10.

MR. MORRISON: Mr. Chairman, documents responding to the second issue in the PUB letter I will have entered at this time.

CHAIRMAN: The two page document entitled Issues From PUB Letter again, Issued to Load and Resource Revenue, will be A-11.

MR. MORRISON: And, Mr. Chairman, the third and I promise final documents to be entered as an exhibit, respond to the third question in the PUB letter.

CHAIRMAN: We don't mind. We can accept them all, Mr. Morrison. And that will be marked as A-12. It is a four page exhibit headed Issues From The Letter, Issue 3, Direct Load Control.

Those are all your exhibits at this time, Mr. Morrison?

MR. MORRISON: That's correct, Mr. Chairman.

CHAIRMAN: Okay. Any of the intervenors have any matters they want to bring before the hearing right now before we look at NB Power's slide presentation? Mr. Hyslop?

MR. HYSLOP: Thank you, Mr. Chairman. Referring to exhibit A-11. The photocopies we received under B, Load Surplus Deficit Summary -- the photocopies didn't come out clear with respect to the years 2000/2001 and 2001/2002. I'm just wondering if those numbers could be provided so we could write them in on our photocopies?

CHAIRMAN: Mr. Morrison, can you oblige?

MR. MORRISON: Yes, Mr. Chairman. Just a point of clarification, Mr. Chairman, was it A-11 Mr. Hyslop was referring to?

CHAIRMAN: That's correct.

MR. HYSLOP: Yes, that's correct, Mr. Chairman.

MR. MORRISON: If you can give us a few minutes, Mr. Chairman, we will try and get copies in the next couple of minutes.

CHAIRMAN: All right. Or you can just read them aloud if you want to. We will fill them in on them, if that's acceptable. It's your exhibit.

MR. MORRISON: That would be fine.

CHAIRMAN: Okay. Let's do that.

MR. MORRISON: Mr. Chairman, for the line 2000/2001, the first number is 3476 in the first column. The second column is (119). The third number is (455). And the fourth number is (455). And for the line for 2001/2002

the number in the first column is 3554. The next number is (180). The third number is (549). And the last column is (549).

CHAIRMAN: Does that cover it, Mr. Hyslop?

MR. HYSLOP: Thanks very much.

CHAIRMAN: Anything from any other intervenors? Mr. Coon?

MR. COON: Yes, Mr. Chairman, with respect to the original evidence in the generic hearings that was filed by NB Power, can that have an exhibit number or how should we refer to it if we need to refer to it.

CHAIRMAN: We might as well give it an exhibit number in this hearing. Have you got a copy that I could do that with, Mr. Morrison?

MR. MORRISON: I can get a copy, Mr. Chairman. And I'm assuming Mr. Coon is referring only to the Load Forecast evidence from that generic hearing.

CHAIRMAN: Might I suggest that we go ahead and then after the next break we can put that into evidence and mark it.

MR. MORRISON: Yes, I think that's -- we can have the witnesses sworn now, I believe, Mr. Chairman.

CHAIRMAN: Good. Go ahead, Mr. Morrison.

(Mr. Marshall and Mr. Larlee, sworn)

MR. MORRISON: Mr. Marshall, do you adopt the evidence that has been prefiled as exhibit A-1 in this hearing?

MR. MARSHALL: I do. But I would like to make one correction to that evidence.

MR. MORRISON: Perhaps before you do that, Mr. Marshall, I will put the same question to Mr. Larlee. Mr. Larlee, do you adopt the evidence that has been prefiled as exhibit A-1?

MR. LARLEE: Yes, I do, Mr. Morrison.

MR. MORRISON: Okay. Proceed, Mr. Marshall.

MR. MARSHALL: Yes. Exhibit A-8 that was just passed out is a replacement page for page 53. Page 53 is a summary of the electric heating technology end use DSM measure analysis.

And in going through the individual worksheets behind all of those that were requested as part of the Lepreau hearing and were filed last week -- in going through those 50 or 60 odd individual sheets and cross checking those, we came across some inconsistencies in the costing of six items on this page. Page 53 replaces those. And I would point out where the actual changes are.

Item 26(b) ground source heat pump, closed loop forced air, under the capital cost instead of 7,400, that would be replaced and it's -- no, excuse me. Yes, that changes to \$7,500.

All the changes -- all of the errors were down that

one column. Further down to 27, the fourth one under number 27, ground source heat pump, open loop forced air, large home with no -- no air conditioning, no A/C, that would be \$8,500. Originally it was 10,500.

Item 29, excuse me, 28. Direct expansion heat pump baseboard. The replacement number is 11,500. The original number was 9,900.

The next item under that direct expansion heat pump forced air should be 9,500. The original was 10,300.

And the direct expansion heat pump forced air large house with no air conditioning would be 12,000 -- or was 12,500. It's now 10,500.

And electronic thermostats, item 29, was \$300. It was 323. It's now 300.

Now we re-ran all of those results over again. The columns the rest of the way over have very minor changes in the -- in the pay back and the economic pay back or benefit cost ratios. We also took those results -- they really don't change whether it's -- an item is economic or not. But because these are shell measurers, and as shell measures, the ratio, the action magnitude of the benefit cost ratio influences the quantity of energy that's passed on as economically achievable. We ran that all the way through the model and the results come out within

basically a round off error in the existing table.

So there is no change to the evidence as presented in the total amount of DSM. It's simply a minor tweaking of each one against the other.

That concludes my correction.

MR. MORRISON: Thank you, Mr. Marshall. At this time I propose that the witnesses would proceed with the presentation, Mr. Chairman.

MR. MARSHALL: Mr. Chairman, the presentation that everyone has been handed out, copies of the presentation, they were mailed out a week ago. And they have been marked as exhibit A-7. The presentation provides a summary of the evidence that has been filed in this case.

In particular, to go back to the reason for this hearing, in the generic hearing back last June in the order of the Board of July 11, there was a directive from the Board as the result of that generic hearing that prior to the Point Lepreau hearing we would file an updated Load Forecast and that that updated Load Forecast should address all significant issues with particular reference to demand side management and energy efficiency to natural gas penetration and fuel switching to self-generation by large customers and supply of electricity, competitive parties other than NB Power.

The evidence has been presented in this hearing. The evidence here demonstrates that the load forecast has been updated in accordance with the directives of the Board.

And evidence pertaining to the impact of the updated forecast on Lepreau refurbishment is really the subject of the hearing scheduled to begin on May 27th in terms of what impacts the changes may be. But at this point, as you see, there are very little differences in the forecast long term and the impact on Lepreau.

The methodology for the update in the forecast is the same as the methodology that was reviewed at the generic hearing in June last year. It includes a cause and effect analysis of all past loads, a survey of end use customer uses, end use appliances, uses of energy, assessment of economic indicators and forecasts, demographic factors and technological factors on end use technologies and consultation and discussions with customers. In particular we do regular discussions with all large industrial customers.

The key inputs into the forecast include a number of factors, weather, new customer additions, space and water-heating choices from customers, the effect of natural gas, as I say discussions with industrial customers in terms of their expansion plans, shutdowns, various directions they

may be going with their use of energy, economic activity in the province and energy efficiency measures.

The three key areas that the Board asked to be reviewed in the Load Forecast were consideration of demand side management, consideration of natural gas fuel-switching and its impact on the forecast and also the self-generation and third party supply. So I will address each of these individually.

On the demand side management area, the original forecast conducted by Mr. Larlee's group had a projection of demand side management in it taken from a view of the marketplace and a view of natural gas penetrations from a subjective analysis.

The Board asked for a detailed assessment of demand side management. The detailed analysis and assessment of DSM has been filed with this evidence. It is included as appendix B. And it is a detailed end use assessment of technologies or the economics of those technologies and what impact they could have on end use of energy.

The effect of the detailed demand side management analysis in comparison to the subjective analysis that was done last year by Mr. Larlee's group confirms that the analysis in the Load Forecast is a reasonable provision for DSM and energy efficiency out over the forecast

period.

In the natural gas fuel-switching area there are a number of factors here to look at. Again the assumption in the original Load Forecast last year and in this updated forecast is that all three natural gas laterals are assumed to be built and operational in the forecast period and actually in the forecast period in order to achieve the penetration levels.

At this point in time there are no specific plans as yet for the two northern laterals, the lateral up the east coast to Campbellton or the lateral up the St. John River valley to Edmundston.

In addition the economics of conversion from electricity to natural gas as a result of our end use analysis and economic review remain marginal at best.

The switch to oil from electricity to oil is uneconomic from our analysis. And the use of wood at this time is already at maximum sustainable levels or near maximum sustainable levels in the province from as a heating fuel.

As a result of those factors the gas penetration levels in the forecast we view are aggressive. And the new forecast now adjusts those targets to be achieved at a somewhat slower pace.

In the forecast presented last year the amount of penetration of natural gas heating for electric heating and natural gas water use, heating for electric water heating, the penetrations were achieved in a 10-year period. In the current forecast they have been delayed and stretched out over a 15-year period. The same level of penetrations are in the forecast.

And again the reason for the move to the 15 years is based on the economics of heating and of the availability and timing of the laterals and potential market penetration.

In the last issue, self-generation and third party supply, there are two aspects of this. One is third party supply, the question comes down to a competitive market, the ability of transmission level customers to choose freely in the marketplace their supplier for electricity.

Work has been advancing in that area.

Since the generic hearing the market design committee has been formed and now is near the end of its work. They have released two reports to this point in time, a first and a second interim report.

And on the basis of those reports and the market design that is being put forward or recommended to the Minister is not an overly aggressive market. It is a more

conservative controlled view move towards the marketplace.

That coupled with the fact that NB Power's generation cost structure today is below market and is expected to remain below regional market prices, the third party supply to customers to displace in-province loads is considered very unlikely at this point in time.

So that -- and it is expected in the forecast that NB Power will continue to have the obligation to serve customers who choose not to go to the market. And based on the pricing projected and market prices projected, very few customers are expected to go to the market.

On the self-generation and co-generation side, in the forecast last year it was forecast that 150 megawatts of load, existing load on the system would move to self-generation.

And since that point in time there have been continued discussions with some customers. And there is no change in that position. We still hold the view that that 150 megawatts is the best available forecast for potential co-generation and self-generation facilities in the province.

The results of the forecast then are essentially the same as that filed last year, with a couple of adjustments. There is -- by 2010/11 there is near zero increase in in-province load. And beyond 2010/11 there is

a moderate growth of 1 percent.

The differences between the forecasts are not in time frame out in 2010/11 long term. But they are in the early years an adjustment for economic factors.

If we look at this chart we can see the history of energy supply in the province from 1975 up to the current day. The green line is the forecast from last June. The black line is the current revised updated forecast. The dotted red line is the forecast without natural gas and self-generation.

We can see that there are significant reductions from that forecast without natural gas and self-generation. And by 2010/11 the red line -- the green line and the black line converge to the same point.

Also from the demand side you can see the history of demand supply in the province. And again the forecast from June of last year is the green line. The current forecast is the black line. And the projected forecast without consideration of natural gas and self generation is the dotted red line.

The forecast results again by 2010, '11 are essentially identical and over the long term continue at the same rates.

So in closing we say about forecasting, we know that a

forecast is never right. A forecast is a best estimate and projection of what the future will be. Forecasts from the early 1980's were low. At that time there was a move to bring natural gas to the Maritimes and a belief of gas penetration coming in and forecasts were significantly lower. That didn't occur. And then through the national energy program there was a switch to electric heat so forecasts -- electricity grew more rapidly through the late 80s. So forecasts in the early 90s -- or the late 80s and early 90s then were on the high side taking the effect of that rapid growth.

Factors that would make this particular forecast low are that natural gas impacts may be smaller than forecast.

And it is our view that the natural gas penetrations in this forecast are aggressive. That the self generation, the 150 megawatts of self generation may not materialize, although it's our view that the 150 megawatts is a reasonable projection of what will happen.

Industrial additions could exceed the forecast growth.

If there are increases in industrial lows we could require more supplies. On the other hand, there are factors that could make this forecast high. We saw the effect in the forecasts of an economic downturn in the last year. If we had a very severe economic slow down or

lower than

economic growth projected that would have an impact to make the forecast lower -- or make the results lower than the forecast so the forecast would be high.

And again if self generation becomes very inexpensive and more than 150 megawatts comes about, then there could be increased self generation would make the forecast high.

Now for self generation to become very inexpensive requires much lower gas prices than our current today or our forecast. So these are the varying factors that could occur.

So the -- in conclusion we are here today to hear the evidence that we presented and the decision that NB Power is requesting of the Board is in review of this load forecast that the -- this updated forecast provides a reasonable estimate of future electricity requirements by NB Power's inprovince customers.

And in order to present that evidence the witness panel, myself, Phil Marshall, Director of Strategic Planning. The issues in the evidence that I have been responsible for deal with the self generation, the detailed in use demand side management evidence, appendix B and the fuel switching which is evaluated in that same appendix B.

And Neil Larlee, who is Manager of Load Forecasting

and Rate Development, will deal with the actual load forecast model itself, the actual forecast. All the models, inputs and outputs of the forecasts and the results of the forecasts and that methodology.

Thank you very much.

MR. MORRISON: I believe that concludes the presentation, Mr. Chairman.

A question, I guess, Mr. Chairman, on how you would like us to proceed. It was my intention to deal with the PUB letter and the three issues that were raised in that correspondence now. I don't know whether you would like Mr. MacNutt's involvement in that examination but certainly we are prepared -- or the witnesses are prepared to address the issues that were raised in that letter.

CHAIRMAN: I think that -- subject to many intervenors having difficulty with it, I think that would be an appropriate way to proceed, Mr. Morrison. Anybody else have any difficulties with proceeding that way? No. Go ahead please.

DIRECT EXAMINATION BY MR. MORRISON:

Q. - Mr. Larlee, would you refer please to exhibit A-9, which is the letter dated April 19th 2002 from the Board to NB Power. And in that letter there are three questions or three issues that are raised. The first deals with the

data upon which NB Power relied in developing its estimates for real personal disposable income. And Mr. Larlee, I would ask that you address the issue that was -- that issue that was raised in that letter, please?

MR. LARLEE: Thank you, Mr. Morrison. Mr. Chairman, in the letter the first point on economic modelling actually details three separate economic items, and I would just like to go through them one at a time, if I can.

The first item deals with the gross domestic product used in the model. After 1996 the numbers that we have for gross domestic product vary from what is available from Stats Canada in their data base, starting what they call the CANSIM data base. The reason for that difference is in the way that we update the numbers. When we update our gross domestic product numbers in the model, we normally don't have numbers available through StatsCan for the most recent year. So what we do is we will use the best available estimate that we have for growth in GDP and apply it to the previous year.

What has occurred since 1996 is that we have done this successive years and have not gone back and updated with the data available from Stats Canada.

The result of the variance -- in order to determine the result we reran the model with the most up-to-date GDP

data. And the impact is quite small. The last year of the forecast is 6 megawatts out of the forecast of 3,050 megawatts, so that's approximately a .2 percent difference.

The second item involving econometric modelling refers to personal disposable income. There is a variance between personal disposable income in the model and what is available from Stats Canada. I would like to refer you to exhibit A-10, and I can just bring it up here on the screen.

This chart shows what was used in the model and what is available from Stats Canada.

What occurred here, Mr. Chairman, was a communication error between ourselves and the source of the data. We normally source the data from the New Brunswick Department of Finance. We thought we were asking for personal disposable income, they were under the impression we were looking for disposable income or total disposable income.

That having been said, the important thing to recognize here is that in the model the absolute magnitudes of income as an input in the model don't play any significance. What is significant is the pattern of the series of numbers. And as you can see on this slide, the pattern is quite similar.

And what I have done is I have shown the numbers in the next slide one over top of the other just to emphasize that fact. And you can see that the pattern is almost identical.

As a result when we rerun the model with these numbers for income, there is no impact on the output of forecast.

The third issue relating to econometric modelling was a question asking why we use a nonlinear regression as opposed -- or as opposed to a linear regression when we are relating personal disposable income and gross domestic product.

In that case the normal procedure that we have when we are looking at relating data using the regression technique is to use several different methods. In this case we found that using -- or testing several different methods, rather -- in this case in -- we found that in using a logarithmic regression we actually got the best statistical correlation between the two numbers, and that is why we used the logarithmic or power curve type of regression to relate personal disposable income and gross domestic product.

That concludes my response to the first items in your letter of April 19th.

MR. MORRISON: If there are no questions from the Board,

Mr. Chairman, I would proceed with Mr. Marshall to give explanations for the second two issues raised in the PUB letter.

CHAIRMAN: Yes. Go ahead, Mr. Morrison. By the way, just proceed with your examination. Don't look to me for an okay to proceed. If I want to stop you I will do that. Great.

MR. MORRISON: Understood.

