New Brunswick Energy and Utilities Board

IN THE MATTER OF an application by New Brunswick Power Distribution and Customer Service Corporation (DISCO) for approval of changes in its Charges, Rates and Tolls (Includes Interim Rate Proposal)

Trade and Convention Centre, Saint John, N.B., on November 30th 2007.

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BEFORE: Raymond Gorman, Esq., Q.C. - Chairman
Cyril Johnston, Esq. - Vice Chairman
Mr. Roger McKenzie - Member
Mr. Don Barnett - Member
Ms. Connie Morrison - Member
Mr. Yvon Normandeau - Member

N.B. Energy and Utilities
Board Counsel - Ms. Ellen Desmond

Board Staff - Mr. Doug Goss
- Mr. John Lawton
- Mr. David Keenan
- Mr. Dave Young
- Mr. Andrew Logan

Secretary to the Board - Ms. Lorraine Légère
Assistant Secretary - Ms. Juliette Savoie

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CHAIRMAN: Good morning, everyone. I will take the appearances at this time.

MR. MORRISON: Good morning, Mr. Chairman, Members of the Board. Terry Morrison and Ed Keyes on behalf of the Applicant. And at counsel table this morning is Michael Gorman and Darren Murphy.

CHAIRMAN: Thank you, Mr. Morrison. CME? Nobody from CME this morning. Conservation Council of New Brunswick, no one. Enbridge Gas New Brunswick not represented this morning. Irving Oil? We're not doing very well. JD Irving Pulp & Paper Group?

MR. WOLFE: Good morning, Mr. Chairman, Wayne Wolfe.

CHAIRMAN: Good morning, Mr. Wolfe. N.B. Forest Products Association? Dr. Sollows? Utilities Municipal?

MR. ZED: Not to disappoint, Mr. Chairman, Peter Zed representing Utilities Municipal. And I am joined by Darrell Shonoman and Dana Young.

CHAIRMAN: Thank you, Mr. Zed. Vibrant Communities? Public Intervenor?

MR. THERIAULT: Good morning, Mr. Chair. Daniel Theriault. I am joined by Robert O'Rourke and Jayme O'Donnell.

CHAIRMAN: Thank you, Mr. Theriault. New Brunswick Energy & Utilities Board?

MS. DESMOND: Ellen Desmond, Mr. Chair. And with me is John Lawton, Dave Young, Dave Keenan and Board Consultant, Andrew Logan.

CHAIRMAN: Thank you, Ms. Desmond. And preliminary matters?

MR. MORRISON: Just a few, Mr. Chairman. Three undertakings that we should submit. The first is undertaking number 1 from Tuesday from Mr. Wolfe. And that had to do with his

questioning of Ms. MacFarlane on a couple of reports on hedging. And I believe the Board Secretary has a copy of that.

CHAIRMAN: Yesterday you had read into the record the response to a couple of the undertakings but since this is a written one I think we will give it an exhibit number in order to keep track of it.

And the last Applicant's exhibit number, I believe, was A-38. Is that -- no, sorry. No, that is correct. That is what I have is A-38. This will become A-39.

MR. MORRISON: The next undertaking response, Mr. Chairman, is undertaking number 2. It is response to an undertaking requested by Dr. Sollows. And it dealt with -- he brought the witnesses to a section of the previous Board's decision and asked for a particular calculation and we have submitted a -- prepared a response to that.

CHAIRMAN: Thank you. That will become exhibit A-40.

MR. MORRISON: And finally, Mr. Chairman, is undertaking number 5 from Thursday, November 29th and it was to provide some information that was filed in the last hearing with respect to historical hydro flow.

CHAIRMAN: That undertaking response will be marked as exhibit A-41. Anything further, Mr. Morrison?

MR. MORRISON: I do have a very brief redirect, Mr.

Chairman.

CHAIRMAN: Certainly. I wonder if we should get questions from the Board first before your redirect.

MR. MORRISON: That's fine.

CHAIRMAN: It may be that you have more redirect as a result of that. That's all.

MR. MORRISON: Certainly.

CHAIRMAN: Mr. Barnett, do you have some questions?

MR. BARNETT: Thank you, Mr. Chairman. Good morning, panel.

BY MR. BARNETT:

Q.661 - I would like to return to the Belledune upgrade, if I may, as one of the topics I would like to talk about. And probably you, Mr. Good, having looked at the transcript last night.

In the power purchase agreement in A-3, the vesting agreement, it appears to be contemplated that there are major refurbishments and if there is major, presumably there is something less than major that doesn't meet the threshold in that regard.

Can you, by way of example, give me some idea of what something or than major refurbishment would be so far as the -- specifically the Belledune facility. Or maybe some other thermal facility if you can't come up with Belledune.

MR. GOOD: As I said, a refurbishment would be something that would be required to get the station to the end of its estimated service life. So in terms of something that might fall below that threshold might be something like a turbine rewind which would be necessary in order to allow the station to continue. But the dollar value of that might be less than the threshold.

Q.662 - Thank you. When did the Belledune station come into service?

MR. GOOD: I believe it was in the early 90s. I don't know the exact date.

Q.663 - Okay. I think early 90s is probably accurate enough for where I'm going. In the early years of Belledune my understanding was that it burned coal from a number of different sources and that one of those sources would have been Grand Lake. It would have been NB Coal, the subsidiary, I believe, of NB Power.

Now this ceased -- the movement of coal to Belledune ceased somewhere later on in the 90s, I believe, in that regard. Were the concerns insofar as the boilers were alerted to the burning of shall we say Minto coal?

MR. GOOD: No, I don't believe so because we have been monitoring the condition of the water wall for a number of years now. And as I said yesterday, the condition was

only noted last year during the spring inspection so it is a relatively new occurrence.

Q.664 - So from that I infer that -- I think it is well known the nature of the Minto coal which I believe was high sulphur, high ash, you are indicating to me that in fact the assessment of the water wall to the boilers at Belledune did not really show any impact of burning the Minto coal?

MR. GOOD: That's correct.

Q.665 - Before the refurbishment -- not say refurbishment -- the upgrade of the boilers were contemplated, was there a study done? Did you just indicate there was a study done in terms of the wear on the boilers prior to undertaking this call for proposals, I think you said yesterday, and issuance of contract to do the work?

MR. GOOD: As I said, there was -- every year during the annual outages, the station staff go in and visually look at the condition of the boiler, do some testing and things like that. I don't know that I can say there is actually a report prepared every year.

Q.666 - But before you undertake a substantial expenditure like the $9.1 million, there would have been some assessment done and is any of that assessment available to leave to the panel to this hearing?

MR. GOOD: There were condition assessments done and the engineering staff worked with external -- an external engineering firm to do testing and run some analysis on the problem, yes.

Q.667 - I guess what I'm looking for is if there is anyway of assessing what -- how long a life would remain in the Belledune boiler system had you not undertaken this upgrade and had you continued to burn the blend of petcoke and other coals at that facility?

MR. MORRISON: Mr. Chairman, obviously we didn't anticipate that we would be getting into technical -- really technical aspects of this. And of course Mr. Good is a Genco witness but he is basically a financial witness. We can have and we do have a Genco witness who does have technical expertise who could probably answer those questions for Mr. Barnett. He is in the building. He can certainly better answer the technical aspects of this issue than Mr. Good could.

MR. BARNETT: Really what I am looking for, Mr. Morrison and panel, is if in fact there is a report. I don't think I need to ask my questions of a technical witness, but if there was an assessment report that was done of the Belledune facility that's the animal I'm looking for.

MR. MORRISON: And we are going to check that right now for

you, Mr. Barnett. But please continue on with other questions. We should have an answer momentarily.

Q.668 - Okay. Just staying with the Belledune facility for a moment, I think yesterday it was indicated that the cost in this test year is somewhere in the order of $800,000, am I correct?

MR. GOOD: That is the cost to DISCO in the test year. As I said, the capital project itself was in the order of $9.1 million.

Q.669 - And then I think you indicated it was a 21 year term remaining on the life of the Belledune facility as it sets with this upgrade work.

MR. GOOD: That's correct. It's to October 2028.

Q.670 - And if my arithmetic is right we are looking at maybe 252 months or something like that, if you will take that subject to check in that regard?

MR. GOOD: Correct.

Q.671 - So if I take the 800,000 that works out to roughly $67,000 a month per month for the year?

MR. GOOD: Sorry. One thing that I should point out. That 800,000 is on a prorated basis, because the work was only undertaken in the spring, DISCO is only getting a partial year charge. In the following years the charge would be more in line –

Q.672 - Yes. I didn't mean to interrupt. In the following years then when we were at a full year, it's not prorated, what will that number be?

MR. GOOD: It's about a million dollars, I believe.

Q.673 - A million dollars. Okay. And what sort of interest rate have you used in regards to calculating that during the amortization period?

MR. GOOD: We have used a rate of 6.23 percent.

Q.674 - Six point?

MR. GOOD: 23.

Q.675 - Thank you. Now just continuing with the Belledune facility for a moment. I think you indicated yesterday, and correct me if I am wrong, that there was no benefit to Genco, the benefits all went to DISCO through the reduced fuel costs which flowed through the vesting agreement, is that correct?

MR. GOOD: That's correct.

Q.676 - Can I conclude from that then is -- looking at the export market -- that the Belledune facility is not used for any -- at any part, any time of the year, any hour of the day, for the export market?

MR. GOOD: No. Belledune was used for the export market, but recognize that through the third party growth margin credit the actual benefits received from export sales do

flow back to DISCO. So my statement yesterday was to the effect that some way, shape or form all of the benefits actually flow back to DISCO.

Q.677 - And in the export market there is no benefit accruing to Genco.

MR. GOOD: In the PPA there is a prescribed credit that is set and if export sales in the year are within plus or minus 20 percent GENCO would get to keep any excess within that 20 percent, but so too if exports fell below the prescribed credit, as they do in the current year, Genco absorbs that loss.

Q.678 - I understand. So just to be clear, if there is an upside to it the benefits do get shared with Genco?

MR. GOOD: Within the 20 percent band --

Q.679 - Understand.

MR. GOOD: -- and then anything above that there is sharing between DISCO and Genco, that's correct.

Q.680 - Thank you. Moving on to another subject, I heard Mr. Hay and I think I have heard Ms. MacFarlane and Mr. Kennedy talk about the relationship -- the involvement of NB Power and -- DISCO rather -- in terms of energy efficiency, and your definition of demand side management. It would appear insofar as energy efficiency is concerned, this is all now left with the Energy Efficiency and

Conservation Agency of New Brunswick?

MS. MACFARLANE: That's correct.

Q.681 - And you seem to be very comfortable, at least the impression, correct me if I'm wrong, that this is where it should rest and you are comfortable leaving it with that agency to pursue energy efficiency initiatives which will down the road have benefit to distribution company, will they not?

MS. MACFARLANE: But with respect it doesn't matter whether we are comfortable or not, that's what the legislation says. That was an intentional policy change and legislative change made by the Province of New Brunswick. I will remind you that, as Mr. Hay said, we do continue to have energy policy advisors that work with residential customers, and we are very anxious to see direction coming from Energy Efficiency -- the Energy Efficiency agency -- where we can participate in their programs in a more active way. But they are a new organization and it is not yet clear where we will play a role in their defined programs.