Q. - Mr. Marshall, could you also refer to exhibit A-9? And the second issue deals with the load and resources review. And I would ask you to address that issue that is raised, the second issue.

MR. MARSHALL: Yes. The load resources review, the issue is that in the generic hearing capacity planning in 1990 the load and resource review presented at that time was a much more detailed document and had a number of tables of detailed monthly numbers. It also had an analysis of two different reserve criteria.

And in exhibit A-11 what we have provided here is a summary of that analysis. And in particular, I draw your attention to the bottom of that table, section B, load surplus deficit summary.

Now there are two criteria that were used at that point in time, the sustained surplus deficit criteria

which is column number 3, starting with the number 325 at the top and working down to a negative 304 at the bottom.

There was also a criteria, peak surplus deficit starting at 94 and working down to a negative 734. The two criteria stem from planning development from NB Power from the early 1970's.

At that point in time the size of the system was such that after the Mactaquac station was built the energy-limited capacity of the Mactaquac station to provide capacity was a limiting issue on the development of the system.

And the sustained criteria was developed to take into consideration the limited energy nature of our hydro system. It's based on 95 percent probability of having that energy available.

So it looks at the low conditions of low river flows and low energy available for hydro to say, how much can you operate then under that basis with having low water conditions?

And when you take that low water and you put it under the load curve, you can only get a certain amount of capacity out of the hydro. So that was done at that point in time. And that was the limiting criteria on the system through the 1970's and early 80s.

As the system grew in time and loads became more you are able to take that energy from the hydro and squeeze it more into the peak and get more capacity value out of the energy. So that's the sustained criteria.

The peak criteria is the current reserve criteria that has been in use again since the early 1970's. It is the 20 percent of the load or the largest unit, whichever is higher.

And currently that reserve criteria is the size of the Point Lepreau unit on which we rely. It's -- 605 megawatts is the current amount of capacity from Lepreau that's credited to New Brunswick in-province load. 30 megawatts of Lepreau is credited to Prince Edward Island requirements.

So the 605 megawatts of Lepreau is the governing criteria at this point in time. As the system load grows beyond 3000 megawatts then 20 percent of the system load becomes the governing criteria.

Now at that point in time we would look at which of these two criteria, the sustained criteria or the peak criteria provided the least amount of assurance of supply.

That would be the governing criteria on which we would do our planning.

You can see from the results in the table from the

data from 1989, '90 that the governing surplus deficit, the furthest column on the right, every number comes from the peak or surplus criteria.

Based on this and based on continuing load growth through the 90s, in the early 1990's, around '92 or '93, I forget exactly when, we basically disbanded the sustained surplus criteria because it is irrelevant and no longer requires -- gives us a governing balance.

So that from a planning point of view the only criteria we go by is the peak surplus deficit. And then there is no need to do all of the detailed monthly calculations on the sustained criteria.

Q. - Thank you, Mr. Marshall. The third and final issue, which is raised in exhibit A-9, deals with load control durations. I wonder if you could address that issue?

MR. MARSHALL: Yes. Again in terms of direct load control, in 1990 the integrated resource plan that was reviewed under the generic hearing on capacity planning by the Board had in it a full detailed assessment of demand side management.

The direct load control was a measure that was looked at. And it was discarded because of energy shifting because of the limited nature of the hydro system, again because you cannot shift the energy far enough outside the

peak to have a proper impact.

And at that time -- I guess written in those reports it was said to be shifted 14 hours. In the current demand side management document we talk again about direct load control.

And there seems to be a little confusion. We said shifting up to about 12 hours. There is no difference in philosophy from where we were in 1990 to where we are today. It's that I guess we have quantified the number of 12 hours rather than 14 hours. But it's -- the issue is of shifting energy from the peak outside the -- the hydro dispatch is still required in order to gain any value out of the shifting.

One of the other differences -- and just so that we can actually illustrate that, we have a couple of charts here that we could look at.

If we go back to our philosophy from 1989, '90 -- and this was reviewed at the generic capacity planning hearing. This is a chart that I actually dug up out of our files from our evaluations in looking at curtailable load at that time. And this Board reviewed that as a reasonable approach to curtailable load credits.

You can look at -- the chart on the left would be our hydro system. It is -- our winter peak load is a 2 humped

load peaking early in the morning at around 8:00 o'clock and then again peaking in the evening at 6:00, 7:00 o'clock.

So that is generally what a winter daily load would look like. And we like to take the hydro energy and get the most value out of it by peak shaving that load. So the dotted area would be hydro energy. And then the thermal requirement would be everything below that.

If you can curtail the load on the peak for a period of time, you can take the area that the X megawatts curtails on the peak and you can now take the hydro energy that would have been in that area and you can now redispatch the hydro energy.

But you have to take that energy and you have to spread it all the way across the bottom of the hydro curve. So you only get half the amount of megawatt reduction on the thermal requirement from the reduction on peak from the interruption of energy.

Now this is the logic behind the curtailable credits of half a capacity credit at that time. And the logic still exists today.

Now we were asked to review current loads, look at our hydro dispatch for a recent peak day, look at our actual hydro and demonstrate what would happen for a direct load

control measure.

This chart shows you the actual system load for February 22nd of this year which was our peak day. And I might add this looks like a little bit more sophistication than the previous chart.

Back in 1989, '90 we didn't have access to the data that we do today. We have this data. We have the ability to pull off on 2-second polling everything that goes on in our system today. And we store it.

And this chart is drawn up based on 10-minute -- we can then integrate them over whatever period we like. So this is integrated 10-minute actual data of the system. And you can see that we can get a very accurate portrayal of what goes on.

The black line is the actual in-province load. The blue line at the bottom is the actual dispatch of the hydro system. By subtracting the blue line from the black line we get the green line which would be what is the thermal requirement to supply in-province load after we have dispatched the hydro.

Now from the previous chart in 1989, '90 we would say we will peak shave the hydro right flat across the curve.

Now in reality we do not have perfect knowledge of the load. We do not have perfect control of the hydro system.

And the hydro is used to do other things than just peakshave. It is required for load following, for frequency control. There are other ancillary services that the hydro system helps to provide. And I'm sure we will be here again next fall talking about those services in detail, okay, in the transmission hearing.

But just to make this chart a little simpler, you can see we have drawn a red line across the moving green line, across the peak, and say if we had perfect knowledge we could average that hydro dispatch flat across the red line. And the average thermal load then is 2527 whereas the hourly average peak load that occurred between 7:00 and 8:00 o'clock in the morning was 2893.

Now if we take and put a direct load control hot water heater on here where we have 150 megawatts of hot water heater load that we can interrupt 300 megawatt hours -- and this was an example suggested in the letter that we look at -- if we did 300 megawatt hours with direct load control at the top of our peak, we would have the purple area, and we would no longer need to supply that load.

So the load would follow the black line. I think we can follow without a laser chart. Would follow the black line up to the purple line and then come down, follow the purple line over and then continue on on the black line.

If we take that area, that 300 megawatt hours of energy, that is 300 megawatt hours of hydro energy we now no longer need to generate and put into that area. If we have perfect knowledge we can take that hydro energy and put it down and lower the thermal requirement across the system. It will lower the thermal requirement by about 22 megawatts.

So 150 megawatts of 2-hour load control on the peak only lowers the thermal requirement by 22 megawatts. And you see the value.

What we did in the evaluation was we looked at this as a demand side management issue from a straight capacity point of view and a total resource point of view, it doesn't gain enough on the economics because it doesn't avoid enough capacity because of the hydro.

However, today we look at the system in a different way than we did in 1990. In 1990 we looked at we were a completely integrated operation, looked at bundled supply of energy and capacity to deliver right to customers door.

Today, as we will be here again in the fall, with an unbundled transmission system and ancillary services that have to be provided as optional services for customers to choose, it is necessary now to unbundle the cost of spinning reserve, 10-minute reserve, 30-minute reserve

separately from capacity reserves. And direct load control may have some value in providing that spinning reserve or 10-minute reserve.

And so in our evaluations we arbitrarily said the capacity credit at which we should evaluate this should be similar to the curtailable load and we use \$36 rather than full capacity cost. And that is essentially the deviation from our evaluations in 1990.

Q. - Thank you, Mr. Marshall. In those last two slides you were referring to that was exhibit A-12 I understand?

MR. MARSHALL: Yes.

MR. MORRISON: That concludes the direct examination, Mr. Chairman.

CHAIRMAN: All right. We will take a 10-minute only recess.

And before we do, there is one thing that I did neglect to do in my preliminary remarks.

And that is that between the prehearing conference and today, the Board Secretary had been in contact with the shorthand reporters and then with NB Power. And what we have come up with is as follows that NB Power will pay for certain transcripts, and as well, the shorthand reporters will give up their copyright.

And so that if an intervenor wishes to have a copy of the transcript of a proceeding or a hearing day, they can

get a copy from NB Power.

It may be a little after 8:00 o'clock in the morning.

Like it might be 10:30 or something. We will have to work that out. But it will be available for all intervenors at no cost.

If you wanted to have one that is produced overnight then you would have to go and pay the shorthand reporters the per page amount, so I think a little patience will reward you in that regard.

So I suggest that each intervenor who wishes to have a copy of the transcript approach NB Power personnel and let them know.

Okay. We will take a 10-minute recess.

(Short recess)

CHAIRMAN: Anyway, what I misunderstood was is that NB Power will provide each intervenor with a CD copy of the transcript, not a hard copy. Is that correct, Mr. Morrison?

MR. MORRISON: That's correct, Mr. Chairman.

CHAIRMAN: Okay. Is that all right, Madam Secretary?

BOARD SECRETARY: Yes.

CHAIRMAN: Okay.

MR. MORRISON: Mr. Chairman, before the break you had indicated that I think Mr. Hyslop wanted the load forecast

evidence in the Generic Hearing entered into evidence.
Now we do have -- obviously we don't have copies for everyone, but we do have several copies here.

I propose to have them entered at this time.

CHAIRMAN: All right. Appendix C from the Generic Hearing which was the load forecast 2002-2011 is exhibit A-13.

Anything else, Mr. Morrison?

MR. MORRISON: No, that's all, Mr. Chairman.

CHAIRMAN: All right. I believe it's Conservation Council cross.

CROSS-EXAMINATION BY MR. COON:

Q. - Thank you, Mr. Chairman. Mr. Larlee, your position -- title is Manager of Load Forecasting and Rate Development, is that correct?

MR. LARLEE: Yes.

Q. - How long have you held that position?

MR. LARLEE: Yes, it is. Since November of 2000.

Q. - And is that the position that Mr. Bhutani formerly held?

MR. LARLEE: Yes, Mr. Bhutani held that position prior to myself.

Q. - Will you be able to speak to the load forecast in A-13 as that was part of Mr. Bhutani's evidence in the generic hearings? Are you going to be speaking to that evidence if required?

MR. LARLEE: Yes.

Q. - Thank you. What was the previous position you held prior to November 2000?

MR. LARLEE: Prior to November 2000 I was the -- I was the Rate Design Engineer in our Transmission and Distribution Group.

Prior to that -- for a period of about nine years prior to that, I worked under Mr. Bhutani's direction in the Load Forecast and Rate Design area.

Q. - Thank you. I'm going to refer to start with to the Board's decision of July 11th 2001 concerning the generic hearings. Have you got that available?

MR. LARLEE: We don't have a copy of that with us.

Q. - Maybe counsel can provide you with a copy there.

CHAIRMAN: Mr. Coon, just for the future, normally if someone is going to question witnesses in reference to documents that are not exhibits in this particular hearing, they should have one or two or make provision, let somebody know in advance.

MR. COON: Sorry, Mr. Chairman. In fact, should this be numbered as an exhibit or I assume it's a decision, it's not --

CHAIRMAN: Oh, no. Not at all. Just for convenience with the witness, that's all, Mr. Coon.

MR. COON: Right.

CHAIRMAN: Oh no, this -- you have to take public notice of this anyway. There is no -- anyway, it stands by itself. Go ahead.

Q. - Okay. If you could turn to page 1 of the Board's decision, and question 1. It refers to -- well, let's back up a minute. The generic hearings were held to address three questions. And with respect to question 1 it reads, Is it reasonable to believe that NB Power will require the electricity presently generated by Coleson Cove and/or Point Lepreau or replacement facilities in the future. So that was part of the purpose of the generic hearings to respond to that question. Is that your understanding?

MR. LARLEE: Yes, it is.

Q. - And if we turn to page 5, at the beginning of the first full paragraph that starts, "The Board considers". The Board considers that the approximately thousand megawatts of generating capacity represented by Coleson Cove is a necessary component of NB Power's system. The need for the 635 megawatts of generating capacity represented by Point Lepreau is another matter.

He goes on to indicate that NB Power's forecast provided by Mr. Bhutani at the time showed a deficiency in

generating capacity of just over 300 megawatts in 2007 and 430 megawatts in 2011. So that would suggest to me that - - then one way of thinking of these hearings today is really to look at the question is it reasonable to believe that NB Power will require the electricity presently generated by Point Lepreau or replacement facilities in the future to provide a reliable supply of electricity to New Brunswick.

Is it your understanding that that's why we are looking at a revised load forecast today?

MR. LARLEE: My understanding of why we are looking at a revised forecast is because contained in this decision the Board has asked for a forecast update.

Q. - True. But would you agree that the reason the Board asked for the updated load forecast -- or one of the reasons they asked for the updated load forecast was the fact that -- that while they accepted the thousand megawatt generating capacity of Coleson Cove as a necessary component for NB Power's system in their decision of July the 11th, they hadn't yet accepted the 635 megawatts of generating capacity represented by Point Lepreau as a necessary component of NB Power's system in saying that it's another matter?

MR. MARSHALL: The issue of load resource balance and

adequacy of supply and requirement for supply we see is an issue that influences the economics of a decision to redo Point Lepreau. It's an issue for the Point Lepreau hearing which is scheduled for May the 27th. It's our understanding that this hearing is to review the load forecast to determine whether that forecast is reasonable or adequate.

The effect that the reasonableness of this forecast may have on the next hearing will be reviewed as we go forward as a result of the Board's decision from this hearing.

Q. - Is it correct to say as is summarized in the Board's decision on the same page in the first full paragraph there, that with the revised forecast a deficiency of generating capacity of just over 300 megawatts exists in 2007 if Point Lepreau is not refurbished and approximately 430 megawatts in 2011? Does that remain the case?

MR. LARLEE: Mr. Marshall can respond to questions related to supply and balance.

MR. MARSHALL: Those numbers, 300 megawatts and 430 megawatts are a result of the load resource analysis. And that evidence is presented in the Point Lepreau hearing. It's not part of this evidence.

Q. - It seems to us that with respect to the requirement for

power by -- by the system in 2006 and 2007, or at least the load forecast, that that load forecast -- well, let me -- let me -- here, let me direct us to page 42 perhaps of the A-1 -- the evidence of A-1, and we can straighten this out, right.

CHAIRMAN: Mr. Coon, is that -- you said the evidence, but is that Appendix A or B, or what?

MR. COON: In A-1, page two. I am sorry about that, on Appendix B. So Appendix B, page two. So this hopefully will get us back on the right track.

Q. - And I guess Mr. Marshall, this is part of your evidence, so I will direct this to you.

Here it says to develop a long term resource plan to address replacement and refurbishment of Point Lepreau capabilities, NB Power employs a power supply planning process that consist of the following steps. You list five steps here.

The first step is to conduct a Load Forecast to determine the future loads to be supplied. Is that correct?

MR. MARSHALL: Yes.

Q. - And then it goes through a number of other steps down to step two, review the supply resources available to meet the load and reserve requirements to determine the

quantity and time and the resource shortages. That is step two. And you are saying that will be dealt with in the next hearings on the Lepreau refurbishment?

MR. MARSHALL: Yes.

Q. - Okay. And the next step, identification definition costing preliminary evaluation of potential power supply options that could be employed to meet future shortages, will that also be dealt with in the next set of hearings dealing with the Lepreau refurbishment?

MR. MARSHALL: Yes.

Q. - Okay. So that is step three. We get down to step four, identification, definition and costing preliminary evaluation of potential demand side management options, that also will be dealt with in the next set of hearings?

MR. MARSHALL: No, that is in this hearing as provided -- this document that we are referring to, Appendix B does that.

Q. - And then we get to step five, determination of the least cost resource plan through the evaluation of a viable supply in DSM options integrated with existing supply and resources of Integrated Resource Plan, which is to be filed as evidence for the Point Lepreau Refurbishment Hearing. So the consideration of the results of the DSM then will be done in the next set of hearings regarding

the Lepreau refurbishment. Is that correct?

MR. MARSHALL: Yes. Let me explain so that it might avoid some confusion.

Q. - Step five will be dealt with in the second set of hearings?

MR. MARSHALL: Step five. Evidence on step five has been presented as evidence for the Lepreau Hearing.

The evidence from step four, the identification, definition, costing and preliminary evaluation of all end use demand side management measures has been presented in evidence in this hearing.

The results of that relative to impact on load and a comparison to what has been done in the Load Forecast to determine if the Load Forecast reasonable is all part of this hearing.

The additional possibility of additional demand side management options that may be measures that of achieving demand reduction over and above what is in the load forecast is an economic issue and is considered as part of the Point Lepreau Refurbishment Hearing.

Q. - Okay. So today we are going to deal with primarily the Load Forecast, and secondarily the particular demand side analysis contained in Appendix B here. So those are the two items we will deal with today.

We will start with the Load Forecast and get to the demand side management analysis a little later.

Just to clarify, Mr. Marshall, at what point will the load and resources review be examined in the context of the need for the capacity of Point Lepreau?

MR. MARSHALL: In the evidence on Point Lepreau Refurbishment, the economics of Lepreau in the Lepreau Hearing, the load resource numbers have been redone and the replacement numbers for the 300 and 430 megawatts were provided in evidence there.

Q. - So that will be at the second set of hearings dealing with refurbishment of Point Lepreau?

MR. MARSHALL: Yes.

MR. COON: Okay. Thank you. Dr. Secord.

CROSS-EXAMINATION BY MR. SECORD:

Q. - I just have a supplementary question which again relates to your understanding of the purpose of this hearing.

In the PUB's decision with respect to the generic hearing, the first question that they asked was whether it was reasonable to believe that NB Power would require the electricity presently generated by Coleson Cove and/or Point Lepreau or replacement facilities in the future. As part of that generic hearing the Board instructed the applicant to redo their load forecast as part of their

evidence to address the question of whether the capacity of Point Lepreau will be necessary in the future. That is, is it your understanding that this hearing today is a continuation of that generic hearing?

MR. MARSHALL: Could you give me a reference in the decision where that is, please?

Q. - On page 1 in the decision the first question that the generic hearing dealt with was the question, is it reasonable to believe that NB Power will require the electricity presently generated by Coleson Cove and/or Point Lepreau, or replacement facilities in the future?

Is it your understanding that these hearings today are a continuation of the generic hearings in order to answer that question?

MR. MORRISON: Mr. Chairman, if I -- I might at this point, whether they are a continuation of the generic hearings, I guess that you could get into a legal argument about that.

My understanding was that at generic hearing the Board made a determination with respect to the Load Forecast. The Board then went on and instructed NB Power prior to filing the evidence on Point Lepreau to update the Load Forecast to see whether there were any changes which would have an impact on the reasonableness of the original Load Forecast. In particular, NB Power was to address certain

specific issues.

That has been done. The new Load Forecast has been presented. The purpose of this hearing is to determine whether that updated Load Forecast is reasonable. And that is the only purpose of this hearing.

I understand that there are going to be a lot of questions with respect to the DSM analysis, the screening, whether Point Lepreau is the most economic alternative to supply that load, whatever that load is. But that is for the next hearing, not this one.

This hearing, as I understand it, and as NB Power has understood it, is dealing with is the Load Forecast as presented a reasonable one. And if we are going to go down that other road we are going to be here an awful long time.

CHAIRMAN: Well, Mr. Morrison, with all due deference, I thought I heard the witness say that number four on page two of Appendix B is part of this hearing.

MR. MARSHALL: Yes.

CHAIRMAN: So that is a little, I think, different from what you said. However, I will ask the Conservation Council to continue having Mr. Morrison's remarks in mind. But it sounds like it's -- it's an issue. I don't know if we understand and appreciate both sides of this. I don't

know. Go ahead Conservation Council and ask some more questions and let's try to get to the bottom of it.

I thought Mr. Marshall's response was fine and it laid it out as being one in four on page two of Appendix B.

Q. - Perhaps this would clarify it. The evidence with respect to an updated load and resources review, will that be the part of the evidence for the upcoming Lepreau hearing?

MR. MARSHALL: I believe there was an interrogatory asked for that information and it was presented. But again I am a little confused too answering questions on three or four different hearings at the same time as to which is which, so I can understand everyone's confusion here.

But our position on this hearing is the Load Forecast presented in the generic hearing, Mr. Larlee's group redid the Load Forecast. My group did a detailed end use evaluation of demand side management which is item number 4. Mr. Larlee did item number 1 on that list.

We compared the results of item number 4 with the Load Forecasts subjective review of demand side management -- I shouldn't say subjective, I mean there are analytical thesis but not the same analysis that was done, to determine is this reasonable, and they came up with a new adjusted Load Forecast.

As a result of that, the decision taken from NB Power

to go forward in the Lepreau hearing is that the long-term Load Forecast is the same. It hasn't changed. Or the amount that it changed is so small that it doesn't make any difference. And so that the evidence presented in the Point Lepreau hearing on economics is based on the same forecast as was given in the generic hearing.

And that that would be simple and provide all the analysis that was done on the Coleson Cove case and the Lepreau case, all based on the same information so that all intervenors would be able to come from the same database.

And as an interrogatory we were asked what is the quantification of the difference in the economics between using this new adjusted updated forecast and the old one, and it ends up being a very small difference.

So we are here to determine whether this forecast is reasonable, and if it is then our basis of using the same forecast as done in the generic hearing should be valid to go forward with Point Lepreau.

That's my understanding.

Q. - So it is your understanding that any questions with respect to the need for a rebuilt Point Lepreau -- any questions dealing with that will be dealt with in the Point Lepreau hearings?

MR. MARSHALL: Yes. The point here is if this Load Forecast is reasonable there is a need for some capacity. There is no discussion here about what capacity that is, exactly how much it is, is there a need for that capacity and how can you achieve it. Those issues are part of the next hearing and will influence the economics of what capacity, how you do it and how you achieve it. All of those factors are to be considered in the next hearing, given that we have a Load Forecast on which to base that evaluation.

Q. - I conclude from that -- this will be my last question on this point. Am I correct in concluding that all discussions of the updated load and resources review will be deferred to the next hearing?

MR. MARSHALL: That's my understanding.

Mr. Secord: Fine.

CROSS-EXAMINATION BY MR. COON:

Q. - Okay. Well let's dig into the Load Forecast itself.

Mr. Larlee, in response to question 4 of the evidence in exhibit A-1 you talk about significant changes in the key factors affecting the updated forecast. This refers back presumably to the key factors that Mr. Bhutani had identified in the initial forecast which we are calling now exhibit A-13.

The key factors that Mr. Bhutani identified -- just to understand how these things change, we want to go back for a minute and look at the key factors Mr. Bhutani had identified in his evidence in the generic hearings, which he identified as the availability of natural gas, the intention of the provincial government to remove restrictions on electricity generation --

CHAIRMAN: Excuse me, Mr. Coon. To help us follow your cross-examination, you are referring to exhibit A-13?

Q. - Well I'm actually referring to Mr. Bhutani's evidence in support of A-13. I had mentioned earlier that I wanted to refer to the generation -- the evidence that is submitted to the generic hearings around the Load Forecast, and perhaps that was interpreted as just the Load Forecast itself, but I did want to refer to Mr. Bhutani's direct evidence concerning the Load Forecast at the generic hearing. Sorry.

CHAIRMAN: Well as long as the witness can be given a copy of that. While NB Power is looking for it, Mr. Coon, you are not a lawyer and you do a much better job than a lot of lawyers I have known. However, what you attempt to do is to make certain that the applicant, or whomever you are cross-examining, knows what documents you are reading from or referring to, so the witness can then follow along on

it.

MR. MACNUTT: Mr. Chairman, I wonder by way of point of clarification, what I think we have done is introduced as exhibit A-13 was exhibit B from the direct evidence, pre-filed evidence, of NB Power in the generic. Might it be appropriate to have the pre-filed evidence of the witness Bhutani from the generic introduced as an exhibit and then the two exhibits could be referred to?

CHAIRMAN: I don't know, Mr. MacNutt. There is -- this may be the only reference to it and it's very short and sweet and that will be fine. I suggest we just let this go. And exhibit A-13 is Appendix C, as I recollect.

Anyway, go ahead and if it turns out you start -- or if you want to question extensively based upon Mr. Bhutani's pre-filed testimony in that hearing, Mr. MacNutt's suggestion is probably a good idea.

MR. COON: I don't think it will be extensive. I just wanted to refer to this in the context of the evidence Mr. Larlee provided with respect to the significant changes in those key factors.

CHAIRMAN: Okay. Go ahead, Mr. Coon.

Q. - Okay. So, Mr. Larlee, at page 38 of Mr. Bhutani's evidence down at the bottom where he lists the key factors that affect Load Forecast basically are future electricity

requirements, he lists the availability of natural gas in New Brunswick. Now you indicate that there is some change in that factor in the updated forecast?

MR. LARLEE: Yes, that is correct. As Mr. Marshall indicated in the presentation earlier on, we extended the time frame for which natural gas impacts will be seen in New Brunswick.

Q. - Okay, thank you. The second key factor Mr. Bhutani had entered in evidence was the intention of the provincial government to remove restrictions on electricity generation. Does your evidence contain any significant changes to that factor?

MR. LARLEE: No. Question 4 in the pre-filed evidence, exhibit A-1, it lists those changes that have been made to the forecast.

Q. - So there is no change in issues around the factor of removal of restrictions on electricity generation in New Brunswick from the original?

MR. LARLEE: No, there is no change there.

Q. - The third key factor Mr. Bhutani identified as having any impact on Load Forecast was the provincial government's building initiative. And I see there is no change in your anticipation of the impacts of the provincial government's building initiatives, is that correct?

MR. LARLEE: Yes.

Q. - And on the fourth was ongoing improvements in appliance and thermal efficiency in homes. And again, I don't see - well I will ask you. Is there anything here in terms of significant changes that would affect that key factor?

MR. LARLEE: No.

Q. - Okay, thank you. So the only change -- all these key factors that Mr. Bhutani had identified as affecting New Brunswick's electricity requirements in the future -- of course apart from economic growth and demographics here, that is the context that Mr. Bhutani had mentioned these key factors, is the -- some issues around natural gas? Those are the key changes from those key factors?

MR. LARLEE: Apart from what you mentioned, economic growth, yes.

Q. - And demographics?

MR. LARLEE: Yes.

Q. - Correct. Okay. Thank you. Now so we will go back to exhibit A-1 of the evidence and let me take you to question 7. How does this forecast address demand side management? Now you define demand side management for us in interrogatory 2, I believe, of exhibit A-6, CCNB-2 in exhibit A-6.

This is quite important because this question was how

does this forecast address demand side management. In your definition in responding to our interrogatory CCNB-2 you describe the demand side management as those activities that through education, regulation, economic incentives or subsidies cause an electricity consumer to reduce their existing or future demand for electricity. Is that correct?

MR. LARLEE: Yes.

Q. - Now there is some confusion in our minds here about this point because if we look in the load forecast itself with respect to where you touch on this in appendix C, what we are calling exhibit 13, I just want to compare the two. On page 78 in the middle of that page 2.5.3 the -- under the title Energy Efficiency it says the forecast also includes estimates of naturally occurring energy efficiency measures.

Is that what you are referring to in the response to this question about, does this forecast address the demand side management? In other words, these energy efficiency measures outlined in the -- on page 31 of the exhibit 13?

MR. LARLEE: The energy efficiency measures including shell improvements and the public provincial building initiatives and -- and adjustments after the termination of the provincial building initiatives based on what we

have seen through those initiatives, are all considered energy efficiency measures. And we have included them as part of DSM in our definition.

Q. - Okay. And if I take you to the updated Load Forecast, appendix A in exhibit A-1 to find my spot. Just a minute. Well, one reference to it, in any event, is on page 21, section -- paragraph 4, I guess. Here you refer to naturally-occurring demand side management, reducing sales by 123 gigawatt hours for residential customers by 2010.

Now here you are using the language of naturally occurring demand side management. And previously we had the language of naturally occurring energy efficiency measures. And I'm wondering why the difference?

MR. LARLEE: I believe we are using the terms interchangeably here. The reference to naturally occurring is a way to characterize the type of demand side management. You can see that it doesn't require a program to activate, drive people to these efficiencies.

Q. - But in your definition you provide for -- in response to CCNB-2 you indicate that the definition of DSM as basically the improvements and efficiency that result from programs?

MR. LARLEE: I'm sorry. I'm going to have to ask you to repeat the question.

Q. - In CCNB-2, interrogatory CCNB-2 where we ask you to define demand side management your response was that these are activities that result in electricity consumers to reduce their existing or future demands, some activities that are directed at bringing about that reduction.

And what you have described here as naturally occurring demand side management would seem to be a contradiction in terms.

If it is naturally occurring what are you managing?

MR. MARSHALL: I think the issue here is when we say naturally occurring we mean that it is occurring within the normal state of business today.

We do a lot of things in our business through our account managers and energy advisers, publishing information, making that information available to customers on energy efficiency and things.

What we are talking about here is that when we get into subsidies or direct incentive payments we do not have clear programs targeted at those, all right. So there is kind of a gray line between what you consider naturally occurring.

If we did not have any energy advisers or any account managers dealing with customers in any way and had a completely hands-off approach to end use energy, then I

think we could say it is naturally occurring.

But in the Load Forecast we know that we do have all of these people out there working with customers and dealing with them. So we say inherent in that we are going to project to achieve certain reductions in end use load. That is what is measured as in these forecasts as naturally occurring.

Q. - Thank you, Mr. Marshall.

I would like to take Mr. Larlee to CCNB interrogatory 16 which is exhibit A-6 again. And here we ask you to define naturally occurring demand side management, as we were somewhat confused based on your definition of demand side management in interrogatory CCNB-2.

And you say that naturally occurring demand side management refers to measures undertaken by customers who control their demand for electricity with no external stimulus or incentive.

So is it fair to say the impact on the Load Forecast of what you are calling demand side management in the evidence in response to Question 7 is a combination of those things that customers will do with no external stimulus, in other words they will do them anyways, and the one program that is in place operated by the provincial government, and that is the one focusing on

their own government-owned buildings to try and improve the -- reduce their energy consumption there?

MR. LARLEE: I'm sorry. You referred to Question 7?

Q. - I'm sorry. That is Question 7 of your evidence, direct evidence.

MR. LARLEE: Oh, the direct evidence?

Q. - Yes.

MR. LARLEE: Thank you.

Q. - So just to rephrase that, the question was how does this forecast address demand side management? And looking at the way you are defining -- have defined demand side management and naturally occurring demand side management, we understand from that that this forecast addresses it in two ways.

And it considers those measures undertaken by customers to control their demand for electricity with no external stimulus and the results of -- forecast results of the government's own program to reduce efficiency -- or increase efficiency of electrical use in their own buildings.

So are those the two ways in which this forecast addresses what you call demand side management here?

MR. LARLEE: Those are two of the demand side management measures that are in the forecast. We also have

significant adjustments in the forecast for natural gas incursion into our load which affects the forecast as well.

But what we do not consider demand side management we have embedded in the residential model, we have applied sufficiency improvements. So those are all areas where the load is impacted through reductions in use in electricity.

Q. - Correct. But what you are -- so you are agreeing with me then that this forecast addresses the issue of energy efficiency or improvements or what you are calling demand side management simply by trying to forecast what people or customers are likely to do with no external stimulus in combination with the government's building program for their government-owned buildings?

MR. LARLEE: The government building program is only in the forecast for one year. And then we have estimated impacts beyond that just based on what we have seen historically.

Q. - Based on the government's program to upgrade their buildings?

MR. LARLEE: Based on what we have seen in the past, that either under the assumption that customers will continue to do those improvements in the absence of the program or that the government will continue the program. But there

is no indication that they will.

Q. - Well, which is it? Are you expecting the government to continue the program or are you expecting the government building managers to continue to make the kinds of improvements we have seen under the government program?

Has the program -- are you assuming the forecast that the program continues here or is it terminated and you are assuming that we will continue to see similar improvements without the program?

MR. LARLEE: Given that we have no information that the program is going to continue, we are forecasting similar improvements without the program.

Q. - So would you agree then in that sense the improvements seen today have been a result of that approach?

CHAIRMAN: Excuse me, Mr. Coon. Mr. Larlee, would you repeat your response to that question. We didn't understand the last bit of it.

MR. LARLEE: Given that we do not have any information that the program is going to continue beyond its planned end date, the allowances we have in the forecast then are based that building managers or that the general service sector will continue the efficiencies, similar to what we have seen under the program.

MR. MARSHALL: I might add to that. That is consistent to

what has happened in the past. When we ran our R-2000 program back in the early to mid 1990s and we provided direct subsidies, that program was able to change the infrastructure of the house construction industry in the province. So that when the program ended, the level of energy efficiency in the average new house constructed was very close to R-2000. And those assumptions have been included in the forecast to date.

So the fact that we run a program or the government runs a program, that program will have some ongoing value and pick up in the industry of changing the infrastructure that is there.