Q.682 - Thank you for that. The knowledge base insofar as the electric consumption in the province really still rests with the distribution company, would you not agree?

MS. MACFARLANE: Yes, I would. And I understand that at a

working level there is a lot of information sharing between our DISCO folks and the Energy Efficiency staff.

Q.683 - You are anticipating my next question. It relates to the relationship between the utility and the Efficiency agency. I would like to -- to increase my comfort level -- in fact what actually takes place?

I mean are there regular meetings, monthly meetings, weekly meetings? How often do they meet? How is information shared between the utility being DISCO and the Energy Efficiency Conservation Agency?

MS. MACFARLANE: I'm not trying to avoid your question, but I know at an operational level Mr. Larlee on the next panel, and Ms. Leaman, are much more familiar with that than I am. So would it be okay if we explored that on the OM&A DISCO revenue requirement panel?

Q.684 - I'm quite prepared to leave it at that, Ms. MacFarlane.

MS. MACFARLANE: Thank you.

Q.685 - Now I would like to talk about -- ask questions in regard to the renewal portfolio standard. I think you mentioned this the other day, Ms. MacFarlane, and this may be more directed to Mr. Kennedy.

My understanding is under the legislation there is a commitment that you are obligated to reach a certain level

by a certain period of time. Could you just indicate what that is?

MR. KENNEDY: Yes. We have an obligation under the renewal portfolio standard to secure by 2016, 10 percent of our requirements from renewable resources.

Q.686 - And where are you at in achieving that goal, Mr. Kennedy?

MR. KENNEDY: We basically have identified that wind is a potential resource and we have 96 megawatts of wind energy under contract, and the project is proceeding. It is referred to as the Kent Hills project and it's 96 megawatts again of wind.

We are currently evaluating other proposals and in the final stages of agreeing and knocking down towards the PPA for an additional 300 megawatts of wind capacity to come on line by 2010 -- in the year 2010.

Q.687 - So you will achieve the target that is contemplated ahead of schedule, is that the understanding?

MR. KENNEDY: Yes. We have accelerated the program to take on more energy -- renewable energy in advanced stages.

Q.688 - And I understand Mr. Hay's comments on day one, he indicated that the power purchase agreements for this contracted capacity and energy from these wind resources is with the distribution corporation?

MR. KENNEDY: Yes, that is correct.

Q.689 - So as we sit here today you have a PPA with -- I believe it's TransAlta, the Kent Hills?

MR. KENNEDY: That is correct. The PPA is with TransAlta.

Q.690 - And if you are successful in negotiating for this other 300 megawatts you will have x-number of PPAs with the successful proponents?

MR. KENNEDY: Yes, that's correct.

Q.691 - Let's just think about wind in terms of the variable nature of it, and we have talked about hydro and how it's dispatched. How will wind be dispatched under the PROMOD model, Mr. Kennedy?

MR. KENNEDY: As you know, wind is not a dispatchable resource. It will be dispatched into the base of the PROMOD run.

Q.692 - So I think we discovered somewhere where hydro resources are at sort of a zero cost in so far as dispatch is concerned?

MR. KENNEDY: With respect to pricing hydro, we discussed that with respect to interruptible and surplus pricing. And when it goes in, when it forms a piece of that, the block that is serving -- the piece that hydro falls in there is at zero dollars, but there tends to be other generation in that mix that is required to serve that

load. That is what was being referred to.

Q.693 - And in the stacking order for dispatching, those are my words, not yours, where will wind fit in the supply chain?

MR. KENNEDY: Wind will be in the base of the dispatch along with our other hydro resources and nuclear.

Q.694 - So in effect it gets into a let's say must run facility?

MR. KENNEDY: That is correct.

Q.695 - Obviously in the pursuit of renewable resources there is other matters than just the actual revenue accruing from the energy produced and whether meet capacity payments or not. Are there environmental credits associated with renewable resources as well, and if so, will DISCO have the advantage of these?

MR. KENNEDY: Yes. We will have ownership of all the environmental attributes as per the contract.

Q.696 - So if I understand it, if you have these environmental credits, and if wind -- and I'm not saying it is, but if wind were to be at a higher cost than what some other forms of generation are, the environmental credit could be used to offset any incremental or increased costs in wind generation.

MR. KENNEDY: My assessment as at this moment is that those

credits, they may have to reside to meet our requirements for the renewable portfolio standard. But if any is in excess of our requirements on any year they could be sold or marketed.

MR. BARNETT: Thank you, panel. Those are my questions, Mr. Chairman.

CHAIRMAN: Mr. MacKenzie?

BY MR. MACKENZIE:

Q.697 - Good morning, panel. We have talked a lot about the use of petroleum coke at Belledune. I'm interested in the status of the testing program for the petroleum coke at Coleson Cove. I'm interested to know how far along that program is, what sort of percentage of petroleum coke can be used or thought to be able to be used at Coleson Cove, and would there be any impact by the use of petcoke on the test year? Thank you.

MR. GOOD: The capital work at the station has been ongoing over the summer and it is expected to come back online in early December on heavy fuel oil.

Beginning in January, February, March we will start testing the new blend of fuel by introducing different levels of petcoke into the boiler along with the heavy fuel oil that is currently burned. Our target is to eventually use a blend of 20 percent petcoke at the

station.

And nothing was modelled in the test year. The decision to proceed with the project was only approved by NB Power's -- the boards of directors in December after the budget was already set for the year. Any benefits accruing from the testing during the test year will actually be attributed back to the project.

MR. MACKENZIE: Thank you. That's all my questions.

CHAIRMAN: Thank you, Mr. MacKenzie. Mr. Johnston?

EXAMINATION BY THE VICE CHAIRMAN:

Q.698 - Panel, I know that the Public Intervenor intends to come back to the issue of the statistics in the forecasting of hydro generation, but I just have a couple of fairly simple questions.

Do you have item 4 for identification there, which is table 1, Forecasts of Monthly Generation? You may not need it, but -- and I'm going to be referring as well to exhibit A-41 which was the response to an undertaking that was just provided.

My first question is, what use is made of the monthly forecast of generation as are set out in this table?

MR. KENNEDY: It's used to determine the hydro adjustment on a month by month basis within the year from measuring actual hydro performance against forecasted hydro

performance.

Again in the model there is 26 54 modelled in the PROMOD and this just breaks it out on a monthly basis. It's broken out on a monthly basis in the PROMOD to assess the price that is set for the test year. But within the year there is a comparison done between actual and forecast.

Q.699 - I want to make sure that I understand this, Mr. Kennedy. The price is set annually in advance based on anticipated hydro flows as are set out here -- or excuse me -- hydro generation as set out here. And then there is a monthly adjustment by comparing the actual to these monthly forecasts.

When the original amount is set do these monthly forecasts have a role, or is it only the annual production that has a role?

MR. KENNEDY: The 26 54 is a number that is in the power purchase agreement based on historical average hydro flows over a 40 to 45 year period. And in the model it basically states from an annual point of view that you should model 26 54.

So basically it needs to be broken down finer than that and basically this is the allocation on a month by month basis that historically it goes back to determine

the month by month.

And this basically is an actual result but there is a prescribed amount that is put in for the PROMOD run that is used in determining the fuel component cost to set the vesting energy price that is put forward before this Board at this time to -- and it's fixed.

So basically it's 26 54 as set out and as in this table, if you look at A-41 --

Q.700 - Yes.

MR. KENNEDY: -- and you look at the monthly assumed hydro production, those numbers are basically in the PROMOD run -- in the PROMOD run for the purpose of setting the vesting energy price.

So after the fact there is a hydro adjustment done each month using those numbers as a base and then comparing actual to those numbers.

MS. MACFARLANE: Mr. Johnston, if I could just clarify. The monthly determinations are for people like me, accountants who are required to report financial results on a monthly basis to our board and to our management teams.

From a perspective of setting an annual budget setting the vesting price, setting rates, the 26 54 is the relevant number. And you may ask yourself, why are we doing monthly true-ups? It's simply to facilitate

in-house reporting on results compared to budget.

It may be that there are variances in each month all along the way and at the end of the day they average out to the long-term average. That seldom happens. But the monthly is simply to facilitate monthly reporting. It doesn't have any impact on rates. 26 54 is the number in the PROMOD. It's the number in the rates.

Q.701 - Ms. MacFarlane, I though I understood there until you added in. Mr. Kennedy, I guess what I want to come back to is for setting the vesting energy price, does the monthly assumed hydro production have a role or is it only the annual hydro production of 26 54 that has a role in setting the vesting energy price?

MR. KENNEDY: The monthly numbers are put into the PROMOD and they have a role in setting the vesting energy price.

Q.702 - Thank you. The other question I have relates to a certain extent to hydro production as well.

Ms. MacFarlane, I don't have the transcript with me, but yesterday you clarified that for dispatch purposes hydro production is priced at zero, but when it's sold in the export market, that it is sold at the market rate.

I was wondering if you could comment on that same topic with respect to when hydro production is delivered to interruptible customers and what effect it has on the

price that is paid by the interruptible customers?

MR. KENNEDY: What the issue is when it goes to the interruptible customers, again the interruptible load is a block of load that is served just above in-province firm load dispatch on an hour by hour basis. It tends to be a block that is about 100 megawatts or more.

In that block hydro can find it's way -- generation into that depending on conditions on the system with respect to load. So basically there is a certain amount of megawatts in that block coming off of hydro combined with other generation sources, so the hydro in there has an effect of lowering the blended or average cost to serve that block.

And we in turn take that cost, or that product, the cost product that is passed through from Genco, and DISCO takes that product and puts an adder on it, a $9 per megawatt hour on peak and a $3 per megawatt hour off peak. And it's basically a pass through from Genco to DISCO to the customer and we basically pick up the 9 and 3 to cover costs and provide a certain amount of return.

CHAIRMAN: Okay, Mr. Johnston. Mr. Normandeau, no questions, I understand? Ms. Morrison, no questions? And I have no questions. So I guess we get to redirect.

MR. MORRISON: Thank you, Mr. Chairman. And getting back to

Mr. Barnett's issue. There is a technical report on the Belledune water wall. They have requested it, we may have it today, but more likely we will have it on Monday.

I only have two questions on re-direct, Mr. Chairman, and Mr. Barnett may have found some way to clarify this, but I will get back to the question that was asked by Ms. Desmond at the end of the day yesterday.

REDIRECT EXAMINATION BY MR. MORRISON:

Q.703 - Mr. Good, it was directed to you. Ms. Desmond referred you to comments made by Mr. Hay on Monday where he talked about the degradation of the Belledune boiler. And Mr. Hay went on to say that it had occurred for a number of reasons and not just petcoke. And he mentioned a blend of five different types of fuel.

And when asked by Ms. Desmond whether you agreed with that statement you said that you disagreed with that statement, and I wonder if you might be able to amplify on that?

MR. GOOD: Sure. Mr. Hay was on a policy panel and was speaking at a high level. And he was correct when he says that all coal does have sulphur in it but petcoke has a little bit higher amount of sulphur in it, and it was the introduction of this higher level or higher blend of sulphur into the mix at Belledune that has caused this

problem.

Barring that, if we had not increased the percentage of petcoke, we wouldn't have had to do this work. The boiler would have made it to the end of its estimated service life without this upgrade.