And I might add that it is not a question of no external stimulus at all. Our account managers and energy advisers, as I say, are out talking to builders and talking to customers and advising and giving us this information. So that customers have access to the improvements from those programs and then look at continuing to go on.

And those are the things that Mr. Larlee has in the forecast.

Q. - That may be, Mr. Marshall.

Mr. Larlee's response to our direct interrogatory with respect to defining what is in the forecast with respect

to demand side management consisted of this naturally occurring demand side management which results, according to his evidence, from no external stimulus.

And secondly, the government building initiative or at least continuing to get similar results into the future as has been produced by the government building initiative.

Am I correct, Mr. Larlee? Is that what you have said?

MR. LARLEE: Yes.

Q. - Okay. Thank you. Okay. I would like to shift to --

CHAIRMAN: Mr. Coon, the Board will break by 12:30 at the latest. Is this a good time for us to break or do you want -- have you got a line of questioning that you would cover in 10?

MR. COON: I would be starting a new line now, Mr. Chairman, so if you would like to break now that will be fine.

CHAIRMAN: Take the break. We will -- is 1:30 sufficient time? We will try it, and if somebody isn't back we will wait till you get here. How is that? Okay.

(Recess - 12:20 p.m. - 1:30 p.m.)

CHAIRMAN: Any preliminary matters before we start this afternoon? If not go ahead, Mr. Coon.

MR. COON: Thank you, Mr. Chairman. I would like to move on to some questions around the issue of self-generation by large customers and whether there is any changes between

the last forecast and this forecast. So that would be on page 4 of the evidence, exhibit A-1.

CHAIRMAN: Is that Mr. Larlee's direct evidence you are referring to --

MR. COON: Yes.

CHAIRMAN: -- Mr. Coon? Thank you.

MR. COON: Correct.

Q. - My question was does the forecast change -- contain any change the assumptions for self-generation by large customers? The previous forecast contemplated 150 megawatts by a particular date.

Could you just repeat for me what date that was, the 150 megawatts of self-generation was anticipated to come on?

MR. LARLEE: The question, Question 9 is Does this forecast contain any changes to the assumptions for self-generation by large customers?

The answer, to read it back into the record is "No. 150 kilowatts of self-generation commencing midway through '05, '06 continues to be NB Power's best estimate."

Q. - Now this is assuming I think as you said, as was said this morning in the presentation, that gas laterals are built to the northwest and the Miramichi, is that correct? That is the assumption?

MR. LARLEE: The assumptions around the 150 megawatts of self-generation would probably be best answered by Mr. Marshall. So I will defer to him.

Q. - In the presentation this morning, Mr. Marshall, it appears to me that there is an assumption that the laterals, gas laterals were being built up to the northwest and the Miramichi as part of -- in the Load Forecast. That was an assumption.

MR. MARSHALL: That is correct. Relative to the amount of gas penetration for space heating and water heating, we looked at those regions of the province.

And it assumes the laterals to Campbellton and to Edmundston are completed in the forecast period.

Q. - Are these 150 megawatts of self-generation to come on between 2005 and '6 in the southern part of the province?

MR. MARSHALL: The gas right now is only available through the central part of the province and in the southern part of the province.

The discussions that are ongoing with a number of suppliers would be in the southern part of the province, yes.

Q. - So I guess my question then is why -- if we have got 150 megawatts in the south being displaced by self-generation, if you are assuming from this Load Forecast that gas is

going to be in the northwest and the Miramichi, why we wouldn't see some further displacement of load through self-generation above and beyond 150 megawatts in the forecast period?

MR. MARSHALL: Again, the 150 megawatts is based on projects at this time looking forward for what has an impact in the immediate forecast on a decision to retube Lepreau or not and the requirements in the 2006 to '10 period.

The potential for co-generation or purchase of energy by -- from other suppliers in the long term, we believe at this time to be low, the probability of that to be low based on the cost structure of NB Power and our projected costs going forward, looking at the marketplace, we see that opportunity to be low. And that is what the forecast is based on.

Q. - If a company decides to self-generate, will they have the legal ability to export surpluses to other customers in Canada or United States?

MR. MARSHALL: They have the opportunity today to do -- any independent generation today that interconnects on the system has the opportunity to export power out of New Brunswick under the current transmission tariff.

Under the energy policy which targets access to transmission level customers for customer choice and

supply in April of 2003, any surplus energy would be able to compete in that marketplace.

Q. - Have you canvassed your industrial customers in the northwest or Miramichi about their interest in self-generation if they had access to natural gas?

MR. MARSHALL: Yes. As Mr. Larlee has said in the Load Forecast, we have continuing discussions with our large industrial customers about a number of topics, what load they may use, what their future plans are, as well as what potential there may be for co-generation.

Q. - What are the typical loads of a pulp and paper mill, the range from the low to the high end, firm loads?

MR. MARSHALL: The range of load of a pulp and paper mill in the province? They could go from a natural load point of view, an end use load in the pulp mill, they could go from a low of around 30 megawatts to a high of around 150 megawatts.

As a customer of NB Power, some of those mills have a lot of self-generation today that is already inside the mill. So from a firm load point of view, in terms of contracting for firm load, that we need to supply, the numbers go from zero to -- I guess zero to 75 would be the largest.

Q. - What would happen to the load forecast if in fact another

-- say we have got 150 megawatts going to self-generation.

Right off the bat, under the new market environment, what would happen if another 75 megawatts on top of that, from your industrial load, went to self-generation say midway between 2009/2010? What would that do to the load forecast?

MR. MARSHALL: It would lower the load forecast by 75 megawatts.

Q. - What would it do to the projected rate of growth in the year 2010/2011?

MR. MARSHALL: It won't affect the growth. The Load Forecast forecasts the end use of energy by all sources. And then the self-generation is an adjustment to the forecast after the fact.

So it won't affect the use of the energy forecast. It will affect the supply of the energy.

Q. - Which is something we are going to talk about in the next hearing, we understand --

MR. MARSHALL: Yes.

Q. - -- not this hearing?

MR. MARSHALL: And the economics of that supply.

Q. - Now in the presentation you gave this morning in A-7, you have just repeated what you describe as the PUB directive from the generic hearing. And that is the one that

directed NB Power to file this updated Load Forecast.

It asks you to address a variety of issues such as self-generation by large customers, but as well as the supply of electricity by parties other than NB Power.

And in the Load Forecast evidence we cannot find anywhere where the supply of electricity by parties other than NB Power is addressed in this direct evidence. We see the self-generation evidence we are just discussing.

Why is that not addressed?

MR. MARSHALL: The -- we see no impact from that. However there was an interrogatory, PUB-3 which asked that that be specifically addressed.

And the response is given in PUB-3, page 4 of exhibit A-6 under the tab Board of Commissioners of Public Utilities.

You can see the response, the first paragraph, NB Power's generation costs are very competitive with market prices of electricity and are expected to remain so beyond 2010/11. New generation under construction is generally based on natural gas which is more expensive than existing or refurbished generation facilities at NB Power.

So any new facilities that are going to come online in order to supply competitively this electricity should on our projections be higher priced than our current cost of

supply. So we do not expect customers to exit the system and leave to competitors.

Q. - Mr. Marshall, are you familiar with the Province's energy policy designed to establish a competitive market for wholesalers and retail competitors on the industrial transmission side.

MR. MARSHALL: Yes, I am.

Q. - And are you familiar with the market design committee that that energy policy established to recommend the rules by which such a market would operate?

MR. MARSHALL: Yes, I am.

Q. - In fact did you sit on that design committee?

MR. MARSHALL: Yes, I do.

Q. - So what you are saying then is the Province wants to create a competitive market for electricity at the wholesale level, a level of retail industrial customers hooked to the transmission line. But in fact there will be no market?

MR. MARSHALL: The White paper policy is to provide an opportunity for self-generation, to provide an opportunity for customers served at the transmission level to be able to procure power in the marketplace.

And the rules of market design are setting up a structure and recommendations to the Minister under which

that market could operate.

Whether or not there will or will not be a fully functioning competitive market will depend upon the competitive availability of resources in that marketplace.

And at this point in time we do not see a significant amount of competitive sources other than NB Power supply.

Q. - Could that be because no market exists currently?

MR. MARSHALL: There is a market today that exists. There is a wholesale market that NB Power participates in in the region with Quebec, Maritime Electric, other utilities, Northern Maine in the United States, ISO New England market, through Quebec into New York and Ontario.

There is a fully functioning northeast regional wholesale power market that operates today that NB Power competes in.

What we are talking here is about the choice of customers, individual customers inside New Brunswick to have access to that market should they so choose.

Q. - But there currently is no market that industrial, large industrial consumers, your large industrial customers hooked to the transmission lines can play in New Brunswick?

MR. MARSHALL: The current law today under the Electric Power Act makes NB Power the monopoly supplier for all

loads in the province.

Until the Electric Power Act is amended and changed to set up the rules for that market, customers do not have the right to purchase from other than NB Power.

Q. - And what year is that expected to happen?

MR. MARSHALL: Mr. Coon, you are well aware from the White paper and your participation in the market design committee that the government policy is targeted to have that operational by April of 2003.

Q. - And could you tell us what the total size of that potential market is, the total size of the contestable market potentially?

MR. MARSHALL: The contestable customers in that market will be all large industrial customers served at the transmission level plus municipal utilities, Saint John Energy and Edmundston Energy and the Town of Perth-Andover, who are currently not a customer of NB Power but will have access to move in that marketplace.

The total load of all of those customers is about a thousand megawatts.

Q. - So after April 2003, a thousand megawatts of NB Power's load, those customers represented by that load would have the opportunity to choose another supplier besides NB Power?

MR. MARSHALL: That is correct.

Q. - But you did not address that possibility in your evidence?

MR. MARSHALL: As I said in response to PUB-3, we do not see that alternative suppliers will have costs lower than our current supply.

And that coupled with the White paper policy position that there will be no cost-shifting to other customers in New Brunswick, and we still have an obligation to supply all customers who choose not to leave, we are forecasting that we will maintain that obligation and have to supply the total load of the province with the exception of 150 megawatts of self-generation that is in the forecast.

Q. - Is one of the alternative suppliers that your current industrial customers able to go to post April of 2003, would that include Hydro Quebec?

MR. MARSHALL: Yes.

Q. - If an aggregate, the pulp mills in Atholville, Dalhousie and Bathurst along with the smelter in Belledune went to the market, sought contracts post 2006 with Hydro Quebec, what would NB Power's lost sales amount to?

MR. MARSHALL: Just a minute. The amount of load that could switch if you look at the pulp mills in -- up in the -- the Chaleur Region, plus the smelter and the mines would

be roughly 150 megawatts.

Q. - Are the including in that the Miramichi mills or just the ones on the North Shore?

MR. MARSHALL: From Bathurst north.

Q. - Thank you. All right. Now can we go forward in time a little bit regarding in-province electricity requirements beyond the 2002, 2003, 2010, '11 time frame forecast, I have a number of questions on that. And that's on the same page in response to question 10.

It describes the growth rate for that period as being approximately 1 percent per year. And it also says that that's based on the growth rate anticipated in the final year of the initial forecast period. Am I correct in following that line?

MR. LARLEE: Yes, I believe you are.

Q. - Okay. So you have taken the growth rate of the final year of the 2010 to 2011 forecast period, and applied that across on an annual basis the post 2011 period. So you are saying that after 2011 we can expect the growth rate to be 1 percent every year forward?

MR. LARLEE: We don't see any significant changes to what is in the forecast for that at the end of the forecast. So therefore we think that the growth rate that we see at the end of the forecast will continue.

Q. - What would the actual growth rate be if you took that last year out of 2002 to 2011? What would the growth rate be for -- average growth rate for 2002 to 2009/10?

MR. LARLEE: I don't have those numbers available right in front of me.

Q. - Or just average. What is the average growth rate for this -- this forecast period?

MR. LARLEE: If you look at Appendix A of exhibit A-1 on page 3, table 1, perhaps this will help in answering your question.

The overall increase in the forecast you can see at the bottom of that table is essentially 0.5 percent over the period of the forecast. And the growth rate for the last year, if we look at the very last column on the table, 1.1 percent, the year before .9 percent on a year over year basis.

Q. - Okay. Thank you. That clarifies that. In load forecasting is it the case that the level of certainty around the forecast decreases as you go out in time?

MR. LARLEE: Yes. I believe that is the case in all forecasts.

Q. - So wouldn't it be fair to say that in any forecast the final year of that forecast would be the least reliable of those you are forecasting in a forecast period, furthest

out, the year that's the furthest out?

MR. LARLEE: We are likely to see the most variation in the last years of the forecast than in earlier years.

Q. - So to be on the -- why then would you not assume the average .5 percent growth rate post 2011 into the future rather than picking the least reliable year's projected growth rate of 1.1 percent?

MR. LARLEE: During the forecast period there is several things that -- that are in the forecast that are only forecast to happen one time. And that is the appearance of natural gas. So that is in the forecast and is accelerating through the forecast period. But then towards the end of the forecast it has diminished somewhat.

And the second significant item is 150 megawatts of self-generation which is in the forecast period in '05 - '06. But then on a going forward basis, there is no other adjustment in the forecast for self-generation.

Q. - What then would account for the 1 percent growth rate, 1.1 percent growth rate you are projecting for that final year of the forecast period?

MR. LARLEE: Well, I believe the forecast discusses in quite a bit of detail the impact of economic growth and on general service and industrial consumption and population

and household size resulting in the growth in residential customers impacting the forecast. So those two items would result in the growth that you see there.

Q. - Okay. So let me get this clear then. What you are saying is over the forecast period there are a number of bumps in the road which reduce load growth.

Competition from natural gas, some self-generation coming on that wasn't there before caused by a change in - - in the environment you are operating in, the availability of natural gas from one or more sources. Changes to New Brunswick's electricity policy regarding self-generation and other possible changes around opening competition. This has created a number of bumps in the road for the current forecast period. And those bumps in the road will -- will not appear past 2011. And we will be back to a steady rate of growth?

MR. LARLEE: That's the assumption, yes.

Q. - In the evidence, exhibit A-1, back on page 4 at the bottom there, you list a number of factors to kind of explain why you think the load growth rate beyond 2010 and '11 would be approximately 1 percent similar to the final year of the current Load Forecast.

You have got natural gas penetration continuing to impact on residential and general service sectors. That's

the first one.

If we turn the page, you have a curious one on the top of page 5, which is NB Power's cost of generation will continue to be more economic than emerging technology such as fuel cells and micro turbines.

Now in your opinion, wouldn't it be the case that a more significant factor here concerning competitive supplies would be potential for a self-generation -- a gas fired self-generation, co-generation, access to Hydro Quebec imports and other alternative suppliers to 1,000 megawatts of your load base?

MR. MARSHALL: The point on NB Power's cost of generation will continue to be more economic than emerging technologies is specifically references fuel cells and micro turbines. What the point is our cost base will be competitive, more economic than -- than natural gas, developments in natural gas, co-generation at projected prices of gas as well.

And more economic than -- than Hydro Quebec. Not than the cost of Hydro Quebec energy, but more economic than the price that Hydro Quebec are willing to sell their energy at.

They will target the highest price markets in Ontario, New York or New England and sell into those markets. And

because the prices in those markets are projected to be higher than our cost structure, Hydro Quebec will sell into those markets at a greater profit and not sell into New Brunswick.

Q. - Mr. Marshall, do you know what Hydro Quebec is willing to sell their power at to New Brunswick for 2011/2012?

MR. MARSHALL: They will not give us a price for long term supplies, because they will not contract for long term firm supplies at this time.

Q. - So the answer is you don't know what kind of contract they would enter into in discussions at 2011/2012?

MR. MARSHALL: They have not offered -- they will not offer us any energy out in that time frame.

Q. - Well, now. But the point is, is there -- do you have any information that would suggest once we get out to the year 2011/2012 that Hydro Quebec wouldn't contemplate offering energy at a competitive price to some of your customers?

MR. MARSHALL: Our view is that Hydro Quebec will -- will offer energy to anybody that will take it that will pay a price high enough that they will maximize their return.

Our projections of market prices and other projections of market prices, and our projections of our cost structure are that Hydro Quebec will make more money

selling that power into New England, New York and Ontario than they will into New Brunswick.

Q. - There are some other factors that strike us as perhaps being important around the load growth after 2010/2011. And, I guess, Mr. Larlee, I would like you to comment on them.

One of them is, what role do prices pay -- play here in terms of cost of electricity out beyond 2010. Are there price effects?

MR. LARLEE: We have -- we have a significant amount of fuel switching in the forecasting, which implies that there will be some advantage for customers to go to natural gas. That implicitly implies that there are -- there are price impacts in order to get the level of fuel switching that we have in the forecast.

Just to add another comment, that the level of fuel switching we see could also be as a result of subsidies or price relationships.

Q. - Have you estimated actually the price elasticity of demand in your market?

MR. LARLEE: I believe there is an interrogatory from the Board of Commissioners on price elasticity of demand. Perhaps you can refer to that.

In exhibit A-6 under the Board of Commissioners Public

Utilities tab, page three, PUB-2, there is a question on price elasticity and how it is handled in the forecast.

Q. - So this describes -- yes, this describes how you have handled this. But I guess my question was, do you actually do estimates of the price elasticity on demand for your markets?

MR. LARLEE: No, we have not. However in price elasticity, that is the price of electricity related to the consumer price index or inflation, electricity is tracked closely with the consumer price index. So there hasn't been any - - any elasticity effects in the last 10 years or so.

Q. - So does that mean that you are assuming in this forecast and beyond that there will be no real increases in the price of electricity in New Brunswick?

MR. LARLEE: No, that is not the case. At this point because of several factors, one of which is the corporate structure of NB Power, it is still an item on the Provincial government's agenda. We do not have a long range or mid-range rate strategy. And until that -- until we have such a strategy that type of prediction can't -- can't come about.

Q. - Without that rate strategy, how reliable are the estimates in your Load Forecast and what sort of margin of error would you expect in the absence of the rate

strategy?

MR. LARLEE: Given that in the past we have seen consumer price index and electricity tracked quite closely and our sales continue to increase, we don't think that there would be significant impact. But again, until we have more information on where prices are going, it is not possible to build that into the forecast.

Q. - Okay. Just to clarify, Mr. Larlee, could you explain in time what a medium term rate strategy, what time that would cover and a long term rate strategy? Or, maybe conversely, how far up does your short term rate strategy go if you have got one?

MR. MARSHALL: I guess the short term rate strategy is the rate increase that happened last week. It will cover this year. And a medium term would be over the next few years.

Relative to your question on price elasticity, underlying the economics of the Lepreau evaluation, again, which is the subject of the next hearing, but because you are coming back to effects on price elasticity, CPI is projected to grow at 1.8 percent over the period for the economics of Point Lepreau.

So if electricity rates increased at 1.8 percent along with CPI, there would be no cause for any price elasticity differential relative to the forecast. So for purposes,

you could assume that level of projection.

So what change we are talking about would be a change if price -- electricity prices are lower than 1.8 percent, we would expect maybe there would be an increase in use of electricity to some degree. If the rate increases are higher than 1.8 percent, then there might be a mitigating effect in terms of elasticity.

I just want to make the point that the elasticity is not from a zero base, it has to be from a CPI base of 1.8 percent growth.

Q. - What I understand that is being said then is, there is no rate strategy for the next few years as defined --

MR. MARSHALL: That is correct.

Q. - -- as medium term?

MR. MARSHALL: As Mr. Larlee said, until a decision is made by the government on what structure the assets of NB Power will be in, whether it is one company, two companies and how it will be handled, it is not possible to go forward with a detailed structure.

MR. COON: Thank you Mr. Marshall. I would like to move on now to the actual Load Forecast itself, Appendix A of exhibit A-1. And if we could turn just to begin with page 3.

CROSS-EXAMINATION BY MR. SECORD:

Q. - The question relates to page 3 of the Load Forecast itself in Appendix A. In response to the Conservation Council's interrogatory number 9, the entries in Table 1 listed as outlook were revised. And the Conservation Council request that -- requested that several other numbers be -- the outlook figures be revised for more current data that NB Power had. And there was some difficulty actually replacing the numbers for some of the other data.

I just want to make certain in Table 1 that we have more up to date numbers and we agree on them. In Table 1 in Appendix A there is a number for the outlook in 2001/2002 of 3,041 megawatts as peak demand.

And in response to interrogatory 9, the number that is given as 2768 to replace that number, am I interpreting that response correctly, that 3041 should be replaced by 2768?

MR. LARLEE: The number that you see there for the outlook are numbers that were available to us when the forecast was pulled together. These are actually what we call the September outlook numbers so they would have been available to us in late August.

The numbers that supply the response to your interrogatory CCNB-9, those numbers are up to and

including preliminary actuals for the month of February and the budget numbers for March.

The number 2768 megawatts that is the one hour peak demand that occurred in February.

Q. - So that should -- then I assume I am correct in replacing 3041 with 2768?

MR. LARLEE: I'm sorry. Can you repeat the question?

Q. - In table 1, should I replace 3041 with the number 2768 as your most recent outlook estimate for 2001/2002?

MR. LARLEE: Yes. The numbers are comparable.

Q. - So am I correct in inferring from that that your estimate for this year for peak demand was off by about 8 percent?

MR. LARLEE: That sounds approximately correct, yes.

Q. - Or another way of looking at it is that the actual peak demand from 2000/2001 to 2001/2002 dropped -- instead of increasing as expected by 5.1 percent, it dropped by about 4 percent roughly?

MR. LARLEE: Yes, that appears correct. If we look at the energy numbers, you will see that the energy numbers are down as well. That is almost entirely due to weather.

We had a considerably warmer than the 30-year normal year from April through to March. In the order of about 555 degree days out of 5,000 degree days in a year.

That accounts for all but something in the order of 10

gigawatt hours difference between the forecast and what you see here as more recent numbers.

Q. - Does that apply to the peak demand figure as well, that 90 percent is explained by weather?

MR. LARLEE: No, we do adjust the peak hour demand figures based on minus 24 as the design temperature and using a rolling eight hours of temperature readings.

I don't have those adjustments with me right at hand.

But it does raise the value. The temperature was not quite that cold.

Q. - Can you give us some indication of what went wrong in this forecast on the peak demand? You mentioned for energy supply it is the weather, on peak demand how do you explain that variance between your outlook nine months ago and the most current estimates that appear to be off by about 8 percent? What explains that variation?

MR. LARLEE: We adjust for two factors. We adjust for the temperature, as I mentioned. We also adjust for unusual industrial operations.

But there are other factors that come into play, the amount of daylight, if the peak occurred -- I believe this peak occurred in February. So there is more daylight than the January peak that we would be forecasting.

As well history shows that a number of the peaks that

we have seen in the past occur after extended cold snaps several days or more. We haven't seen those, the extended cold snaps in the last few years.

Q. - I'm not certain if we are talking about the same thing. So I will maybe rephrase the question.

CHAIRMAN: Dr. Secord, would you bring that mike over more in front of you. And Mr. Larlee, if you could bring it in closer as well.

There are occasions when some of us are getting hard of hearing in this room. And your voices drop off. And we start to lose you. Thank you.

Q. - Focusing on peak demand, we have established that back in August or September you thought the peak demand was going to be 3041 megawatts. Today you think it is going to be 2768.

And you have told me that 2768 was actually what happened one month this year, is that correct? Is the 2768 a --

MR. LARLEE: It is an actual figure.

Q. - -- actual figure?

MR. LARLEE: Yes.

Q. - My question is how do you explain the difference between your estimate and what actually happened?

MR. LARLEE: I just -- I thought I answered that question.

There are several factors, the temperature, industrial operations and factors that we don't adjust for, including the length of time of the cold period beyond eight hours.

We only take an eight-hour period and the amount of daylight.

Q. - My next question is do you know what proportion of that variation in your estimate was due to weather and what proportion was due to other factors?

MR. LARLEE: We have adjusted our estimate for weather and industrial operations. But we -- I don't have those numbers with me right now.

Q. - So am I correct in inferring from that that you don't have the numbers with you to explain the variation between your estimate and what actually occurred for that period?

And I will put it simply. How much of this is due to economic slowdown? How much is due to the weather? How much is due to forecasting techniques? Do we know? And can we have that evidence?

MR. LARLEE: When we put together the outlook in September we didn't make any adjustment to the demand. What you see there, the 3,041 is the same number that appeared in the forecast file, the generic hearing.

We did however adjust the energy. And the energy was adjusted in response to what we felt was the economic

slowdown at the time.

There were no adjustments made at that time for weather. And the reason being where we were in the year.

The heating months had yet to come.

Q. - What I'm trying to get at is this is the -- the numbers for 2001/2002 in many ways serve as a base for your Load Forecast. That is where you are starting from. And I'm trying to establish where we are starting from.

And if we are starting from a lower number, not because of the weather but because of some real factors aside from the weather, then it is helpful to know what the base is that the Load Forecast is working with.

That is what I'm getting at here is what is our best estimate of our most recent estimate of megawatt peak demand? And is there anything unusual about it due to the weather in which you might say well, that should be a little bit higher than the 2768 because of the weather?

MR. LARLEE: I think the key point here to remember is that this forecast starts out as an energy forecast, and that the peak hour demand is then derived from the energy forecast.

The point I tried to make early on was when we look at the energy outlook and compare it to the actuals that we have adjusted for weather, it is within 10 gigawatt hours.

So we are very close. And that gives us a lot of confidence, that this forecast is indeed a solid forecast.

Q. - I will infer from what you are saying is that you are not providing evidence to this hearing on the variation between 3041 and 2768, but -- am I -- is that a correct statement?

MR. MORRISON: Mr. Chairman, I think we can probably -- if I understand what the Conservation Council is looking for is an explanation as to why the peak hour demand or what proportion of it is due to weather and so on, I think we can probably get that information at the break and provide it. It's my understanding that that information is obtainable.

CHAIRMAN: That's what you are looking for, isn't it, Dr. Secord?

MR. SECORD: That's correct, yes.

CHAIRMAN: All right. Why don't we do that. Go on to another line of questioning.

CROSS-EXAMINATION BY MR. COON:

Q. - Staying on the same table one -- well actually the point is below table one I suppose -- the key factors that affect the pattern of load, the last factor there suggests an industrial customer shut-down is scheduled for 2008/2009. Is that Bathurst Mines? Is that what that

represents?

MR. MORRISON: Mr. Chairman, I believe this was the subject of the confidentiality hearing last week. NB Power has refused to give information that it obtains from customers that deal specifically with confidential information that is provided by those customers. I believe that -- at least it was my understanding that that issue was resolved last week and I don't think it's appropriate for the question to be brought up at this time asking NB Power to identify a specific customer and its plans, whether it be for development, shut-down or variation in operations. That issue was argued last week and I don't think it should be revisited here today.

CHAIRMAN: Was that to be your response?

MR. LARLEE: Yes, it was. Not quite so eloquent.

Q. - I guess what I'm trying to get at here, Mr. Larlee, is in the Load Forecast, it's obviously important to include -- remove any customers who have announced their intention to shut down or go out of business on the industrial side since they represent significant loads. You indicate one industrial customer shut down here 2008/2009. So maybe without naming names, rephrase and ask you does the Load Forecast anticipate only a single -- first of all, does this represent a single facility, let me try that?

MR. LARLEE: The paragraph you are referring to on page 3 is discussing a comparison between the previous forecast and this forecast, and it is the shut-down of a particular customer that is causing some of the difference that you see between the forecasts.

Q. - Correct.

MR. LARLEE: It doesn't imply that there is only one industrial shut-down in the forecast.

Q. - Okay. We are getting closer to what I am after here. So where it says an industrial customer, does that though refer to a specific facility or a company with multiple facilities?

MR. MORRISON: Again, Mr. Chairman, I understand the significance of the question, but I think we have to be careful that the response given doesn't through the back door identify a customer that we have already decided --

CHAIRMAN: Well, Mr. Morrison, I'm going to ask you to refrain and let the witness attempt to answer. He is perfectly well aware of the confidentiality issues involved, and, Mr. Coon, I would like to know where you are going with it, frankly.

MR. COON: The reason for the question simply was to determine whether or not the likely industrial customer shut-downs in this Load Forecast period are all included.

So if I may be permitted to ask one single further question which Mr. Morrison is unlikely to have a problem with, I would like to go ahead with that.

CHAIRMAN: By all means, go ahead. That's the way we play this hearing process is that you ask it and Mr. Morrison or the witness will say something if they don't think it's appropriate.

Q. - Okay. Mr. Larlee, has NB Power studied possible shut-downs of other customers on -- other industrial customers on your system in addition to the one you are referring to in the evidence here?

MR. LARLEE: We have a staff whose full-time job is to stay in touch with industrial customers, and certainly part of that undertaking would be to relay back to my group any indication from those customers that they receive that the operation is or may be closing down.

Q. - I said one, but supplementary to that which is at what point -- at what point in those discussions do you decide to adjust the Load Forecast? Do you adjust the Load Forecast in response to notice of intent from a customer or do you adjust Load Forecast once its public, the intent of a customer to shut down.

MR. LARLEE: We wouldn't wait for a public announcement. We would rely on our discussions with the customer.

Q. - Thank you. Now if we could turn to page 7, some very nice graphs, in exhibit A-1. I would like to look at figure 4 which is the bottom graph that charts demand out over time, '75 to some time past 2010. And I want you to look at the solid black line and in looking at the period past 2005 or so, 2005, 2011 there, the slope of that curve -- and maybe it's just the graph -- but my question is does the slope of that curve represent a return to the growth rates of the late 1990s which on this graph appears to have a similar slope?

MR. LARLEE: I haven't decomposed this chart and analyzed the different slope rates at different times.

However, what you are seeing there is the incursion of natural gas flattening out the growth rate.

Q. - I guess at least visually the growth rate takes an upturn there past 2007 or so that seems to be about similar to the growth rate in the mid '90s, mid to late '90s, where there was no natural gas.

MR. LARLEE: You can see in the forecast, the forecast line, the solid line, the impact of self-generation. Then as you move out in time I believe that's the area of the curve that you are focusing on. The effects there are mostly the result of natural gas and then there is a slight step that would be as a result of industrial

customer shut-down. And then the slope returns. Again natural gas -- however, the effects of natural gas are starting to wane at that time.

Q. - Thank you. Now if we could turn to page 12, another nice figure. I have got to learn how to use this software. Figure 5 on page 12, I just want to clarify that of that pie chart the grey shaded components, industrial transmission, that's 36.6 percent of sales, and these are energy sales by customer class, industrial transmission 36.6 percent of sales in the 8.2 percent of sales concern wholesale, that's the portion of NB Power's sales that can go anywhere after 2003, alternative suppliers to the market.

MR. LARLEE: Yes, that's correct.

Q. - So it's that grey -- large grey chunk there. Okay.
Thank you.

Now if we could turn to page 18. This deals with looking at potential for switching from electric heating to natural gas space heating. Now one of the things that we were wondering about was the characteristics of these customers who are identified as switching. Are these households assumed to have a greater heat load or heat demand than a typical electric house in this instance, those potential candidates? Would the characteristics of

their heat load thermal envelope or shell characteristics be different than others who wouldn't be candidates for switching?

MR. LARLEE: Can you give me a more specific reference, Mr. Coon? I'm at a bit of a loss here exactly where you are in the report.

Q. - Well the question -- you have identified some 23,000 homes that match characteristics that would make them potential candidates for converting to natural gas over 15 years.

MR. LARLEE: Okay. I have got you now. Yes.

Q. - Yes. And I guess what I am wondering is these candidates -- for example, would these include houses that were originally built for something other than electric heating and then later on adopted electric heating so they don't have the kind of efficiency standards that newer electric homes were built to?

MR. LARLEE: The characteristics we are talking about are what we refer to as homes where the heat transport system essentially are centrally heated homes. And the reason why we targeted them is because they are much more cost effective to convert than a baseboard heated home which has a decentralized system.

There hasn't been any adjustment in the forecast to

look at the age of those homes and the difference in the thermal shell characteristics.

Q. - Thank you. Now if we could turn to page 19, another figure, figure 9, which looks at the displacement of electric heat in the natural gas territory.

If we work down this chart, you have -- well let's start at the beginning. Of the number of homes near the gas distribution network we have 90,000 homes. This chart suggests that 60 percent of these are electrically heated, so 54,000 homes. And of those 35 percent, or roughly a third would convert to natural space heating -- natural gas space heating and the other -- another two-thirds would not. But of those two-thirds that would not convert to space heating with natural gas, you are saying 43 percent of them would install natural gas fireplaces, about 15,000 homes. Is that -- am I understanding that line correct?

MR. LARLEE: Yes.

Q. - Have you looked at what percentage of those homes that installed natural gas fireplaces would utilize that gas for other purposes, appliances, water heating or secondarily later on, space heating? In other words, once they have got the gas in the house for their gas fireplace, then that opens all kinds of opportunities up

for them. Have you looked at that as part of this load forecast?

MR. LARLEE: Yes, we have. We made allowances for electric water heaters. If you look at the last paragraph on the -
- on the page you are referring to, page 19, overall 53,000 electric water heaters are forecast to convert to natural gas.

Q. - And what percentage of those would fit in the category of homes that didn't convert to natural gas space heating but put in one of those beautiful natural gas fireplaces?

MR. LARLEE: If you look at figure 10, you can see the breakout for water heating.

Q. - Okay. Thank you. And what evidence is there that you would get 65 percent of -- or sorry, 43 percent of your -- your electrical heated homes who don't convert installing natural gas fireplaces?