Q.704 - Thank you, Mr. Good. I have one other question and again it's for you. I would like you to pull out A-16. It's in the Nuclearco tab 6. It's A-16. Let's just wait for the Board members to get their hands on that. Again that's A-16 under the Nuclearco section, tab 6. It's page 2, table 6(B).

Yesterday Ms. Desmond directed you to that table and asked you -- you will see there it's issue number N-5, I think it's the third one down, do you see that? She asked you -- and that has an issue rate of 10 percent. She asked you whether that was inordinately high. And in your response you explained how the debt was distributed among the operating companies but you did not directly address the question.

And can you, Mr. Good, explain whether that particular issue rate is inordinately high as compared to the other rates on that table?

MR. GOOD: Yes. The rate is higher obviously than the other rates in this table but it is not higher than other coupon

rates for other legacy debt that existed at the time of restructuring.

Maybe what I can do is direct you to exhibit A-27. There was an IR answered on this. It's exhibit A-27, our response to PI-28, which provides a table that actually shows what happened with all of the legacy debt issues, how they were allocated to the different companies.

The goal of government in allocating the debt portfolio was to give each of the operating companies the same weighted average cost of debt, which worked out to be 6.72 percent. And so in doing that they had to, as I say, allocate all the different debt issues.

When you look at the schedule that is actually provided in that IR you will see that they range anywhere from as low as 3.8 up to I believe as high as 11 percent. And those -- that just reflects the then current interest rates available in the market at the time that those debt issues were. So no, this rate is not exceptionally high based on that.

MR. MORRISON: Those are all my questions, Mr. Chairman.

CHAIRMAN: Thank you, Mr. Morrison. I guess that would conclude this panel.

MR. MORRISON: It does, subject to, as we talked about earlier, whether there is anything that comes up from the

IR responses or whatever that we have to deal with.

CHAIRMAN: I thank this panel for their attendance and, Ms. MacFarlane, I believe we will see you again.

MR. THERIAULT: Mr. Chairman, if I may, it concludes the panel but also with the questions on hydro generation that Mr. Larlee and perhaps Ms. MacFarlane or whatever at a later date.

MR. MORRISON: That's correct.

CHAIRMAN: Okay. That's fine. So thank you, panel, and I guess we will get to clear the table and you have another panel ready to go at this time?

MR. MORRISON: We do, Mr. Chairman. The next panel on the schedule -- it's a one witness panel and it will be Dr. Jim Sustman, who will be dealing with his report that was filed with the evidence on PROMOD matters. And at this point my partner Mr. Keyes will be handling this panel.

CHAIRMAN: Mr. Keyes, I guess while the panel is leaving and Dr. Sustman will be taking his place on the panel, perhaps you could direct us to where his evidence is found, what exhibit number it is, so we will get it right.

MR. KEYES: Yes, Mr. Chairman. It is in exhibit A-7.

CHAIRMAN: Yes.

MR. KEYES: And it is at tab entitled "PROMOD".

CHAIRMAN: A-7, tab "PROMOD".

MR. KEYES: "PROMOD Review" it says on it.

CHAIRMAN: Thank you. And Ms. Desmond, perhaps you could come forward and swear the witness.

DR. JAMES SUSTMAN, sworn:

CHAIRMAN: So for the record the witness has been duly sworn.

MR. KEYES: Thank you, Mr. Chairman.

DIRECT EXAMINATION BY MR. KEYES:

Q.1 - Dr. Sustman, could you state your name for the record?

A. My name is James Sustman.

Q.2 - And what is your address?

A. My --

Q.3 - Your address where you live?

A. My home address is 851 Springdale Road in Atlanta, Georgia.

Q.4 - Okay. And what is your occupation?

A. I'm Vice President with New Energy Associates in Atlanta, Georgia.

Q.5 - And the New Energy report filed in this proceeding in exhibit A-7 under the PROMOD Review tab, was that prepared by you or under your direction?

A. Yes, it was.

Q.6 - Could you tell the Board how long you have been employed with New Energy?

A. I have been employed with New Energy or its precursor company Energy Management Associates for 31 years, since 1976.

Q.7 - Now attached to your report as Appendix B is a document entitled "Professional Experience of James Sustman, Lead Investigator."

I wonder if you could turn to that and take us through your qualifications and professional experience for the record?

A. Okay. Let me start with my education. I received in 1970 a Bachelor of Science degree from University of Wisconsin at Oshkosh, majoring in Mathematics and Physics. In 1971 I completed a Nuclear Engineering Master of Science degree at Stanford University.

And then I attended Yale University in the Ph.D. program in Computer Science. I received my Master of Science degree in Computer Science and my Ph.D. in Computer Science from Yale University in 1975.

Following graduation from graduate school I started my career teaching Computer Science at Georgia Tech in Atlanta for one year before joining Energy Management Associates, which as I said is now New Energy Associates.

So I have been with that company for the past 31 years.

Q.8 - And I wonder if you could tell us a little bit about

your involvement with PROMOD?

A. Yes. When I first started with the company I was working on software development, developing computer simulation models for the electric utility industry.

The first products I worked on were developing maintenance scheduling software package that you would licence to utilities to help them schedule their plant maintenances.

Another one was to develop the scheduling engine that the PJM power pool in Pennsylvania, New Jersey and Maryland uses to schedule their hydro system even today I believe.

Following that I got involved in PROMOD development in 1978. The actual first version of PROMOD was delivered in 1976. New Brunswick, as a side issue I will mention, picked up PROMOD I believe in 1978 or '79. So they are going on 30 years of use of PROMOD.

In 1978 I first got involved with PROMOD related to a project we had with the Department of Energy in Washington. At the time there was a coal miners strike going on. The United Mine Workers had struck and basically closed down coal production in the United States. And it had extended for a number of months.

And Department of Energy had contracted with us to bring PROMOD in so that they, along with information from

other consultants, could do simulations of the power system on a weekly basis to forecast how soon it would be before the plants would start running out of fuel.

And this was information to be shared with the White House every week. Unfortunately the miners settled the strike before we actually used the results. They saw us coming, I guess.

Beyond that I worked on a number of studies and developmental PROMOD applications and algorithms in PROMOD. I began working with a variety of power pools in the United States and elsewhere in implementing their interchange agreements, similar to say the PPAs here that govern how the costs are going to be shared among the member companies of NB Power Holding, various holding companies in the United States, Entergy, Southern Company, Allegheny Power System, American Electric Power.

All are holding companies with member companies. And they all have their own interchange agreements, if you will, that govern how they are going to share costs. And we would implement those roles within PROMOD so that they could do their fuel forecast and other cost allocation studies using PROMOD. I also worked at the New York Power Pool and PJM Power Pools in implementing their rules for allocation of cost within the companies.

At one time in the 1990s we had companies probably representing 70 percent of the U.S. and North American generating capacity using PROMOD for doing regulatory filings, fuel forecasting and things like that.

In addition to the sorts of things I have talked about already, we have done studies with PROMOD. There is one I can mention. In the 1980s several companies in New York were developing the Nine Mile 2 nuclear plant. And around 1984 they had us do an initial study where they had about $400 million sunk in the plant and another forecast of $400 million to go, and asked us to do a study about whether they should complete the plant or write off the $400 million.

And we did the study. And at that time it came out economic to complete the plant. Two years later they came back to us with the same study request. Except by that time they had about $800 million sunk in it and another $600 million to go because of snowballing costs of development.

And we redid the study again one or two times after that. So by the time the last study was done they had $1.2 billion sunk and were looking at $600 million of additional costs.

So we use PROMOD in a variety of studies like that to

do cost analysis for new plant. Some of our clients are doing studies, PJM Power Pool and others are doing studies on multibillion dollar transmission investments, looking at the economic value of reducing congestion within the markets.

Q.9 - I'm going to draw you back in a little bit here --

A. Okay. Thank you.

Q.10 - -- Dr. Sustman. Just a question. Is PROMOD proprietary to New Energy?

A. Yes. PROMOD is a software product that is trademarked and that we licence and sell to electric utilities primarily but also to consultants. And we have some merchant generators. And even power traders will use PROMOD.

Q.11 - And I want to ask you if in your position with New Energy Associates, have you ever had occasion to testify as an expert in regulatory matters?

A. Yes, I have. Not too many times. But in the mid 1980s I testified in Pennsylvania and West Virginia for Allegheny Power System, now Allegheny Energy, on the issue of the need for capacity reserves and the economic value of a new plant, a pump storage hydro plant that they were bringing into rate base at that time, the Bath County pump storage plant in western Virginia.

I also provided written testimony in Indiana and Texas on the valid and appropriate use of PROMOD by the utilities that had filings pending in those states that were asking for my judgment about their appropriate use of PROMOD. And I testified in Louisiana on the merger benefits of merging Gulf States Utilities with Middle South Utilities, which is now Entergy.

Q.12 - When was the last time that you testified?

A. The last time I testified was about four weeks ago in Wisconsin. Wisconsin Electric Power and the other utilities have a biannual filing in Wisconsin for their fuel costs, to identify the fuel costs which would get rolled into their retail rates.

And two years ago that corresponded with the same time that the Midwest ISO, the new market that was being implemented in the mid-western United States was starting up. And they had several accounts that are paid to the ISO that the Commission did not know whether they would be considered extra or already imbedded in their fuel forecast.

And they said they would defer those costs and accrue those costs in a deferral account. And so I was testifying to the validity of the companies collecting

those payments under the deferral account.

MR. KEYES: Thank you, Dr. Sustman. Mr. Chairman, at this time I would ask that Mr. Sustman be qualified as an expert in production modeling and PROMOD for the purpose of this proceeding, subject to any cross examination and questions.

CHAIRMAN: So it is production modeling and PROMOD is his field of expertise?

MR. KEYES: Yes.

CHAIRMAN: Mr. Wolfe, do you have any comments or questions?

MR. WOLFE: I have no questions, Mr. Chairman.

CHAIRMAN: Do you have any objections at all to him being noted as an expert witness?

MR. WOLFE: No.

CHAIRMAN: Mr. Zed?

MR. ZED: I don't have any objection to him being qualified.

CHAIRMAN: Thank you. Mr. Theriault?

MR. THERIAULT: Certainly not.

CHAIRMAN: Ms. Desmond?

MS. DESMOND: No objection, Mr. Chair.

CHAIRMAN: All right. Then Dr. Sustman will be qualified as an expert on the subject of production modeling and PROMOD.

MR. KEYES: Thank you, Mr. Chairman.

Q.13 - Dr. Sustman, just for the record could you advise the Board what PROMOD does?

A. Okay. I might refer you to the end of this report starting on page 19, attachment A, actually beginning on page 20. There is a summary of what PROMOD is. It's a rather standard application within the utility industry. It's a simulation software package that simulates the operation of the utility at the level of say the control centre decisions within the utility.

We are not modeling the heat transfer within the plant and the actual electrical generation of energy per se in terms of the mechanics and the heat transfer within the plant. We are modeling the decision process that the plant -- the system operators make when they are deciding when to start up units and how to dispatch the units hour by hour to meet the customer demand.

So the basic inputs to the model are things like the generating unit characteristics. You would have the net capability, the net megawatt output of the plant that the unit is capable of, what the heat rate characteristics are in terms of the heat rate curve, what the average heat rate of the unit is, running at minimum output as well as different operating levels going up, what the forced outage rate is, what fraction of the time can you expect

the unit to be failing due to forced outages, what the planned maintenance schedules are related to the units, what the environmental production rates in terms of SO2 and NOX production rates are related to the plant, and other costs related to operation of the plant, startup costs and so on.

In addition to that you have the fuels. We can monitor the individual fuel contracts with limits and fuel inventories so that the user can represent the deliveries of the fuels with their particular costs. We can calculate the inventory costs on a month by month basis and then report then the out-of-pocket costs basically for the fuel burn of the plant.

In addition to that you have -- I have mentioned emissions. You have contracts representing purchases and sales of outside parties, I would say outside the bench that you have got, the representation that you have got for your utility.

And so you would represent these purchases and sales perhaps as dispatchable quantities or fixed schedules that you are buying and selling with their cost characteristics on it.

Q.14 - Dr. Sustman, you were retained to provide a report in this matter which we have seen and it has been marked.

What was the nature and scope of your retainer?

A. Well, for that I would like to refer again to a report. If you turn to -- actually it starts at the bottom of page 3 and continues to page 4 and 5 of the report.

Q.15 - And if you are referring to your report I will just get you to slow down a little bit, Dr. Sustman.

A. Okay. Thank you. This is the report entitled "Technical Audit and Review of Power Purchased Costs for Fiscal 2007/2008."

Q.16 - And again what was the nature and scope of your retainer?

A. The scope was to do a technical review of the PROMOD cases that were prepared by Genco as the basis for establishing the vesting energy price and the DISCO budget for this case and to further review the development of the evidence, the spreadsheets basically represented by the company in its evidence related to this filing.

Now if I may proceed, I broke that entire process up into what I consider eight steps that are outlined in this section 1.2 of the report, talking about the audit process.

Q.17 - Why don't you take us through those?

A. Okay. Thank you. The first thing I did was just

review the PPAs, the three power purchase agreements, to identify what aspects of them would have relevance to the PROMOD cases.

So I was looking for issues related to things that are specified in the PPAs in terms of data assumptions that need to be used in the vesting energy price case, requirements of the vesting energy price case, fuel budget case and so on, to see just what the requirements are under those contracts.

Q.18 - Dr. Sustman, just before you go on, you mentioned there were three cases that DISCO submitted in support of --

A. Yes. There actually were. There are three cases. The first is the case that establishes the vesting energy price case. And I will talk about that in detail as we go through the cases.

And this was the first PROMOD case that Genco ran and the first one that I analyzed. Because it basically gave the ground -- the basis for all the other cases.

Following that case, this vesting energy price case, there are additional things that are added to the simulation and some that are taken out.

The vesting energy price case includes prescribed assumptions that are designated in the contracts that may differ from what Genco's current view is of things, like

what the actual heat rate of the plant might be and things like that, and more recent updates to fuel price forecasts and things.

So there are data changes that Genco would appropriately make in the fuel budget forecast that are different than things that are defined and locked down at the point that the vesting energy price case is run.

So that case is run to establish the overall fuel budget that would identify additional costs to DISCO over and above what the vesting energy charges would be.

Q.19 - And in your report that is called the budget case?

A. That's called the budget case.

Q.20 - And then there was a third one as well?

A. Yes. There was a third case. So this is --

Q.21 - And I don't mean to take you out of order.

A. No.

Q.22 - But I just want it on the record.

A. These are called the adjusted fuel procurement case. I will deal with that later in detail again. But this was essentially a redo of the vesting energy price case, but -- I might say despite the way it appears in the company's evidence, it really is not a recalculation of the vesting energy price case.

What it is intended to do is establish a forecast of

an adjustment to the Orimulsion charges under the vesting contract. I will refer to this later on when we deal with this case.

But the vesting energy contract has a clause in it that says if the forecast changes, or actually if the actual deliveries of fuel under the Orimulsion contract changes from what was assumed in the vesting energy, then there can be a monthly adjustment to the charges to payments to Genco to reflect that change in deliveries under the Orimulsion contract.

Q.23 - And that is what that case --

A. And that's what this case dealt with.

Q.24 - So turning back then again to your audit process, you indicate in your report at page 3 and going into 4, there were a number of steps that you did. I wonder if you could take me --

A. Yes.

Q.25 - -- through those steps?

A. As I said, I started going through and identifying the assumptions, for example, related to the generators, nuclear generation, hydro generation, forced outage rates and so on that are prescribed by the PPAs.

Next I got the electronic data files, the computer files that Genco used for the three cases and analyzed

them directly. I pulled them into Text Editor, I pulled them into Excel on the computer and did file comparisons of them to identify, first of all, what tables of data that PROMOD has available to it were actually used by Genco in developing the PROMOD. Because there are many tables that Genco would not need to use based on their modeling requirements.

So I identified specifically what the tables were that were used by Genco, and also which tables changed from one case to the other, so that I was able to clearly identify each of the changes that Genco made going into each of the cases.

The third case or the third step following this initial review of the data was to actually sit down with NB Power people, Genco and DISCO personnel, to review the data assumptions that they had to back up these tables. Each of the tables that I identified were used in PROMOD, each of the tables that had data in them.

I discussed with Genco personnel and identified specific backup material that they had, even in the case of spreadsheets or historical records, for example, for hydro generation for the energies that they would take on individual purchases and sales for the heat rate information and things like that to identify that they had

specific information related to all those data tables.

The fourth step, after reviewing all of the backup material for those, was to review specifically the data tables that were prescribed by the PPAs, to check to ensure that those data values, in the vesting energy price contract case, were consistent with the data assumptions that were prescribed by the vesting contract.

Fifth, the company asked me to do a comparison of some general characteristics of the generating units. I'm just stating this for standard information. We in our capacity of selling our software also provide databases based on public information of what the generating unit characteristics are for all of the units in North America. And so we had tables of information that we could compare the actual data that Genco was using to represent their generators to other information for comparable units. And so I developed some tables just to compare heat rates and forced outage rates primarily for Genco's ocifier generators to comparable generators, primarily New England and the NPCC, Northeast Power Coordinating Council area. Also I checked the fuel prices that we used for the vesting energy price case. As you know, the vesting energy price case was established as of October 1st, the

last business day around October 1st. And so Genco would have picked up spot fuel price forecast for the gas and oil markets at that point.

And I compared those forecasts to our own information about what these forecasts were, what the spot market prices were for those forward strips at that time, to verify that Genco had used the appropriate spot prices.

The sixth step was to actually look at the PROMOD reports themselves. We don't like PROMOD to be treated as just a black box. Some people refer to it as a black box because we would rather not know what goes into it. Fortunately New Brunswick engineers are not like that.

But I looked at the results to say given the input data and knowing how PROMOD dispatched the system and knowing how the Genco's control centre would be dispatching the system, are the results coming out reasonable?

I looked for -- there were messages from the program on checking capacity factors on the generators to see that they conformed to what you would expect for that type of generator, that their average heat rates compared to the input data related to them. So I basically did a validity check on the outputs just to see if the other thing looked reasonable on a general basis.

The seventh step was to go beyond the PROMOD output and to look at the actual spreadsheets that Genco used to actually build up to the vesting energy price case and the budget case and the third case, the adjusted fuel procurement case.

Genco has spreadsheets that take extra inputs, things like the gross margin adjustment from the vesting energy contract is not something that comes from PROMOD. What comes from PROMOD is the actual margins from the PROMOD simulations.

So we just would pick up the gross margin number that's specified in the contract, pick up other numbers that are coming in, capacity cost related numbers that roll into the vesting energy price case, and look at those spreadsheets to see that everything was consistent, the results from the PROMOD cases were properly rolled into those spreadsheets and then that the spreadsheet calculations did reasonably calculate and build up to the vesting energy price case and to the different components of the budget.

So at that point I was satisfied that the spreadsheets were consistent with the PROMOD cases and the PROMOD cases were consistent with the input data assumptions.

Q.26 - And I assume you -- turn to your next, page 6 of your

report -- wanted to do an analysis of each of those budget cases. And I wonder if you could take us through --

A. Well, before I do that, I will say there was an eighth step that we will come to later on. The eighth step, following the review of the development of the evidence, the company also asked me to do a review of the year over year comparison of the vesting energy price from 2006/2007 contract year to 2007/2008 contract year, to break out or try to identify what changed between the two contract years that would account for the cost increase that has been represented in this latest filing.

Q.27 - Okay. So turning then -- before we get to that, why don't you take us through the three PROMOD cases that you reviewed? Your analysis?

Q.28 - Yes. Why don't we start out with the vesting energy price case because that's where I started and where the report is basically organized around talking about it first.

As I described, what I had done was go through the actual data tables used in the case and verified that the information tied back to specific information that Genco and DISCO had related to their data assumptions, to justify their data assumptions.

In the case for example on page 6 they talk a lot

about load forecast. I had checked to see that the load forecast numbers, the monthly peak in energy forecasts for both the firm load and the interruptible load were consistent with DISCO's published at the time forecasts, official forecast of what the load would be for the contract year.

I then went on to looking at the generating units, in the generating unit category, the demonstrated net maximum capabilities, the DNCs that were talked about yesterday, are things that are defined based on the contract and have to be approved by the vesting operating committee.

So I compared the net operation -- or the DNCs, the demonstrated net maximum capabilities of the generators in PROMOD to what was a table approved by the vesting operating committee.

I did similar checks against the heat rates for the units and the forced outage rates for the units. I checked the nuclear generation in the model against what was prescribed in the vesting energy contract.

I checked the hydro generation to see that the hydro generation on an annual basis totalled to what was designated in the vesting energy contracts. And I also compared that to -- or checked the PROMOD numbers to the monthly distribution of energies that was provided by the

company as their representation of what the historical average monthly distribution of the energy would be.

On the Point Lepreau nuclear generation, I checked to see that it matched. On the individual NUGs, the Heritage NUGs, Fraser Paper, Musquash, St. George, Bayside, Grandview, I discussed the characteristics of these NUG contracts.

I did not actually go and review the contracts themselves. But I reviewed tables that Genco had regarding the historical take of energy under those contracts and what the historical costs were under those contracts and discussed how those costs are calculated and verified that those NUGs were adequately represented and accurately represented within the PROMOD simulation.

Once reviewing the NUGs, I then went on to reviewing fuel prices. Genco has a series of fairly large spreadsheets that take as input the spot price forecast for the fuels as well as the delivery charges or relating the difference between the spot price say New York Harbour to what the delivery price would be here at the plant and other information to build up the fuel information that goes into the PROMOD model, and verified that the numbers were going into PROMOD and that they tied back to the spot forecast that the company had established as the basis for

their assumptions.

I looked at the nonfuel components of operating costs, the limestone costs that were being represented, and compared those to the spreadsheets that the company had for their development of the costs for limestone and other nonfuel costs.

I looked at the emission costs. The only emissions cost that was actually represented in the model is a CO2 charge of $15 per ton. And that was represented to me by Genco as at that time that was expected to be a requirement based on provincial legislation that would force them to start incorporating into their operations a cost, an imputed cost of $15 per ton for CO2 production. And so that was represented in the model.