MR. LARLEE: We chose the number 15,000 based on our understanding of how propane gas fireplaces are -- are out in the market with their popularity and using that as a basis for estimating 15,000 homes going to natural gas fireplaces.

Q. - So if I understand you correctly then, this is really a conversation of people with propane -- propane fuelled fireplaces to natural gas?

MR. LARLEE: They would be -- they would be included in there. But as well, there would be new installations in that estimate too.

Q. - Okay. Thank you. Okay. We are going to go to --

CHAIRMAN: Mr. Coon, maybe I will interrupt you. This would be a good spot to take a 15 minute recess.

MR. COON: Fine.

(Short recess)

CHAIRMAN: Mr. Morrison?

MR. MORRISON: Well Mr. Chairman, before the break there was a question that was asked and we undertook to provide a response. I believe Mr. Larlee is in a position to provide that response now.

MR. LARLEE: Thank you. The question related to the peak hour demand in the -- in the last fiscal year. When we adjust the January peak hour demand, and that is the month for which we -- we do the peak hour forecast for, there is a 125 megawatt adjustment for industrial operations which were operating at -- at a level below normal. And a 244 megawatt adjustment for the weather for the peak hour in that month. So as a result, the adjusted demand for January was 2,962. So that compares to what was in the forecast for the outlook of 3,041.

CROSS-EXAMINATION BY MR. SECORD:

Q. - Could you explain again where the 2,962 number -- are you saying I should replace 3,041 by 2,962 now? Or just -- could you -- I guess, could you explain that again, where the 2,962 comes from and what it is?

MR. LARLEE: The 2,962 is the adjusted peak hour demand for January of this past year. That would have been the adjusted peak for the entire year '01/'02. So it is comparable to the 3,041 in table 1 of -- of appendix A.

Q. - And what has been adjusted? The 2,768, is that what has been adjusted?

MR. LARLEE: No, the -- the peak for January was adjusted. So the actual peak on the system was 2,593.

Q. - So the actual peak was 2,593 --

MR. LARLEE: Yes.

Q. - -- in January?

MR. LARLEE: Yes, with an adjustment of 125 megawatts for industrial operations.

Q. - The adjustment 125 for industrial operations, what was that for?

MR. LARLEE: That would be for temporary shutdowns in industrial operations that weren't anticipated. And there is a 244 megawatt adjustment for weather. That would be for the eight hour temperature that I mentioned earlier.

Q. - The industrial adjustment of 125 megawatts was that

caused by economic conditions? Was that an unusual problemistic event or what caused that 125 megawatts to be off your load?

MR. LARLEE: That could be any number of events. It could be maintenance problems. It could be difficulties at the plant. My recollection is there were no inventory adjustment shutdowns in that period which would -- are normally related to economic conditions.

Q. - Now doesn't this typically happen? When you are projecting your peak load doesn't this usually happen every year, there will be a certain probability that part of your load will be down and you will factor that into your peak load estimate?

MR. LARLEE: The forecast for peak hour demand is based on taking the energy for the entire year and then sector by sector spreading that energy over the -- over the -- over the year to each month.

Q. - So you use --

MR. LARLEE: Once that energy is spread then we use historic load factors for each -- for each sector to -- to bring us to the demand, the peak hour demand that you -- that you see in the forecast.

Q. - So for projections you will use some formula to convert your estimate of energy into a peak demand number?

MR. LARLEE: We use the history to give us -- to give us that number.

Q. - Correct. If we look at the number for -- I'm trying to just make this clear here. If we look at the number for 2000/2001, 2,893, now is that an actual number or is that an adjusted number?

CHAIRMAN: I'm going to interject just for a second if I might. Dr. Secord, Mr. Larlee, you have succeeded in totally mixing up the entire lefthand side of this table. We can't follow what it is or where you are going or whatever.

I guess I came to the table with a simplistic idea that the figures you are talking about were what you had projected the peak would be. And then you said that in fact it turned out to be 2,768. Now that's the way I viewed that information. But I don't know where you are going with all your adjustments. And my Commissioners on the lefthand side at least, don't understand either. So maybe somebody could clear it up for us.

Q. - I have the same problem. I have a similar problem which I'm trying to clarify. The -- it -- what I'm trying to get at is -- is -- well, two questions.

The number 2,893, is that a real number or is that an adjusted number?

MR. LARLEE: That's an actual number.

Q. - Actual number.

MR. LARLEE: No adjustments.

Q. - What is the actual number with no adjustments for 2001/2002, your very best estimate of your actual number with no adjustments?

MR. LARLEE: 2,768, the number that we put in the response to the interrogatory.

Q. - 2,768. Okay. Now my question which I posed to be answered at the break was to explain the variation between the estimate of 3,041 and what appears to be actual 2,768. And I thought there was a simple answer that a certain percentage was the weather and a certain percentage was economic conditions. Is such a simple answer possible?

MR. LARLEE: I thought I gave you as a simple answer. There is 125 megawatts of industrial adjustments and 244 megawatts of weather related adjustments. That adjustment was applied to the peak that we saw in January, which is the peak that we are forecasting for. When we do -- when we do that we see an adjusted peak of 2,962.

Q. - So essentially you are adjusting the forecast after the fact? Is that what we are talking about now?

MR. LARLEE: No. What I am relating to you is what -- is what we actually saw on the system. And the adjustments

are aids to us to explain the variation from the forecast.

Q. - What you saw on the system was 2768. Correct?

MR. LARLEE: In February the peak was 2768.

Q. - That is your peak for this yearly period. Correct?

MR. LARLEE: Yes.

Q. - So you saw 2768. You had planned -- you thought it was going to be 3041. Correct?

MR. LARLEE: The forecast for 3041 was for January. That is why I am giving you numbers for the adjustments -- details of the adjustments for January.

Q. - Now, let me see if we are getting in the ball park here and maybe we can move on.

You mentioned a 125 megawatt adjustment for what we might call economic conditions. Is that correct?

MR. LARLEE: No. I wouldn't say that is correct. Those are just unusual operating conditions within the industrial sector.

Q. - But we are not certain what they are? Whether it is a temporary shut down, a permanent shut down, a small load on the distribution system going off, whatever.

We just know that the -- or do we know what they are?

Can we break that out, the 125 megawatt?

MR. LARLEE: I don't have that with me. No.

Q. - So is 125 due to actual industrial load being lower than

expected, and there was another number, was it 244 which is due to the weather?

MR. LARLEE: Yes.

Q. - So if we add those together we get 369. Now, is that the difference between 2768 and 3041?

MR. LARLEE: Those adjustments that add up to 369 are the adjustments that we would apply to the peak that we saw in January. And that peak -- the actual peak in January was 2593. So when you add the 2593 to 369 in adjustments, the January adjusted peak was 2962.

And the forecast for 3041 is the forecast for January.

Q. - Okay. I think we are close enough without getting into discussing why January, why February and so on. But if we can agree that your estimate -- see if my summary is more of less correct that if it is in the ball park I am happy to move on, that there was an underestimate by the difference between 3041 and 2768 which 273. And in terms of the -- am I correct if I just use relative weighting that about -- about 125 megawatts of that is due to the lower industrial load than you had projected for that period and 244 is due to the weather?

MR. LARLEE: Those adjustments are for January. So I believe you used the February actual peak hour demand.

Q. - My last question is the peak demand estimates in megawatt

in the rest of the table, are they all for January?

MR. LARLEE: Yes, I believe they are. They are for January, yes.

MR. MARSHALL: Except for the 2893 actual for 2000/2001, is the number for February 22nd similar to the chart that we did for the example of the direct load control.

Again, it was the actual for that date, not an adjusted number.

Q. - Okay. I want to move on from that discussion. I think I have got an idea of what has happened here. In the rest of the Load Forecast, now that you have an outlook number that is different from your projection from 2001 -- for 2001/2002, are you making the assumption that essentially that slower growth in 2001/2002 is picked up almost immediately in the following years?

MR. LARLEE: The forecast starts out with an end use model for residential, an econometric model for general service and industrial to give us the growth. And then adjustments are applied to that to give us the end result forecast that you see here for things including self-generation and natural gas penetration.

As the first step the energy forecast is done first. And then the demand forecast is derived from it.

As I pointed out earlier, the energy forecast is quite

close to what you see as the outlook. But the base for what you see in this forecast is the actual year 00, 001.

So there is no change in the forecast other than the variation that you see for 01, 02 in the peak hour demand.

Q. - So am I correct in assuming that you are assuming that variation in the first year of your forecast by 8 percent is not a problem because it will be -- it will essentially be picked up later on in your forecast. So the rates of growth on the right hand column would simply be higher than predicted later on so that your final megawatt demand in 2011 still is going to be 3050?

Another way of putting this, the lower than expected peak demand in 2001, 2002 appears to have no impact on your final estimate for peak demand in 2010, 2011. Is that correct?

MR. LARLEE: The forecast when -- or the actual results for 01, 02 when we had adjusted them indicate to us that what you say is essentially correct, that we are not going to see a variation in the end of the forecast as a result.

Q. - Okay. Thank you. I would ask that you turn to page 30 -
- go on ahead to page 36 in Appendix A which deals with the industrial sector forecast, actually page 35.

I have a number of questions about the industrial forecast and the econometric model which is used in that

forecast. On page 35, the first complete paragraph it states that over the past 16 years for every one percent increase in the goods producing gross domestic provincial product, the industrial electricity requirements increased by 1.55 percent. It appears that the goods producing sector in the province has been becoming more electricity intensive over the past 16 years.

Am I correct in that interpretation of that number?

MR. LARLEE: Yes, I believe you are.

Q. - Why has this been occurring? That is what real changes have been occurring in the economy in the past 16 years that have contributed to that increase in electricity intensity?

MR. LARLEE: There is a couple of areas that I can think of.

One is there has been a shift to thermal mechanical pulping in the pulp and paper industry which is very electric intensive. Two is automation is very electric intensive and there are several establishments in the province that are very highly automated. And three there is a general increase use in computers. It's not only affecting this sector, it is affecting all sectors. Those are some of the things that we have seen that would contribute to that.

Q. - So in your forecast for the industrial sector am I

correct in assuming that you project that this increasing electricity intensity will continue at the historical -- along the historical path at that historical rate of 1.55 percent increase for each one percent increase in the goods producing gross domestic provincial product?

MR. LARLEE: We are using the historical relationship between goods producing a gross domestic product and industrial electricity requirements. That's what we are using to -- in the forecast.

Q. - So you are assuming that the goods producing sector will continue to increase in its -- the intensity with which it uses electricity similar to the way it has in the past?

MR. LARLEE: We will continue to see the relationship, yes.

Q. - Okay. Would you say that the New Brunswick goods producing sector generally is more electricity intensive than the Canadian average for the goods producing sector?

MR. LARLEE: Yes, it is. I believe that we are third behind Newfoundland and Quebec.

Q. - So we are already above the Canadian average in terms of electricity intensity per dollar of output in the goods producing sector?

MR. LARLEE: Yes.

Q. - Well why do you assume that the goods producing industries in New Brunswick will continue to increase

their electricity intensity beyond 2011? That is why wouldn't you assume that they would become more energy efficient, for example, or why wouldn't you assume there would be structural shifts in the economy moving away from energy intensive production towards less energy intensive production going into the future?

MR. LARLEE: We don't have any indication that what we have seen in the past would -- we would not see in the future.

In particular if we look at one of the driving factors is to move thermal mechanical pulping. There is an opportunity still for existing mills to make that conversion and possibly even new operations. So there is no underlying evidence to show that we should be deviating from the historical relationship.

Q. - Did you say that NB Power has --

MR. MARSHALL: Also I would like to add to that response that again back to our competitive cost structure that the -- the projected cost structure of generation resources in New Brunswick being below projected market resources give an added value for industry here to expand. And it's not an issue of efficiency. It is a use of thermal mechanical pulping, that it is actually efficiency in converting wood fibre to usable product through thermal mechanical pulping so we get a greater production out of our resource base

through those types of changes. So on that basis we would expect to see the continued growth and projection as has occurred in the past.

Q. - Mr. Larlee, did I hear you say that you expect some additional pulp and paper mills in the province?

MR. LARLEE: No. What you heard me say is that the opportunities are there.

Q. - You are saying there is opportunities for additional pulp and paper mills in this province?

MR. LARLEE: Yes.

MR. MARSHALL: Or I might say the -- the issue is whether there are increased number of mills, the point is is there an opportunity to take the existing amount of wood fibre and use more electricity to produce more paper out of that same amount of wood fibre there exists increased opportunities for production in the pulp and paper sector in the province.

Q. - How many pulp and paper mills have converted to thermal mechanical in the last 15 years?

MR. LARLEE: I believe it's two.

Q. - And how many have the potential to do that?

MR. LARLEE: Existing ones could expand and there could be one or two more.

Q. - On page 36 of the evidence indicates that the forecast is

an average annual increase in the total industrial electrical requirements of 1.5 percent per year over the period of this forecast. Going forward beyond 2011, in other places in the evidence it's indicated that NB Power assumes a 1 percent overall increase. What is the assumption for the increase in industrial electrical requirements? What is the percentage increase per year you are assuming beyond 2011?

MR. LARLEE: In the assumption when looking beyond 2011 we didn't make any change to what we see here for the industrial forecast.

Q. - So you are assuming the industrial requirements are increasing at 1.5 percent per year beyond 2011, is that correct?

MR. LARLEE: That is the implication, yes.

Q. - Now it appears from the evidence, and correct me if I'm wrong, that the key assumption with respect to industrial demand is the sentence that I read from page 35.

That is this: For every 1 percent increase in the goods producing gross domestic product, the industrial electricity requirements increase by 1.55 percent. And that is carried forward in the future.

Am I correct in assuming that that is the key assumption in this forecast?

MR. LARLEE: For industry that is a key component of the forecast, yes. And it is based on what we see in the history for those -- for that relationship.

Q. - Okay. Now if that figure 1.55 percent was half of that, for example .775, how would that change your estimate of total industrial electrical requirements? How would that change the 1.5 percent per year growth rate?

MR. LARLEE: It would halve the growth rate, increased growth.

Q. - So if the 1.55 percent figure is cut in half, then the growth rate would be cut in half, is what you have said?

MR. LARLEE: Yes.

Q. - Okay. I want to turn now to the econometric model which is in the evidence A-5, "Additional responses to interrogatories."

Now as these pages are not numbered it is a task to find that. But it is under the Load Forecast model tab. And then it is quite a large section.

And it begins with "Independent variable". And it may take a moment for people to find that evidence.

CHAIRMAN: Are we looking halfway through it, the front quarter, back quarter?

MR. SECORD: I would say about 2 centimeters.

CHAIRMAN: Oh, I can't figure that.

MR. SECORD: About halfway through that tab.

CHAIRMAN: Good. That I can figure.

MR. SECORD: 40 percent through that tab. It follows a blue divider. And the footer begins "Regressions.XIS".

MR. MARSHALL: The top of the page it has 2001?

MR. SECORD: It does say that. Although many of these pages say that at the top. It starts "Independent variable, natural law of real goods producing gross domestic product."

It is the only one that begins with a shaded rectangle at the top of the page, a small shaded rectangle.

CHAIRMAN: No, it isn't.

MR. SECORD: It is not the only one?

CHAIRMAN: No, it isn't. There is two of them.

MR. MACNUTT: Mr. Chairman, may I suggest that Mr. Secord approach the Board and identify the page and also identify the page for the witness panel. It would save some time.

It is not of much use unless everybody is exactly on the same page.

CHAIRMAN: We have got the two of them. Thank you, Mr. MacNutt. But we have got the two of them. And the difference that we see is base number years. One has 17 and the other has 20.

MR. SECORD: Yes. I'm on the first page with number of

years 17. Does everyone have that now?

MR. MARSHALL: We got it.

Q. - This response to CCNB-12 indicates that the relationship between total NB Power industrial sales and the real goods producing GDP was estimated with a 2 variable linear log model. But it is a model that is linear in form, standard regression model. It appears to use ordinary least squares approach.

And also it is important to note that the independent variable, goods producing GDP, is in logarithmic form. And industrial sales is not in logarithmic form.

And then the page gives some output of some of the standard statistics associated with regression analysis, R squared and F statistic and so on.

My first question is why did you use a linear log model where only the independent variable is in logarithmic form and not the dependent variable as well?

MR. LARLEE: It is similar to my response to the Board's letter of April 19th on the regression for PDI and GDP. We would have tried several different types of regression.

And the one that gave us the best statistical correlation or R square, well, we would have used.

Q. - So you specify the model based on maximizing the R square statistic, is what you are saying?

MR. LARLEE: Yes.

Q. - Could you explain your interpretation of the coefficient of X_n , the figure 1.5594 and the relationship to the evidence?

MR. LARLEE: That is the coefficient that relates the dependent variable to the independent variable.