And then finally I reviewed the out-of-province purchases and sales that the company represented in the vesting energy price case. There are a number of purchases, both firm and nonfirm purchases and sales that the company has, as well as emergency purchases when needed to buy energy from Hydro Quebec in particular that were represented in the model.

And I reviewed the characteristics of the representation of those, tied those back to spreadsheets or tables that Genco had to justify the assumptions for

those. And that basically covered the data assumptions for the vesting energy price case.

Q.29 - And then you went on and reviewed the second case?

A. Yes. The second case is a budget case. It may have just characterized things, at least in my view of things, the way the PPAs are structured is the vesting energy price case is designed to establish a single cost of energy that Genco would get paid to run, for DISCO's benefit, the Heritage assets, the generators that are designated as Heritage assets, and basically put the risk on Genco for running the units consistent with the data assumptions that were represented in that vesting energy price case. Now in addition to the vesting energy there were other things that flow through to DISCO outside of the vesting energy, things like the operation of combustion turbines or peaking units or emergency purchases from off system over and above what can be covered by the vesting resources. Also what flows through is the gross margin adjustment.

And so there is a calculation in PROMOD of what the -- in addition to what the generation to serve native customers would be is the forecast in the budget case of what the generation is going to be to serve off-system

sales and the calculation then related to those sales of what the gross margin is, so we could go through the gross margin test in the spreadsheet to determine that indeed the gross margin for this test year was going to be within the plus or minus 20 percent band that has been talked about.

So I reviewed this budget case. I looked at the file comparisons, the electronic comparisons or the data assumptions, to identify what changed.

At the bottom of page 10 of this report there is a series of bullet points that summarize the types of things that changed between the vesting energy price case which was run at the end of September 2006 and this case which was run approximately one month or six weeks later than that. Things like fuel prices were updated based on the latest price forecasts. Those translate then into adjustments to the fuel inventory costs. Limestone prices and consumption rates were adjusted.

The Point Lepreau plant was adjusted to represent -- reflecting actual expected operation as opposed to the prescribed amount from the vesting contract. Fuel mixtures for Belledune were adjusted based on some adjusted fuel delivery estimates and fuel mixture for that

plant. There were some adjustments to generators on peak -- or off peak in the summer months to reflect adjustments of fuel deliveries.

The CO2 adder was removed. Because between the end of October or the end of September, when the vesting energy price case was run, and the timing that this budget run was run, the company received information that that requirement for the $15 per ton CO2 adder in the dispatch would be deferred at least for one year and so did not need to be included in this test year calculation.

Q.30 - And following -- you have mentioned the gross margin out-of-province sales and the gross margin calculation in that case as well. Then you moved on to the third --

A. Yes.

Q.31 - -- case?

A. The results -- one of the results of the budget case was to do the gross margin test and calculate the margins on sales and ensure that they were within the plus or minus 20 percent band for this test year projection.

Now the third case is what is called the adjusted fuel procurement case, which could be also termed the Orimulsion delivery adjustment case. During the test year it was expected that the Dalhousie plant would be burning heavy oil delivered in lieu of Orimulsion but priced at

Orimulsion cost.

But between the time of the original vesting price case being run and the time that the budget case was being run, the company has represented to me that they received information from the provider of the Orimulsion fuel that they could expect at least one month curtailment of delivery sometime during the year.

Now if you referred to the vesting contract, section 6.10 has a clause in it dealing with Orimulsion fuel and Orimulsion deliveries. And indeed one of the subclauses of section 6.10 of the contract provides that if there is a curtailment of Orimulsion fuel during the year, the company Genco can calculate on a month-by-month basis an adjustment to their fuel cost that gets passed through to DISCO.

The vesting operating committee deemed that they would calculate this adjustment by basically rerunning the vesting energy price.

First of all the clause in the contract says that only the portion of the Orimulsion fuel that was used for providing vesting energy, in the original vesting energy case, could be assumed as going into the calculation of this adjustment for the fuel adjustment on the Orimulsion.

And so the vesting operating committee deemed that it

was appropriate to rerun the vesting energy price case to calculate a new cost for vesting energy that would reflect what the increase in vesting energy would be due to this Orimulsion curtailment.

Now it is my -- the company has represented to me that this 15 cent per kilowatt hour, it ties back to 1.5 million or so dollars total for the year, in terms of the increase in cost, that this 15 cent per megawatt hour on the vesting energy cost is not applied as a vesting energy charge but is actually being applied in the monthly bills as an Orimulsion line item adjustment, similar to what is already represented in the contract or in the monthly bills as the Lepreau nuclear adjustment and the hydro adjustments or the monthly hydro deviations. So these three are all being relatively consistent and represented in the annual bills -- or monthly bills, as I understand it.

Now getting back to the original case that was run, the vesting energy price case was again a rerun of the vesting energy price simulation with simply some changes on the Dalhousie generator capacities.

During the summer months in the off-peak hours, the company was assuming that the generator would be held back in those hours because those lower load hours or those

lower load months to reduce the generation output from that plant in order to stay within the fuel limits that were being represented by this curtailment of one month supply. So the only data change in this case that was represented, compared to the original vesting energy price case, was these off-peak durations for several months on the Dalhousie generators.

Q.32 - So following your review of the three PROMOD cases, what was the conclusion, your conclusion and your -- summarized in your report?

A. Having reviewed all of the data assumptions and their application into PROMOD, the PROMOD results, the spreadsheets and so on, and the rollup of that information into the DISCO evidence that was filed as a backup for this case, I have concluded and am confident the PROMOD simulations were properly executed, that they properly and reasonably reflected the data assumptions that were presented by the company, and that they represent a reasonable and realistic portrayal of what the DISCO costs are going to be for purchased power from Genco this year.

Q.33 - And you had a second item that you were asked to look at?

A. Yes. The final thing the company asked me to look at

is come up with a representation, an explanation for how this data that has gone into the simulation has resulted in a vesting energy price increase that is over 10 percent greater than was in the previous test year.

Q.34 - So can you tell us what you did --

A. Yes.

Q.35 - -- in order to do that and what your results were?

A. Yes. This discussion I will refer you to is on section 3, starting on page 16 of the report. Now the first thing I would do, if asked to do something like this, is say okay, we have got two separate years with all sorts of data assumptions that have changed, actuals. Things have changed in the world between one year and the other. The first thing I worry about is just volume changes, how much energy is in the market that has to be settled, how much energy is being paid for. So the first thing I looked at was just the load forecasts, looked at the 2006/2007 firm and interruptible load in the province compared to the 2007/2008 firm and interruptible load, and saw that the load forecast actually decreased by a fraction of a percentage.

So this indicated that an increase in load, actually a decrease in load, couldn't have accounted for a

significant increase in cost. So the first thing I did was eliminate any change in the load forecast as being contributing to this change in cost from year to year. The second thing I looked at was well, are there any changes in the overall mix of generation, not necessarily the cost of the generation but just the mix of the generation. Have there been significant changes in the energy supply capability of the system?

So in figure 3.1 I have got a table, pie charts that represent what fraction of the total vested energy was forecast to be supplied in 2006/7 by the different types of generation, types broken up by fuel type versus -- as compared to what the breakout would be in 2007/2008.

And so you will see in the biggest sections of these pie charts coal generation, which included the Orimulsion-priced oil generation in 2007/2008.

But the coal generation increased only slightly from 38.6 percent of the total energy to 39.9 percent of the energy. So there is a small increase on a percentage basis in terms of the coal generation.

The NUG generation increased by .1 percent. It was almost the same from year to year. The hydro generation changed from 25.4 percent to 25.3 percent. So it is just a small change in hydro generation. And the NUG

generation -- I'm sorry, the heavy fuel oil generation, the Coleson Cove generation changed from 17.4 to 16.1 percent. Now just based on looking at this, I might say well, coal has increased generation and oil has decreased by a small amount. That might imply a cost reduction for the year. But that's not what we saw.

So a mix in generation certainly wasn't dealing with it. If anything, the mix in generation change from year to year would have implied a reduction in cost. So the next thing I was forced to do was look at the actual cost of the fuels used or these different portions of the energy. And so in the next table, on table 3.1, I broke out comparing the two test years, '06/'07 versus '07/'08, a breakout of the vesting energy costs by fuel type.

Now for this purpose I had to restructure things a little bit in the way the company represented things in their evidentiary filings.

For example, in the evidentiary filing, in the rate filing, the company had broken out the financial hedges on fuel. And the foreign exchange hedge is a separate line item. Well, those are actually fuel procurement costs. And so in order to do a valid and consistent

year-to-year comparison, I took those foreign exchange and fuel hedge costs and rolled those into appropriately the different costs.

For example, the fuel oil, I have the oil hedge, I rolled into the fuel oil cost. The gas-related hedges I rolled into the gas cost. And came up with this table, table 3.1 that lays out the costs broken out by the different fuel sources within the generation for the two years.

And so you will see, looking at this table, that from 2006/'07 to '07/'08 the heavy fuel oil costs increased by $23.2 million. Coal costs decreased by $1.8 million. NUG costs increased by 23.8. And hydro costs were effectively the same.

So out of the total cost increase for the new test year of $45.3 million, it shows up as being almost 50 percent coming of strictly from heavy oil costs and the other half coming from NUG costs which were related to the gas prices. So it is all in the fuel prices in terms of where the cost increase is coming from this year.

MR. KEYES: Thank you, Dr. Sustman. Those are my questions, Mr. Chair.

CHAIRMAN: Thank you. We will take a short break. And then I guess Dr. Sustman will be available for cross

examination. So we will be back at 11:15.

(Recess - 11:00 a.m. - 11:15 a.m.)

CHAIRMAN: Mr. Wolfe, do you have any cross examination?

MR. WOLFE: No, I do not, Mr. Chairman.

CHAIRMAN: Mr. Zed?

MR. ZED: Very brief cross examination, sir.

CHAIRMAN: Proceed.

CROSS EXAMINATION BY MR. ZED:

Q.36 - Dr. Sustman, the first question I would have -- and I was just reading -- looking at the first page of your report, in particular the second paragraph of the executive summary, last sentence, and it says, "This audit did not extend, however, to a review of the methods and sources of information of the various organizations that submitted information for these PROMOD cases", which I would take to be a qualification. And I guess my question simply is how material a qualification could that be?

A. What I am referring to here is a qualification related to work I have done and others in our company have done for PROMOD users in the past, where they would have us come in not just to talk to the generation planning people but also go out and interview the people who do the fuel procurement, the people who run the control centre, the people who establish the contracts with neighbouring

utilities, and investigate their processes and how those processes build up to the forecast going into the generation planning department. This did not include going out to that additional level of detail.

Q.37 - I understand that, sir, and I guess my question more specifically is how material could that potentially affect the result of PROMOD should there be something unforeseen happening with respect to those sources?

And I guess the follow-up question would be how likely is it that there would be a material impact?

A. First of all, I would say there certainly could be a significant material impact, because there is no telling what might change within the company information that the generation planners aren't aware of that people aren't talking to each other.

My experience with the generation planners is that they do talk to the other departments. New Brunswick Power is not that big of an entity. And also the documentation they presented suggests that they are drawing on information that seems to be well founded.

Q.38 - So to paraphrase then, the potential for material change is great but the likelihood is not great?

A. I would say that's -- yes, that's accurate.

Q.39 - Thank you. And the only other question I have for you,

depending on your answer, is what -- roughly what percentage of load would be dispatched on economic dispatch given -- maybe give an answer for average summer load and then perhaps average midwinter load?

My question really relates to testimony from you and others that talks about must-run dispatch, the inability to dispatch hydro on an economic dispatch basis. So rolling all those factors in, how much of the load is actually dispatched on an economic basis, and just a rough answer for perhaps midsummer and midwinter would suffice.

A. It's going to have to be a rough answer because I don't recall -- what would be getting into a detailed analysis of this question is what are the minimum operating levels of the various generators and how they stack up. A typical load duration curve for various months I'm thinking may have a minimum load perhaps 50 to 60 percent of the peak load, for a lower load month in particular may be somewhat different from that, maybe below 50 percent for a higher diversity month.

That would -- and it's not unusual for the company to cover most of that base load each month by all the generators. So you might expect that on a capacity basis the -- I might say 30 to 40 percent of the capacity of the peak load would be covered as base load generation that is

covered by minimum segments, must-run contracts, take or pay contracts, things like that, hydro that is basically covering the base. And then everything above that is -- would be covered by economically dispatchable generators and purchases.

And on an energy basis since the upper portion has a lower load factor than the lower portion, which is 100 percent, I might guess that you might be talking about 60 percent of the energy covered under -- well that's actually getting high, come to think of it. On an energy basis I might think that it might be 40 percent or something might be base load and 60 percent dispatchable, but that's very general and I would hate to be held to that number without doing a detailed analysis.

Q.40 - Well that's quite all right. Thank you. I guess there is a follow-up question. How much of -- I'm just not sure how PROMOD works. Is the base load part of the scheduling in PROMOD?

A. Yes. What PROMOD takes in on an hourly basis for each week is the forecast of the firm load, and then on top of that is representative of the interruptible load. And PROMOD goes through from the bottom up. They dispatch commitment, dispatch to the system each hour over the week to build up, applying the nuclear generation, the hydro

schedules, the take or pay contracts, the NUGS and so on, and then starts making the economic decisions about starting up the fossil units, the dispatchable units.

Q.41 - So I think you have answered this question then just with your last comment. The only thing built in a PROMOD other than the base load we have talked about and the must-runs, is a consideration that the rest of dispatch will be done on an economic basis. There are no other modifiers?

A. Well what do you mean by modifiers? I'm not sure.

Q.42 - Well my question is really other than must-runs or NUGS or hydro, and I guess to some extent nuclear which would be in that model, is everything else dispatched according to the principles of economic dispatch? I mean quite simply, you sell your cheapest cost electricity earliest.

A. Cheapest --

Q.43 - To produce.

A. Cheapest generation is not required for native load, yes. In terms of other resources, we haven't really talked about purchases the company may have negotiated with outside parties. They may have those, may be firm take or pay purchases or they may be dispatchables. So if they were dispatchables they would be dispatched along with the dispatchable generation sources.

Q.44 - But to the extent that there aren't commitments or operating reasons built into the model, is all other electricity dispatched according to economic dispatch in the PROMOD model?

A. Subject to other constraints -- operational constraints that may be represented, there are some constraints in PROMOD that may be represented. For example, fuel constraints. They don't apply in this particular representation. They could be. There are spinning reserve, operating reserve constraints built in to say that a certain amount of capacity has to be spinning but not generating in order to meet those operating reserve requirements. So those constraints are applied as constraints on that economic dispatch. I think I would agree with your statement.

MR. ZED: Thank you. No other questions.

CHAIRMAN: Thank you, Mr. Zed. Mr. Theriault?

CROSS EXAMINATION BY MR. THERIAULT:

Q.45 - Good morning, Dr. Sustman.

Good morning.

Q.46 - I just have some general questions for you. First of all, did you have a written retainer with the description of the terms of reference from DISCO?

DR. SUSTMAN: Yes.

Q.47 - And did you provide a copy of that to the Board? Was a copy provided to the Board of your written retainer?

A. I did not provide it. I'm not sure if the company provided it.

Q.48 - I wonder if --

MR. KEYES: No. They were retained by Cox & Palmer.

MR. THERIAULT: Okay. I'm wondering if we could get an undertaking to have a copy of that retainer?

MR. KEYES: I will take it under advisement but I'm not giving you an undertaking at this stage on that. I haven't looked at it myself, so I don't know whether it's solicitor/client, anything in there that may not be, but I don't particularly want to give an undertaking until I see the letter.

CHAIRMAN: Would it be difficult for you to get a copy of that letter today?

MR. KEYES: It has been quite a while since we have seen it. I don't know if we can get it today. We will undertake to look for it.

CHAIRMAN: Is that fine, if they attempt to find that letter? I guess my difficulty with you taking it under advisement is if that Mr. Theriault has some questions that arise out of this document, Dr. Sustman is not going to be available to answer them.

So I think it would be useful if it's possible for you to see if you could locate the letter today and then give us your position as to whether or not you feel you can release it.

MR. KEYES: We will take a look for it today.

Q.49 - Now, Dr. Sustman, the information that you reviewed, where did you review this information?

A. Some of the information I reviewed in my office, the things that were provided electronically and hard copies. Other information I reviewed at New Brunswick's offices in Fredericton.

Q.50 - Okay. And where did you do your analysis?

A. The analysis was generally done in my office in Atlanta.

Q.51 - Now just a little bit of information about PROMOD. And I think you touched on it and I apologize if you did and I ask it again. But is the license subject to an annual fee?

A. Yes, there is. We have two options for licensing the software. One is where the client would simply pay a year to year annual license fee.

We also have offered in the past with a perpetual fee where the client buys basically outright a perpetual license to the model, but then may pay an annual

maintenance for support related to that license.

Q.52 - Thank you. Now in its original concept, and I think you spoke about that early on in your testimony -- but in its original concept, what was the program's primary function?

A. Back in the late 1970s and early '80s when it was being used, the primary function would be developing fuel forecasts, supporting rate filings, evaluating generation plans, looking at the cost benefits of one plant versus another.

Q.53 - Was it economic dispatch as well?

A. Oh, it is certainly economic dispatch. The heart of the model is in economic dispatch.

Q.54 - Now has the program changed over time in terms of functionality?

A. Yes. Over the years we continue to add functionality and do so today. It went through -- it has been a long time since we did the calculation, but the first version of PROMOD I believe was something like 15,000 lines of code back in 1976 that we delivered to the first client, Public Services of New Mexico.

In the early '90s somebody did a check and at that time there were over 400,000 lines of coded program, and during that particular year 50,000 lines of code had

either been changed or been added.

So we are continually adding. We have a staff of developers who continually release major updates several times a year as -- with new things coming in. Back in the early '90s we did a major overhaul of the software to add the ability to represent the new markets coming into play in the United States and elsewhere related to location and marginal pricing, and modelling the details of transmission of those.

Q.55 - What are the principal requirements that NB Power imposes on PROMOD? In other words, what is it looking for?

A. What is NB Power looking for in terms of the type of application in the things they use it for?

Q.56 - Yes.

A. Well they certainly use it for the things we have talked about here, as far as I know. We have talked about the vesting price case and the fuel budget. So they are doing budgeting related information. I understand that they run periodic updates to the budget within GENCO to look at what change to the budget might be.

I would suspect, although I don't specifically know, that things related to the Orimulsion contracts and converting the units to burn Orimulsion would have been

looked at with PROMOD in terms of looking what the economics were to use Orimulsion versus heavy oil. So it's fuel issues, plant upgrades.

I would think that the -- I don't have specific knowledge or recollection, but I would suspect that any time they are looking at doing a significant investment in a plant they would be looking at what the economics are or production cost savings as opposed to the capital cost savings.

Q.57 - Thank you. Is the way in which NB Power uses PROMOD typical of the way other utilities might use it?

A. Well these days it's -- I would say there is a dichotomy between the traditional regulatory environment, which New Brunswick Power is typical of, and the L&P markets.

A lot of our users now, including traders and merchant generators, model say the whole eastern interconnects. PROMOD is able to model -- our smallest client had two plants. Our biggest clients, or at least the biggest requirements of PROMOD, we have people who run the whole eastern interconnect, 5,000 generators with all the load of the eastern interconnect from the Atlantic Ocean to the Rocky Mountains to do price forecasts for trading purposes and things like that.

On the regulatory side we have a number of clients like New Brunswick. Entergy is a client and has been for years. They have five state jurisdictions plus federal regulators that they submit PROMOD results for, and would be doing things similar to what New Brunswick is doing except on a bigger scale.

Q.58 - So in other words, it is flexible enough to provide a number of functions?

A. Yes.

Q.59 - Now were you able to verify the accuracy of the data that was put into PROMOD?

A. I verified that the data put into PROMOD conformed to the data assumption sheets -- work sheets, spreadsheets and tables that were prepared by NB Power as back-up. I asked questions about those to verify that their representation of them were a reasonable source of information. To verify them beyond that would have required extending the audit to talking to other people in the company outside of the process of running the PROMOD cases.

Q.60 - So you spoke to people within -- you spoke to representatives of NB Power to verify the information?

A. Within NB Power, yes.

Q.61 - Now would you characterize your review as an audit?

A. I would characterize it as an audit of a particular process. It started from the preparation of the data going into PROMOD through the preparation of the evidence going into the file.

Q.62 - Would you characterize it as a reasonableness audit?

A. There were elements of it that were -- involved a reasonableness audit in terms of comparing some of the numbers to industry standards, to just the determination of whether the data assumptions had reasonable sources was a reasonableness audit.

Q.63 - Now the -- is it fair to say that basically the input seemed reasonable and consistent with the PPAs but that nothing more was done to verify the accuracy of the figures aside from speaking to people within NB Power?

A. Well as I said in my discussion report earlier, I did look at the heat rates that were being used, the forced outage rates for the generators, to verify that those were within the range of what might be expected for similar units. Beyond that I, on at least a subjective basis, was keeping aware of any differences I might see in this data from what I had been somewhat familiar with seeing from GENCO in the past having worked with them for 20 years. So I was looking for anything that might spring out at me

as a new direction in terms of the way they are forecasting or preparing data.

Q.64 - Okay. Now I would like to review with you your data analysis with respect to the vesting energy price case. And first I would like to deal with the load forecast. Now I believe you said that -- in your report that you compared this load forecast to previous years' data and to its new energy market, new load forecast for the New Brunswick system, and had found that this load forecast reasonable. That statement was -- that is in your report?

A. Yes.

Q.65 - Yes. What is the source for the data of your market view load forecast?

A. We developed from public information a forecast for the load for basically all of the control areas in North America. The main source of that information is the NERC, ES&D forecasts, the North American -- National Electric Reliability Council, ES&D is Electric Supply & Demand forecast. NERC produces an annual forecast of peak energy requirements by NERC subregion. North America is broken up by NERC as industry reliability body into half a dozen or so different regions of which New Brunswick is part of the NPCC, or Northeast Power Co-ordinating Council region.

And NERC produces a forecast on an annual basis of what the forecast would be for the peak demand and energy demand on a sub-region basis, not a control area basis. We take that forecast and apply it then to a historical test year that we have hourly load by control area. So using the test year which in our data is -- currently the most recent year is the 2002 test year -- of hourly loads by control area to take this subregion level forecast and allocate it back to those -- to the individual control areas based on the hourly loads of each control area in that --

Q.66 - Now where does NERC get its data?