Q. - Is that coefficient essentially the number which is used on page 35, 1.55 percent that I have been referring to?

MR. LARLEE: Yes, it is.

Q. - It appears, and tell me if I'm wrong, it appears that you are interpreting that coefficient as telling you the relationship between the percentage change in goods producing GDP and the percentage change in industrial sales, is that correct?

MR. LARLEE: It is relating the two variables.

Q. - One is in logarithmic form, one is not?

MR. LARLEE: That is correct.

Q. - And my question is, for this kind of problem why did you not use a double log model, that is take the logarithms of both the dependent and the independent variables, if you wanted to interpret the coefficient in that way?

MR. LARLEE: Again, we are trying to maximize the statistical correlation between the two variables.

Q. - Are you aware that the standard way to relate percentage

changes in the independent variable and the dependent variable is to express them both in logarithmic form?

MR. LARLEE: Yes. But here the dependent variable is the total NB Power industrial sales. So it is not the change in industrial sales, but the total industrial sales.

Q. - But yet you interpret that coefficient in terms of a percentage change, did you not?

MR. LARLEE: I would have to refer to the actual workings of the model to see precisely how that coefficient was interpreted.

Q. - Well, you have told me that you interpreted that coefficient as the 1.55 percent on page 35?

MR. LARLEE: Yes, I did. And I may have misspoke. I would like to be given an opportunity to check that before -- if I may.

Q. - I have another question about the model. I just wanted to clarify that you get back to us with your answer.

Okay. Another question about the model --

CHAIRMAN: I'm sorry. The shorthand reporter doesn't transcribe nods. Was that a yes, that you are going to get back on that? In other words is it an undertaking?

A. Yes.

CHAIRMAN: Or is it something that could be checked in a break if we took it later on this afternoon?

You know, if he -- Dr. Secord, if he gets back to you the matter may be closed. Your cross-examination may have been completed.

I don't understand the nature of what he has to look at. But is it here? Do you have it here, what you wanted to check on?

MR. LARLEE: I would have to check back to the office.

CHAIRMAN: I see. All right. Well, you go ahead and concluded your questioning. And it may be that we will take a brief recess so he can check with the office.

Do they go home at a certain time?

MR. LARLEE: Yes.

CHAIRMAN: I'm going to take a four-minute recess while somebody checks with the office.

(Recess)

CHAIRMAN: All right. Mr. Larlee, were you able to contact the people in Fredericton?

MR. MORRISON: Mr. Chairman, perhaps I will try to guide the Board first to where it can find the page that Mr. Larlee is going to reference. If you can bear with me. I know this is exciting, but if you can -- if you look at exhibit A-5 and if you put your thumb or finger on the tab that starts with "energy planning survey" --

CHAIRMAN: Just a minute. I have got to mark --

MR. MORRISON: And if you count back six blue sheets.

CHAIRMAN: Six blue?

MR. MORRISON: Six blue sheets. It's the tab that says "energy planning survey", and then backwards six blue sheets.

CHAIRMAN: Two blue sheets of where we were.

MR. MORRISON: And then go nine pages forward.

CHAIRMAN: Just so we make sure we have got the right blue sheet, is it NB Power monthly distribution substation peaks and load factors?

MR. MORRISON: No, it is not.

MR. MARSHALL: The pages before are page numbered at the bottom.

MR. MORRISON: I have made copies of the page in question.

CHAIRMAN: Could we have copies of that page?

MR. LARLEE: If you can locate the section that starts with "calendar month sales", "calendar month residential sales", it's page 12 in that section.

MR. MACNUTT: Having found calendar month residential sales how many pages towards the back do you go?

MR. MORRISON: 12.

MR. LARLEE: Yes, it's page 10.

CHAIRMAN: Mr. Morrison, I suggest that we give that single page which has come out of exhibit 8 -- A-5. Why don't we

give it an exhibit number of A-14.

MR. MORRISON: Yes, Mr. Chairman.

CHAIRMAN: Go ahead, Mr. Morrison.

MR. MORRISON: At this point, Mr. Chairman, I'm going to defer to Mr. Larlee who can explain further on that.

MR. LARLEE: I asked Mr. Morrison to take us to this page because it confirms what we suspected. There is a typographical error in the sheet that shows the progression. I misspoke. It is indeed a log log regression and the sheet that we have been deftly steered to by Mr. Morrison confirms that. You can see the very last column in that table shows the natural log value for the annual total industrial sales, and that indeed is what was used in the regression.

MR. SECORD: Are the other inputs to this regression included in the evidence, and are they easy to find?

CHAIRMAN: Let's just have one question at a time.

MR. SECORD: Oh sorry.

MR. LARLEE: I believe all of the inputs are included. I think the second question is self-evident. They are quite difficult to find.

CHAIRMAN: Okay. In fairness though to Dr. Secord, if he wants to find them how does he do it and where are they?

MR. LARLEE: They are all within the history section that we

are now looking at.

CHAIRMAN: Oh, in other words where A-14 came from?

MR. LARLEE: Yes, that's right. Within the history section.

And the regressions identify the time periods used for each regression. I think between the two you can locate the actual data used in each regression.

Q. - In the historical data section does it also include all the inputs which were used in the econometric model for the commercial sector?

MR. LARLEE: Yes, I believe so.

Q. - I have a few other questions with respect to the econometric model. One is a point of clarification on -- where it lists a dependent variable as total New Brunswick Power industrial sales. I assume that should be changed to read total industrial sales, is that correct?

The table you referred me to in the historical section was for total industrial sales, I'm assuming that's total provincial industrial sales, not just NB Power sales, is that correct?

MR. LARLEE: I'm just looking through the tables to confirm that.

CHAIRMAN: Are you referring to A-14?

MR. SECORD: Yes.

CHAIRMAN: He is referring to A-14.

MR. MARSHALL: But just to clarify, Mr. Chairman, other than self-generation for some production of energy that industry would use themselves on the premise, nobody else is licenced in the province to sell any electricity to industry. So total NB Power sales would be total provincial sales as well.

Q. - Aside from industrial co-generation?

MR. MARSHALL: I guess --

MR. LARLEE: Just looking at the tables quickly, I can't confirm whether the wholesale customers, which would be the only difference between NB Power and total provincial sales, are included or not. I would have to go back to look at it in a little bit more detail to confirm your --

Q. - Okay. But you are certain that this A-14 was the input in logarithmic form which was used in econometric model for industrial sales, is that correct?

MR. LARLEE: Yes.

Q. - Okay. I have another question about the model. I assume this is a computer print-out of some of the parameters of the model. Back on A-5 the basic econometric model of industrial sales. This is a two variable time series model. It's a common problem with two variable time series models that they have problems with serial correlation or what is sometimes called auto-correlation.

Did you calculate a Durbin Watson D statistic in this case to test for auto-correlation? Are you aware if a D statistic was estimated for this model?

MR. LARLEE: I believe as part of the standard output for the regression method used here there is a T statistic.

Q. - Not a T but a D as in Donald?

MR. LARLEE: Oh, excuse me. As far as I know we haven't done any analysis on -- of that type for auto-correlation.

Q. - So certainly provided the input status here it's easy enough for an intervenor to calculate that and present it in argument as it's a straightforward technique. Without a --

CHAIRMAN: Dr. Secord, I'm going to interrupt there. Just repeat what you said. The appropriate way is if you wish to do a calculation is that you do it, present it to the witness and ask him to comment on it as to the -- as to whether or not he agrees with the mathematics, rather than you attempting to introduce it during argument.

MR. SECORD: Very good. Or an alternative way I guess, which I would ask the applicant if they would be willing to provide Durbin-Watson statistics for all of the regression analysis which are in the evidence? This is important.

Q. - This is important essentially because as I understand it

without a test for auto correlation it's difficult to conclude that your T test, your F test and your R squared values are reliable because of a common sometimes problem with serial correlation in your models?

MR. LARLEE: The analysis you are asking for we don't have available.

Q. - So are you saying that the Durbin Watson D statistic was not calculated as part of these regression models?

MR. LARLEE: What you have before you is our -- all the calculations done as part of the load forecast model, so they were not as far as I know.

MR. SECORD: Okay. Thank you.

CROSS-EXAMINATION BY MR. COON:

Q. - Mr. Larlee, we just have one question and one more page of Load Forecast and then we are done with you and on to Mr. Marshall.

And I would ask you to turn to page 60 of evidence -- sorry, exhibit A-1, in the evidence. Page 60, the Load Forecast, which is well numbered.

Now on table 23, as I understand this what it does is compare the peak hour demand that was forecast through load forecasting and the actual demand, what actually happened forward in time. Is that what this table does?

MR. LARLEE: Yes, that's what it does.

Q. - Okay. And if I read this correct if you take a similar period of time like -- to the current load forecast period we are dealing with right now 2002-2012, if we start at 1991 here, the 1991 load forecast projected for 2000/2001 peak demand of 3,448 megawatts. Am I reading -- interpreting this table correctly?

MR. LARLEE: Yes. 3,448 was the forecast done in 1991 for 2000/2001.

Q. - And the actual peak hour demand for that year was 2,901 megawatts?

MR. LARLEE: Yes. After adjustments for weather that's correct.

Q. - Thank you. So it's fair to say then that that forecast made in 1991 for the 10 year period was off by 550 megawatts by the time you got to the final year of the forecast period? In other words it over estimated by 550 megawatts?

MR. LARLEE: 547 megawatts, yes.

Q. - Thank you. So it was 547 megawatts then it was over estimated in terms of the load forecast that was done starting 1991, '92 for 2000 and 2001?

MR. LARLEE: Yes. And there are several factors that contribute to that including the economic climate through the 90s.

Q. - Yes. And as we discussed earlier you acknowledge that the final year in the load forecast period is the least reliable one to count on getting something close to what is really going to happen, so that's --

MR. LARLEE: As well I would like to point you to our response to interrogatory CCNB23 where we go through and get some detail on the forecast --

Q. - Yes.

MR. LARLEE: -- variation in that time frame.

Q. - Correct. And we appreciate the response to CCNB23.

Okay.

Well thank you very much, Mr. Larlee. I would like to shift now to the screening of demand side management options in Mr. Marshall's evidence in exhibit A-1.

Okay. If we could turn to page 10 of the -- that appendix. Sorry, that's, of course, this appendix B. In the middle paragraph there which says, A void in generation and transmission capacity credits are applied only after the year 2006 when Point Lepreau needs to be retubed or replaced.

Does this mean that while Lepreau is operating up until 2006, that there are no generation and transmission credits that could be considered?

MR. MARSHALL: No, there are no capacity credits. We gave a

response to PUB -- PNB 17. They asked the same question about credits prior to 2006. The response given there in PNB-17 is that they would only get a voided energy cost credits up to 2006. So if there are fuel savings on the system for fuel that is avoided by not having to generate the electricity, then there are those savings.

But I want to clarify that as well, Mr. Coon and Mr. Chairman. We normally -- if there were savings prior to 2006 we would allocate energy credits to those. All of the evaluation done in the demand side management sector though has been done targeting amount of reductions for 2010 - '11, and specify putting it in that year.

In the modelling for the Point Lepreau refurbishment case, the economic case, we allowed some additional DSM starting in 2006. So the evaluations are done assuming that the DSM is coincident with the need for both capacity and energy starting in 2006. So there is no need for any credits prior to that point in time.

Q. - After -- if Point Lepreau is rebuilt, how will DSM be treated? That is, will they be given credits for generation and transmission capacity, or will we be back to the situation that's pre 2006 described here where they only get credits for voided incremental fuel costs?

MR. MARSHALL: The evaluation of the DSM here is done to see

what is economically achievable, what type -- amount of DSM could be used to avoid the Point Lepreau refurbishment. But in addition to that, the DSM was used to determine what DSM could be options for future capacity requirements and future energy requirements beyond the need for Point Lepreau or its replacement.

And options were developed that went on into the economic modelling. And DSM was given a fair opportunity to compete against other power supply plants to determine what is the least cost plan. And in those, those DSM credits would be given the full credits for capacity that they would avoid in -- in from a generation point of view and from transmission and distribution.

So as part of our long term plan to get to 2020 and deal with CO2 emissions and mitigate CO2 emissions, you can see in the -- in the Point Lepreau evidence there is inclusion of demand side management over and above what is in the load forecast as an option to supply that future requirement.

Now that's a long winded answer to say that essentially the answer is, yes, they would get credits. And they are not in the load forecast. They are as options in the economic evaluation of Point Lepreau and other alternatives, which we will discuss in the next

hearing.

Q. - You may have said this, if so, tell me. At present when you look at DSM options for tomorrow, next week, this year, it appears from the text that at present you are not giving generation and transmission capacity credits. Is that true? When we look at DSM programs in the -- in the short term, in the next 12, 24 months.

MR. MARSHALL: In the evaluation of the DSM we take a point in time and credit all of the DSM with what opportunities there are for capacity and energy savings.

The entire studies of the Coleson Cove case, the Point Lepreau case and this load forecast and DSM evaluations, all of that has been done using 2006 data. And 2006 as a base year in which we are evaluating everything.

Now in order to get to a program, the information that we have collected and that we have looked at, we communicate all of that information to our energy advisors and account managers. They are out talking to our customers and communicating information to them, so that customers have access to what is cost effective and what is not. You know, relative to, not necessarily just to the utility or the total resource test, but relative to their participant test against their power bill what is cost effective for them to pursue. And in those decisions

all of the capacity credits would be involved.

Q. - So what you are suggesting is now when you tell your energy advisors how to do their job, that you are telling them to recommend DSM options based on not just incremental avoided fuel costs at this moment, you are also considering avoided generation and transmission capacity?

MR. MARSHALL: The type of information that our energy advisors and account managers would give to customers don't necessarily relate to the benefits to the utility -- the utility avoided costs. They relate to what are -- what are the savings to a customer against his power bill. And on that basis what are the economics that a customer sees.

In this evaluation of DSM there are three tests. We look at what are the -- the savings against alternative resources. The total resource test which looks at all the avoided costs from a societal point of view without taxes or any transfers.

Then there is the test from the utility point of view which looks at lost revenue of sales in addition to avoided cost of new investments.

We also do a test from the participant point of view where a customer sees if he makes an investment in energy

efficiency, the only thing that he has got to pay it back is reduced electricity purchases. So whatever the rates are in his rate class the savings that he gets against those purchases, he gets that information.

We provide that kind of information to our account managers and energy advisors so that they can advise customers according.

Q. - Thank you. If I could get you to turn to page 14, Mr. Marshall, the question under sensitivity considerations down at the bottom. You say that all energy base DSM options were modeled under the assumption that each kilowatt hour of energy saved avoided .0008 tons of CO2 at a value of \$15 per ton.

Where does that figure come from, the .008 tons of CO2?

MR. MARSHALL: We responded to that in your interrogatory number CCNB-40 that the CO2 credits come from the assumption that Coleson Cove Power Plant operating on oil.

Q. - So can you confirm then that that means essentially providing a credit of 1.2 cents per kilowatt hour based on that figure?

MR. MARSHALL: In the demand side management evaluations this was done as a sensitivity. And in all of the results -- in all of the results in the screening of the demand

side management options, it is an attachment to the document where we can see an example, attachment B. We actually see the residential results of the analysis.

So if we go to page 49 for instance of Appendix B, exhibit A-1, measure number 1 on that table, shell measures would be increased attic insulation, if you come across you can see the total resource perspective over in the middle, it says that it has a benefit cost ratio of 5.39.

If you go over to the right hand side you can see the total resource and ENV.EXTERN, that would be with including environmental externalities, the CO2 credit of 1.2 cents a kilowatt hour would be included in that calculation in order to change the benefit cost ratio from 5.39 to 6.33.

Q. - Thank you. Now if we turn to page 22. This section 5.4 talks about how you estimate achievable potential for energy efficiency improvements in the residential sector.

Now we had asked in our interrogatory about this, specifically you say in the second paragraph of that section that NB Power system planners extracted potential penetration rates from published industry studies and so on. We had asked for those to be provided in CCNB-43 in exhibit A-6, which were not.

But in this case you clarify this point by saying the primary resources used to determine penetration rates are NB Power Energy Planning Surveys.

So is it correct to say then based on that response to interrogatory 43, CCNB-43, that the primary way of determining the achievable potential for energy efficiency in the residential sector is based on NB Power Energy Planning Surveys?

MR. MARSHALL: No. You can see the response to CCNB-43 also points out that in addition information is confirmed with data from Statistics Canada Publications Household Facilities and Equipment. And the level of penetration rates, we are dealing with the -- we start with the number of actual -- end use appliances.

So if you are looking at a particular measure based on the energy planning surveys, appliance saturation surveys that are done by the load forecast and rates group, we would have an indication of how many appliances there were. So on that you know how many are out there, then when you go to look at -- we do the economic test to determine whether it would pass on economics or not.