A. I believe they have input from all their member companies. They may do some of their own econometric forecasts. I haven't been involved in reviewing those forecasts myself in a long time.

Q.67 - And I believe you referred to it, is NB Power a member company?

A. NB Power is a member of NERC by being a member of the NPCC Council.

Q.68 - So in essence the load forecast for this year, what you are saying is you took the load forecast for this year created by NB Power, compared it to last year's load forecast created by NB Power, and compared it to

information in the public domain created by NB Power?

A. Public domain created by NB Power, I wouldn't say that specifically, but the information in the public domain was a test year 2002 historical loads for NB Power as well as the other companies, but the peaking energy forecast was prepared by NERC. And I can't testify to the degree that any input from New Brunswick went directly into the NERC forecast.

Q.69 - Okay. Were you made aware of the issues of bias in NB Power's load forecasting which were raised at a previous rate hearing?

A. I don't recall that I was, no.

Q.70 - Nor that it was the conclusion of the predecessor Board that there was some evidence to support the contention that there was a bias towards overforecasting?

A. I don't -- I'm not aware of that contention or previous testimony.

Q.71 - Okay. Thank you. Now with respect to generating unit maximum capacities, again would it be fair to characterize your commentary on generating unit maximum capacities as saying the data in the PROMOD run are consistent with section 1.1.67 of the vesting agreement?

A. Yes. If their's is consistent.

Q.72 - In other words, the data is what the agreement says it

is?

A. Well section 1.6.67 gives some information. However, the contract also provides for adjustments to that information by the vesting operating committee. The numbers I relied on were a table that had been approved from the minutes of one of the vesting operating meetings.

Q.73 - But you yourself did not verify the accuracy of the data?

A. In terms of comparing it to other plant information within the company?

Q.74 - No. Getting in behind it, getting in behind the data that you were provided?

A. No.

Q.75 - Now with respect to the generating heat unit -- sorry -- heat rates. Would it be fair to characterize your commentary on generating unit heat rates as saying the data in the PROMOD run are consistent with section 6.2.5 of the vesting agreement?

Again the same question, Dr. Sustman, is the data is what the agreement says it is and that you did not verify the accuracy of the data by going behind --

A. That's right. The agreement does not say specifically what the data is. The vesting operating committee adopts a table of values consistent with the intent of the

vesting operating --
Q.76 - Right. But you didn't go behind that?
A. But I did not look behind it, no. Now let me qualify that statement.
Q.77 - Okay.
A. I did discuss the table with Genco as to what the basis of those numbers were to verify that they did drive back to specific heat rate tests at some point in time at the individual plants with adjustments to its degradation over time.
Q.78 - Okay. Thank you. Now next would be the -- I believe the generating unit forced outage rates.
A. Yes.
Q.79 - Again would it be fair to characterize your commentary on the generating unit forced outage rates as saying the data in the PROMOD run are consistent with section 6.2.5 of the vesting agreement?
A. Yes.
Q.80 - And again, I would suggest that you did not verify the accuracy of the data by going beyond it?
A. I did not go back to deeper level of data, no, to verify these numbers.
Q.81 - Okay. With respect to hydro generation, would it be fair to characterize your commentary on hydro generation

as saying the data in the PROMOD run, namely 2,654 gigawatt hours, is consistent with section 6.12 of the vesting agreement? Again in other words, you did not go behind and verify the accuracy of the data?

A. The company provided me tables that they represented as being the 40 year average water flow conditions and that was consistent with the numbers in the PPA and PROMOD runs, but I did not go back to specific records -- plant records to verify those numbers.

In terms of your original question, I did raise an issue related to the hydro numbers. If you recall there was a particular issue in one month of the PROMOD runs that may have been discussed where there was a maintenance on one of the plants that made it infeasible for that plant to generate given the water flows because of its maintenance. And so the actual output of the generators in the PROMOD run is slightly less than the prescribed number because of the infeasibility of using the water based on that plant maintenance.

Now I raised the issue internally about -- is that the intent of the contract or not to represent that maintenance or is it the intent of the contract to force the energy and ignore the maintenance.

Q.82 - Okay. Thank you. Now with respect to Point Lepreau Nuclear Generation, would it be fair to characterize your commentary on the annual generation from Point Lepreau as saying the data in the PROMOD run, namely 4,240 gigawatt hours, to serve the vesting load is consistent with section 6.2 of the vesting agreement?

A. Yes.

Q.83 - And again, you did not verify the accuracy of the data by going behind it?

A. No, I didn't.

Q.84 - And the non-utility generators, in your report you are quoted as saying, quote, "New Energy has reviewed with Genco the representation of these NUGS in PROMOD and believes that they are accurately represented." Do you recall that statement?

A. Yes.

Q.85 - Okay. Could you explain to me what that means?

A. I discussed the individual NUGS, how they -- Genco presented to me tables based on their historical operation, what their costs are based on the contracts. I did not review the individual NUG contracts but tables that were presented to me by Genco as representations of the documentation of the energy and costs that would be expected from those contracts, and verified that those

numbers were passed onto PROMOD.

Q.86 - Okay. Dr. Sustman, in your opinion -- is it your opinion that the NUGS are dispatched in a true economic order?

A. The NUGS are represented basically as take or pay contracts in the PROMOD case as per instructions both of the vesting operating committee and the company.

Q.87 - So they are not true economic order?

A. They are not dispatched, no.

Q.88 - Thank you. Now the fuel prices, with respect to the fuel oil prices in PROMOD, what is your understanding of the type of contract that NB Power uses, futures only, spot only or a mix of both?

A. For the coal or coal surrogates, for example, petcoke, my understanding is that the company actually does bilateral contracts with individual suppliers to purchase coal. For oil the company purchases oil on the stock market on a physical basis but in advance on an 18 month basis in advance of the actual month will lock in a price for that coal through the financial markets. So that basically the financial market counterparty is adopting a price risk on that advance --

Q.89 - So the futures.

A. For the futures, which essentially locks in a future price on the company's basis for the oil. And similarly for the gas exposure that the company has, not directly to gas but through the NUG contracts which are priced to gas price markets, the company locks in futures to lock in a price that they would be hedged against spot prices for these NUGS that are priced based on gas spot prices.

Q.90 - Thank you. Now with respect to limestone, would it be fair to characterize your commentary on limestone costs as saying the data in the PROMOD run are consistent with the data you were shown by NB Power?

A. Yes.

Q.91 - And you did not verify the accuracy of the data?

A. I didn't verify the accuracy of the data.

Q.92 - Now the out of province purchases and sales, would it be fair to characterize your commentary on out of province purchases and sales as saying the data in the PROMOD run are consistent with the data you were shown by NB Power?

A. Yes.

Q.93 - Okay. And you did not verify the accuracy of the data?

A. I didn't verify the accuracy. I was again aware of looking for any changes, things I had been aware of in the past in terms of data I received from NB Power to support their use.

Q.94 - Now I would like to ask you some questions concerning certain inputs into the PROMOD model. For each of the following inputs tell me what would be the consequences if the value was, one, underestimated, or, two, overestimated. First is load forecast, and I would ask for the overestimated?

A. What are you asking for in terms of the consequence, the forecast of the vesting energy price, the forecast of the budget costs?

Q.95 - Forecast of costs.

A. Well the vesting energy price and budget are both costs. I assume you are talking about budget forecast?

Q.96 - Yes.

A. Okay.

Q.97 - So again for each of the following inputs, with respect to load forecast.

A. Well if the load forecast is too low then the company would underforecast the costs related to meeting the actual load.

Q.98 - Okay. And if it's overestimated?

A. If it's overestimated then the company's forecast would be higher costs than what the actual costs would be to meet the load.

Q.99 - Now with respect to generating unit maximum capacities?

A. If maximum capacities of generators were understated, then the company would be tending to operate higher cost generators more often, so they would be overforecasting theIR costs in general.

If the capacities were too high going in compared to actuals, then they would be underforecasting their costs.

I might qualify myself here. I have worked with utilities in doing simulations for 30 years and questions like these -- I could find cases where nonintuitive results come out. So these are general answers.

Q.100 - And that's what I asked earlier, I think said I am just going to ask you some general questions. And with respect to heat rates --

A. Yes.

Q.101 - -- again what would happen if there was underestimated or overestimated?

A. If the heat rates were underestimated, again the company would be forecasting more fuel burned than would actually be required and so the underrepresentation of heat rates would overforecast fuel costs, production costs. If the heat rates were higher than actuals then they would be underforecasting --

Q.102 - Okay.

A. -- fuel costs.

Q.103 - And what about forced outage rates?

A. If the forced outage rate is too low that means the generators, in particular the less expensive generators would be more available.

And so a low -- a too low estimate of forced outage rates would tend to understate production costs. And forecast a forced outage rate that is too high would tend to overstate production costs.

Q.104 - And hydro generation?

A. If the hydro generation is understated that means that more energy needs to be produced from fuels. And so too low a forecast on hydro generation means higher fuel costs. And too high a forecast hydro energy means lower fuel costs.

Q.105 - And nuclear generation?

A. The same would apply to nuclear generation. It's throwing out the issue of the nuclear fuel cost as being the sump cost.

Too low a forecast of nuclear generation means more other fuels have to be burned. And so you would be -- a low forecast of nuclear energy would understate. The fuel costs would be higher than actual.

If the nuclear generation is higher than actual then the forecast would have too low a forecast of other fuels.

Q.106 - And nonutility generators?

A. I'm hesitating there. Because I'm trying to recall from the original construct of your question, if the production cost we are talking about as being too high or too low include or don't include the NUG cost.

Q.107 - Would you like me to read the question to you again?

A. If you will.

Q.108 - Yes. Sure. For each of the following inputs I asked what would be the consequence if the value was (1) underestimated and (2) overestimated?

A. Consequence on?

Q.109 - I think we were talking on the costs?

A. On generation cost of say the Heritage assets? Or total cost including the NUG's?

Q.110 - Total cost?

A. Total cost including the NUG's? That would depend on the pricing of the NUG's. A low cost -- if the NUG's in some month, because of just the contractual structure of the way things were represented had a higher cost than the marginal generation system, a lower cost -- a lower forecast in the NUG's may actually lower rather than raise the cost of other generation in relation to the NUG cost. So maybe it could go either way depending on what the pricing of the NUG's is relative to everything else in the

market.

Q.111 - Now with respect to fuel prices, if you underestimate fuel prices what happens?

A. Fuel prices in particular get sticky because of unit commitment issues and things where nonintuitive things can happen. But in general if the fuel prices going into the model are too high, you will be overforecasting the fuel costs. If the fuel prices are too low you will be underforecasting the fuel costs.

Q.112 - Thank you. Now I would like you to consider or expand upon what might happen if hydro generation is underestimated.

For instance the NB Power system with its mix of hydro, nuclear and fossil fuel generation, would it be correct to say that if hydro generation was underestimated then fossil fuel generation would be overestimated, given that you will want to maximize the output from the nuclear generator?

A. Yes. If the hydro forecast is below actual, that would mean that the fuel forecast for other generation would be above actual.

Q.113 - Did you do any of the PROMOD runs yourself?