Then depending upon the magnitude of the benefit cost ratio, the magnitude of the -- of the benefit cost ratio from the participant's view point to see whether or not

what is the likelihood of achieving the penetrations for that level.

So that level of penetration is based on experience of NB Power DSM program planners, and energy advisers and account managers in dealing with customers to see what type of investments they would make.

Q. - So as I understand it, this information that you use, that the planners extract from the NB Power Energy Planning Surveys and Statistics Canada gives you some sense of the rate at which people's fridges turn over and so on so that you can calculate, you know, an old fridge replaced by a new fridge which naturally has got a higher energy efficiency rate today, and that gives you some estimate of what you are calling achievable potential?

MR. MARSHALL: No. That is what we use to start with to see what is technically possible.

The achievable it comes down to, we start with -- let's take an example again if we are talking about refrigerators. A lot of people take their old refrigerators and they put them in the basement and they use them to store additional beverages or other things in the basement. And they may be very inefficient refrigerators but they provide a service to the family.

One DSM program is to go out and collect those

refrigerators and take them out of service and remove them from service and pay people to take their refrigerators. So in that one we would look at how many old refrigerators are there. So based on the appliance saturation surveys and things we know the age of refrigerators, how many there are, how many second refrigerators might there be out there in the province. That becomes the technical target of how much savings you could get from that measure.

We then do the economics of how much -- what are the savings against removing that refrigerator. And then you get into then how many people could you actually sell it to. In other words, how many people would say, I don't care how much energy I save, I want to keep my refrigerator in the basement in order to keep my beverage cold. And others will say yes, give me the money and I will take the refrigerator away. That is the estimate of penetration rates that we are talking about, what actually occurs to achieve the DSM, not what is technically possible.

Q. - So what is achievable according to your analysis here is based on the qualitative judgement of NB Power staff, is that what you are saying?

MR. MARSHALL: Yes. It is based on the judgement of

experienced staff dealing with customers and customer interaction with advising them on energy efficiency programs and opportunities that they have.

Q. - Thank you. Now, if I could get you to -- in the same thing I wanted to clarify, in page 25, that is figure 51 in exhibit A-1, that that is -- this figure represents the achievable or what your staff determined as achievable and not the economic potential?

MR. MARSHALL: That is correct. But supply curves on economic potential were requested by the Province of New Brunswick and are provided in response to PNB-24, 25.

Q. - Yes. Thank you. I just wanted to clarify this particular figure to make sure that we understood that it was not the economic potential, but what you call the achievable potential. Okay.

Now if we can shift to page 39. Now at the very bottom of page 39 there is a section dealing with industrial DSM Program Design Considerations. And in it you say in the industrial sector, most of it -- most if not all of the benefits of DSM presumably accrue to the participant because industrial rates include charges for both demand and energy, and these charges are about equal to NB Power's avoided costs.

Can you define what you mean by avoided costs in this

usage here?

MR. MARSHALL: The avoided costs from the utility viewpoint are explained in section 413 on page 9 of Appendix B. I can just summarize that, also a lot more detail was provided in response to your interrogatory CCNB-27 and CCNB-38, and 39. But to summarize, what we refer to as utility avoided costs is that as the utility with the obligation to serve all customers who choose not to leave the system and all customers who don't have the right to leave the system, we have forecast, as we have said earlier, because of our -- the economic cost advantage of our supply to the market place, we expect these customers to remain on NB Power's system. In order to continue to supply them there will be a need to invest in new generation facilities at some point in time. There is a need to invest in new transmission facilities or upgraded transmission facilities. And a need to invest in additional distribution facilities.

So the avoided costs relate to the fact that if energy can be saved and avoided, then there may need to be able to save some of the money in the distribution system by not having to build or upgrade the system, by not having to build some additional transmission, and by not having to build that new generation.

That is what we mean by avoided costs.

Q. - Just for point of clarification, 7339, I appreciate that avoided cost is defined in other places in the text.

So on page -- back to 39 again in appendix B, "Screening of demand side management", my question relates to possible confusion as created on page 39 when it states that "Most if not all of the benefits accrue to the participant because industrial rates include charges for both demand and energy. And these charges are about equal to NB Power's avoided cost."

Now we have seen before in the DSM exercise that the figure for utility's avoided costs are in the range, levelized cost range of about 8 cents a kilowatt hour.

And the confusion that I wanted to get clarified here is that the utility's avoided costs seem to be about 8 cents a kilowatt hour. But certainly industrial customers are not paying 8 cents a kilowatt hour. That is what I'm trying to clarify here.

But the utility is 8 cents a kilowatt hour or seems to be. But the industrial rates are significantly less than that. And it is those rates that they factor in when they make their DSM decisions.

Could you clarify that?

MR. MARSHALL: I think the statement on page 39 refers to

the fact that industrial rates are cost-based rates for high load factor with demand on energy.

We know from the cost of service studies that the cost of service ratio for those as around -- about 1.02 or '3.

So it is well within the range of 95 to 1.05 that the Board had ordered many years ago and that the white paper has said rates should be within that range.

The issue with the avoided costs from the charts of a higher number is that those costs are the costs of new transmission and new distribution and new generation based on analysis of previous costs.

And current rates are based on average embedded costs of the entire system today in terms of where they are. I think that is -- so I think on that basis possibly that statement is not quite correct.

Q. - How should it be corrected? That is, the paragraph seems to be saying that the industrial customers will make decisions about DSM based on their own economic calculations and that those economic calculations would be the same as the utility test. But they are using a different avoided cost than the utility test does.

MR. MARSHALL: I think that may be correct. But there is some confusion that arises from using the 8-cent number. You referred us to chart figure 5-1 when we started this

line of questioning.

The 8-cent number on that chart, I would like to point out, is the not the same number that would be looked at in terms of avoided cost for industrial programs. That is a chart for residential programs.

And it is very important that you look at that chart and see that it is the cost of the gas plant with t and d credits at a specific load factor, 31 percent. The large industrial customers are very high load factor customers.

They don't have any distribution costs in their rates. They would not avoid and distribution.

So you have to look specifically at a high load factor, gas plant and a high load factor use of transmission. So you get a much lower number in order to compare. So it is not the 8-cent number that is on this chart that industrial customers would use to compare.

Q. - In the evidence do you provide that number for the industrial sector equivalent to the number for residential?

Do you have a levelized cost figure for the DSM value in the industrial sector?

MR. MARSHALL: The industrial sector after -- on page 10, at the bottom of page 10 the avoided cost for an industrial sector would be based on an energy savings, of a combined

energy and capacity saving that gives 5.76 cents a kilowatt hour.

And if there are additional demand savings they would be on a transmission avoided cost, which is up in the second paragraph, of \$14 a kilowatt year.

So demand -- industrial programs are evaluated only on the basis of transmission and generation capacity and energy.

Q. - And what is the -- what precisely is the additional credit that residential gets which industrial doesn't?

MR. MARSHALL: Distribution costs -- again in the second paragraph you can see that the -- right in the middle of that paragraph, avoided cost of transmission at \$14 and distribution at \$31.79 a kilowatt year.

So general service and residential customers served on the distribution system would receive that additional credit.

Q. - So that the difference would be then the 31.79?

A. Yes. Plus the load factor and how you apply that.

Q. - To get back to my previous question, do you have the number for that, the equivalent number for the industrial sector comparable to the 8 cents for the residential?

MR. MARSHALL: I don't have one right with me. But we could generate that number for you.

Q. - It would be helpful as it -- I guess from looking at these numbers it looks like if the starting point is a DSM of 5.7 cents a kilowatt hour, and you are adding to that figure, it suggests to me that you are likely going to be over the industrial customers rates that they are paying.

So if you give us an undertaking to provide that number it would be very helpful. Thank you.

One last question about -- just a point of clarification. You mentioned that one of these sentences was incorrect on page 39 where it says "Industrial rates include charges for both demand and energy. And these charges are about equal to NB Power avoided costs."

MR. MARSHALL: Yes.

Q. - Is that the sentence that you indicated was incorrect?

MR. MARSHALL: Yes. And I think our undertaking should answer that for you.

Q. - Okay. If we could turn to page 42 now in appendix B?

CHAIRMAN: Mr. Coon, how much longer do you anticipate your cross will take?

MR. COON: This will be our final question, Mr. Chairman.

CHAIRMAN: Thank you.

Q. - This is the section 8 that deals with the summary of all sectors. At the bottom it says that the results from this

report will be passed on to a system integration analysis where they could attempt to economically defer or replace more expensive supply side options.

My question is -- and that system integration evaluation be provided in the integrated resource plan for the Point Lepreau evaluation that was filed in evidence and be part of the upcoming hearings.

My question is would it not make more sense to pass on the economic potential DSM to a system integration analysis, where then you could look at the kinds of investments you would make on the demand side, what you made on the demand side, to try and achieve as much of that economic potential as possible, that is investments in DSM programming?

Wouldn't that make more sense?

MR. MARSHALL: In actual fact we passed on more than what is in this table. And that is explained in detail in the integrated resource plan evidence filed in the Point Lepreau hearing.

But I think it is -- I would like to just clarify at this time so that everybody understands what these numbers mean. We have gone through this analysis. And in the summary on table 8-1 we get to an amount of demand side management on the first line over here of the totals of

268 megawatts to 776 megawatt hours -- or gigawatt hours.

That is the sum of all of the savings that we project out of our calculations that would come from demand side management and energy efficiency programs and from fuel-switching to natural gas and replacement of heating, space heating and water heating and some cooking and general service sectors in the gas area.

What we have done is we have taken those numbers, the 776 and the 268, and they have been compared in the load forecast document with the amounts of fuel-switching and naturally-occurring DSM or nontargeted specific incentive-oriented DSM programs that are in the load forecast. And they are provided on page 57 of appendix A.

You can see that in that table 21 a summary of DSM and fuel-switching potential. There are two lines, "energy efficiency" and "alternative fuel" and then a total.

The total two numbers at the bottom for energy and demand under the heading "DSM analysis" are the same two numbers that come out of table 8-1 on page 42 of appendix B.

Q. - Yes. I read that. But that is not what I was asking about. What I'm asking about is -- in the evidence here it says the levels of achievable DSM, which we have already established, are based on the quality of judgment

of NB Power staff and are what was passed on to a system integration analysis that would be looked at in terms of attempting to economically defer or replace supply side options.

Would it not be much more appropriate to pass on the economic potential DSM identified in the DSM analysis here to the system integration analysis for that purpose?

MR. MARSHALL: Yes. And effectively it has been. I just want to clarify that we weren't going to double count the amount of DSM.

Q. - Sorry.

MR. MARSHALL: For the Board -- the 776 and the 268 effectively is already in the load forecast, is the point I want to make. It is not an additional option to pass on. It is already in the load forecast in comparison to what Mr. Larlee's group has projected will occur.

Q. - Mr. Marshall, I'm just reading from your evidence. And it says the levels of achievable DSM from this report were passed on.

And the analysis goes at some length to describe the technical potential for DSM, the economic potential for DSM and then what you judge as the achievable DSM in the analysis.

And then it tells me here that it is the achievable

DSM that is passed on to a system integration analysis.
That is the evidence before us here.

And I'm asking you why it was not the economically attractive potential DSM be passed on to the systems integration analysis?

MR. MARSHALL: And I'm trying to explain to you that a lot of it has been. The 268 --

Q. - A lot of it? All of it?

MR. MARSHALL: If I could answer the question it would help.

CHAIRMAN: Well, he is asking you to quantify how much has been passed on. Can you do that and then give your explanation afterwards, Mr. Marshall?

MR. MARSHALL: The quantification of what has been passed on and what has been used is submitted in evidence in the integrated resource plan as part of the Point Lepreau hearing.

It includes the difference between the first line on this table, which is already in the load forecast, and the second line on this table. Plus it includes doubling of that amount.

Plus it includes the addition of water heating, switching to natural gas, which is not in these numbers, because our analysis says that it is not economically -- an economic end use measure.

But we have added it back in to reflect the fact that it is included in the load forecast because of the marketing aspects of gas.

When customers go to market gas, if somebody converts their home to gas for electricity use for space heating, they likely will also convert their water heater to gas. So they have package deals that come together in conversions.

So we have increased the amount of DSM to account for that as well. And all of those are bundled into the economic evaluation options for the Point Lepreau hearing.

So to answer your question specifically, is all of the economic potential passed on, I'm not quite certain. I would have to check on that. But a very large significant portion of it is.

Q. - If we turn back to page 38, table 7.1, this lists -- I'm just going to have three questions here, one on each of the sectors.

And this lists technical, economic and achievable industrial DSM by end use. And it is a 100 megawatt total for the economic potential, industrial DSM passed on?

MR. MARSHALL: I can't answer that specifically. The amount of projected DSM that we have was extrapolated forward. We did not break it out specifically by sector in building

the options in the integrated resource plan.

Q. - Can you --

MR. MARSHALL: A portion of the industrial certainly is included. Whether the whole 100 megawatts is included, I can't say.

Q. - Is there a way of finding out?

MR. MARSHALL: I guess when we go through the evidence of the next hearing, how we built the blocks that are being utilized, we should be able to try to answer it then.

Q. - Let me ask you on page 31, table 6-1 -- this is the demand side management general service summary, and again gives the technical, economical and achievable potential for DSM.

And it identifies, just on the DSM side, 61 megawatts of economic potential for this sector. And is that passed on?

MR. MARSHALL: Much more than that was passed on. The -- in that table, the 61 megawatts --

CHAIRMAN: Mr. Marshall, I'm going to -- it is getting late in the day. You have answered the question that more than that was passed on.

MR. MARSHALL: Yes.

CHAIRMAN: It is a sufficient answer. Go ahead, Mr. Coon.

MR. COON: Thank you.

Q. - And on page 19, table 5-1, that is the residential DSM summary. That is a similar job for us. You have identified a total of 176 megawatts of economic potential for residential DSM.

Was that passed on to the next state?

MR. MARSHALL: Yes.

Q. - Okay. Thank you. So that just takes us back to the statement on page 42 that we started with.

Is it still -- is it therefore inaccurate to say the levels of achievable DSM from this report were passed on to assist in integration analysis?

MR. MARSHALL: Yes. That is an incorrect statement.

Q. - And how would you correct it?

MR. MARSHALL: The -- I can explain why it is there.

Q. - I just wondered how you would correct it?

MR. MARSHALL: How I would correct it? I would say that the incremental DSM for -- that you achieve with CO2 over and above the base case has been passed on.

An additional economic potential above that as well has also been considered to compete against supply options in the integrated resource plan report.

Q. - Could you repeat that?

MR. MARSHALL: What is included in the integrated resource plan report is the difference between the two lines on

table 8-1.

So the 268 megawatts is assumed to already be in the load forecast as is cross-referenced with Mr. Larlee's load forecast. The 474 is an additional amount achievable with CO2 credits.

So the difference between those is additional DSM that has been passed on into the integration, plus that amount again. So double that differential has been passed on. Plus water heating, fuel-switching has also been passed on.

And it is all detailed in the integrated resource plan report as filed in evidence for the Point Lepreau hearing.

Q. - Thank you. Just to clarify your methodology and then I'm done. Final question. On page 2 of Appendix B where you lay out the power supply planning process --

MR. MARSHALL: Yes.

Q. - On page 2, we have gone through before this five step process, and I just want to clarify your methodology. What it seems to be that what you have done is you have taken some of your DSM, it looks like 268 megawatts, it's on page 42, and you are assuming that that is captured in your Load Forecast under number 1 on page 2, is that correct?

MR. MARSHALL: Basically yes. It's not exactly the 268

megawatts. We evaluated and came up with the 268 megawatts. We then gave that information to Mr. Larlee and he compared it with what they had assumed before in the Load Forecast with the methodology they used in the Load Forecast.

The Load Forecast did not alter its approach but our analysis essentially confirmed that their approach was reasonable and the Load Forecast has an amount in it that they have accounted for.

So the equivalent of the 268 is included in the Load Forecast basically.

Q. - Even though you are using a different definition of the management?

MR. MARSHALL: It's two completely different -- when using a different definition we are using two different approaches to determine how much we think will happen.

Q. - One last question hopefully. Does that mean on page 42 it's the difference between 474 and 268 that has been passed on?

MR. MARSHALL: Double that, plus.

Q. - Times two plus some extra?

MR. MARSHALL: Yes.

Q. - So roughly you are passing on over 500 megawatts?

MR. MARSHALL: I believe it was 440 megawatts.

Q. - Okay.

MR. COON: Thank you, gentlemen. Mr. Chairman, that ends our cross.

CHAIRMAN: Good. Thank you, gentlemen. Is a nine a.m. start too early tomorrow? I know some of you are commuting from Fredericton. All right. Well we will adjourn until nine tomorrow morning then.

(Adjourned)

Certified to be a true transcript of the proceedings of this hearing as recorded by me, to the best of my ability.

Reporter