A. No, I didn't.

Q.114 - Did you supervise any of the PROMOD runs performed by

NB Power personnel?

A. No.

Q.115 - I would like if I could, Dr. Sustman, to talk a little bit about economic and possibly noneconomic dispatch. And for the purposes I would like to suggest that economic dispatch is the allocation of demand to individual generating units online to effect the most economical production of electricity?

A. Subject to constraints within the system, yes.

Q.116 - What is the dispatch order that NB Power uses in Genco's budget case?

A. Well, the dispatch order is actually calculated and determined by PROMOD. And if you will there is no single dispatch order. It's dynamic.

PROMOD actually breaks up the dispatchable generators into individual blocks so that -- there is a minimum block that when the unit runs it has to run at that level. And then additional blocks above that have different heat rates and different corresponding costs of operation.

PROMOD in its unit commitment and dispatch decisions goes through and in effect sets up the order of these blocks so that the economic dispatch is ensured subject to constraints.

Those constraints have the effect if you will of

shifting unit segments out of economic order so that the economic order is dynamic in terms of how those constraints interact with the build up the economic dispatch within a particular hour or week.

So in some way there is no such thing as a dispatch order that is being told to PROMOD. PROMOD calculates that dispatch order based on all the cost characteristics and constraints related to the units.

Q.117 - Is one of the constraints the take or pay NUG contracts?

A. It's a constraint on the NUG.

Q.118 - Is it a constraint in developing the dispatch order?

A. Well, in effect the way the NUG's typically would be represented is a take or pay contract. They don't have to be represented this way. And in fact I don't recall off the top of my head. I would have to look at the data files to be sure exactly what data items were used to represent the NUG's.

But I believe most of the NUG's at least, if not all of them, were represented as simply blocks of power that were fed in on a take or pay basis every hour. So every hour would have had the expected average amount for that particular NUG.

Q.119 - So they are must run?

A. Yes. Although I guess -- certainly the bigger ones. I'm trying to remember if that applies to the small hydro NUG's. They may have been actually represented as somewhat dispatchable rather than just take or pay.

Q.120 - Now Dr. Sustman, I'm just going to -- I'm looking at page 12 of your report and specifically the adjusted fuel procurement case?

A. Yes.

Q.121 - And I just want to ask you what is meant by the statement significant change in expected fuel deliveries during the '07, '08 fiscal year?

A. As I stated earlier, the Dalhousie units were expected to be burning Orimulsion-priced heavy oil through the course of this test year.

And following the running of the vesting energy price case as of the end of September of 2006, the company said that it received information from the fuel provider that there would be one month's at least interruption of fuel deliveries sometime during the year.

Q.122 - Does this have -- does this refer in any way to what is known as the PDVSA settlement?

A. It's independent I believe of the PDVSA settlement. I'm not familiar with the terms of the PDVSA settlement. But this was prior to the settlement.

MR. THERIAULT: Thank you. That is all I have, Dr. Sustman. Thank you.

Q.123 - Oh, I guess I do have one last question. And it may assist my friend in the requested undertaking.

Do you have a copy of your retainer letter with you?

A. I may have it in my briefcase. I will have to look.

MR. MORRISON: Actually I'm just going to address that. I do have a copy of the retainer agreement which I signed with Dr. Sustman. The terms of reference -- there is two attachments to the agreement.

One is exhibit A which is the terms of reference of the scope of the retainer. Exhibit B is the financial arrangements that I made with Dr. Sustman.

MR. THERIAULT: I would only be interested in the terms of the retainer today.

MR. MORRISON: Then I have the terms of reference which is exhibit A to our retainer agreement. And I will provide those at this time.

CHAIRMAN: Thank you. We will mark that document as exhibit A-42.

Mr. Theriault, do you want to take a moment and have a look at it to determine whether or not you have any questions that you want to put to the witness arising out of this document?

MR. THERIAULT: Sure. Mr. Chairman, I'm just wondering if Mr. Morrison could provide the date of the agreement?

MR. KEYES: It will be a minute or so.

CHAIRMAN: In the meantime I will check with Ms. Desmond. How long would you anticipate your cross examination to be?

If it were going to be particularly short I'm sure nobody would object to continuing on and perhaps getting off a little bit early on a Friday afternoon.

MS. DESMOND: Mr. Chair, I expect the cross examination to take perhaps 20 minutes, half an hour. So certainly I could proceed at this stage if that is the preference.

CHAIRMAN: I think we should try to see if we can wrap it up this morning.

Perhaps, Ms. Desmond, you could come forward while Mr. Theriault is doing his review.

MR. THERIAULT: And Mr. Chairman, aside from getting the date there is nothing in here that I would have any further questions on.

CHAIRMAN: Thank you.

MR. THERIAULT: Mr. Chairman, could we have five minutes? There is an issue that we need to address. We need to speak to Board Counsel.

CHAIRMAN: Okay. We will take a five-minute break then.

(Recess - 12:25 p.m. - 1:20 p.m.)

CHAIRMAN: Ms. Desmond, are you ready for cross examination?

MS. DESMOND: Yes, thank you, Mr. Chair. I just have a few questions.

CROSS EXAMINATION BY MS. DESMOND:

Q.124 - And the first question really is to clarify some of the evidence you have provided this morning, sir. And the first question is from the Board Staff's perspective, we would like to know the amount of work that is actually involved in doing a PROMOD run? How long would it actually take in terms of hours or days?

A. Well for the New Brunswick system alone for these cases that will run -- the actual running of the computer model takes only a matter of minutes. I can't remember if it's five or 10 minutes, but it's not a long time at all.

Q.125 - And how much preparation then would be required in advance of actually doing the run itself?

A. The preparation can be very substantial because there is a lot of data involved, developing the fuel assumptions, the generating unit characteristics, gathering information. And all of that requires some due diligence to verify that you are using reasonable numbers. It can involve meetings with people from other departments within the organization. And so I would hesitate to say

how many hours it would take to update the budget process for something like this filing.

Q.126 - Could I just bring your attention to page 8 of your report?

A. Yes.

Q.127 - And at the bottom of page 8 there is a reference to wind energy and that DISCO will be modelling wind energy on an even amount per month. And essentially we are looking to your opinion as to whether that's a reasonable way to model wind energy?

A. Well, first of all, the representation is a flat hourly schedule within each month that I believe that the data actually does change in terms of the amount of -- on month-by-month basis in terms of the amount of energy that would be forecast. So it is not a level amount across the year. It's a level amount within the month.

Now in their particular case, they are making the assumption and have argued -- been made -- that given that the wind, especially this first increment of 20 megawatts is relatively small compared to the amount of hydro generation that they have. And they do have some at least short term -- a substantially short term flexibility in terms of schedule hydro generation. They would use the hydro to essentially level out the net of the wind and

hydro generation so as to maximize the net amount of the energy.

That is not something normally that a utility might have available if they didn't have the hydro to level things out.

Q.128 - For those utilities that do have hydro, would this be a reasonable approach to modelling wind energy?

A. If the hydro is reasonably dispatchable, yes.

Q.129 - Are there other ways that the wind energy could be modelled?

A. Well PROMOD can take an actual hour by hourly schedule and patch a number of our clients. They are doing studies now, Minnesota, in particular and some other midwestern states have very active programs to advance more wind into the generation mix. And a number of our clients are doing wind studies where they put in hourly profiles that are forecast and developed for each wind facility. Our company -- the consulting arm of our company is probably -- I know they have been doing studies lately. They probably have some going on right now looking at wind facilities in Texas and Oklahoma and the midwest where a lot of wind development is going on to evaluate them.

In most of those cases, they would be picking up hourly -- expected hourly profiles and using those as a

representation.

Q.130 - In your experience in other jurisdictions is it a common practice for non-utility third party gas fired generators to be dispatched as a must run?

uA. Well they tend -- if you were a combined cycle gas generating NUGs these days because of deregulation in the United States, back in the 1990s, I may have mentioned that I did -- or maybe I didn't mention -- that one of the studies that I had done in New York was developing an estimate of the stranded costs for weightedism combined cycle NUGs that were basically take or pay at that time. Those stranded costs were rolled into rates to transform the contracts to more dispatchable characteristics.

One of the characteristics we find in the United States at least with merchant combined cycle plants is that the merchant generators do not like to cycle the plants. And they in fact will insist on contracts that are at least constant for 16 hours a day if not around the clock before they will enter into a contract. Now that is not to say that the units can't be dispatchable, but the owner of the plant does not like to operate them in that way.

On the other hand, generators, combined cycle plants that are owned by typical investor-owned utilities,

vertical utilities, for example, like New Brunswick Power in an aggregate sense, they would dispatch their units on a more economic basis to taking into account the cost of that operation.

I might point out that there are evidently substantial costs related to cycling combined cycle plants. I have seen data used in studies by our company and other consultants that assume on the order of $30,000 per start just accrued maintenance expenses due to starting up and shutting down a combined cycle plant.

Q.131 - And what about generators that are not combined cycle?

A. It would depend on the characteristics of the generator. For example, you say -- I will just Fraser Paper as an example, it's a relatively small generator that's built primarily to burn a wood waste I presume from the processing application at that plant. And they may not implement the infrastructure required for dispatchability or the plant may have not been designed to be dispatchable.

And so for a small generator that is not unregular -- or not irregular, in fact it is quite regular to see small generators like wood burners, waste burners, methane recovery generators through landfills and so on like that that are effectively non-dispatchable. The energy comes

as it comes and the utility absorbs it.

MS. DESMOND: If I could just have a moment, Mr. Chair.

Q.132 - Would you have a specific opinion on Bayside Power at its 265 megawatt capacity?

A. It's a moderately large, gas fired plant. It's not certainly as big as some of the newer combined cycle plants I have seen going in the United States. With regard to its dispatchability, I wouldn't know. As I said that can be a preference of the owner of the plant, rather than the just the mechanical characteristics of the plant.

Q.133 - In your experience, sir, is it common practice for parties to consider dispatch options and to evaluate possible savings? So, for example, in this specific case of gas fired generators could parties potentially share in the cost savings that might be achieved from a change in dispatch?

A. I don't recall the specific instances, but in general I would say it would be reasonable for a utility who has a fixed price contract to perhaps at least investigate the possibility of variability. But that would require agreement on the part of the counter party.

Q.134 - With respect to the -- I believe it was the third case that you referenced and that you ran --

A. Yes.

Q.135 - -- and you indicated that there was a 1.5 additional - - 1.5 million additional cost that was caused by the Dalhousie delivery issue, was that based on spot prices?

A. That would have been based on the as burned prices. The dispatch would have been spot prices, as all of the cases have been, but the cost would have been the contracted cost.

MS. DESMOND: Those are all of our questions. Thank you.

CHAIRMAN: Are there any questions from the Board? Mr. Barnett?

BY MR. BARNETT:

Q.136 - Yes, just one short question, Dr. Sustman. In your experience in working with PROMOD, I am thinking about contracts that utilities enter into, and I think in most cases, the whole of northeastern North America in particular, in your experience is it usual that these contracts tend to be of a short duration, that the 10 to 20 plus year contracts are really something that is not normally entered into the electricity market?

A. I would say that's not the case. There are still great areas in the United States that are heavily regulated. And one of the things we found in the past five to 10 years is that back in the 1980s when reserve margins were lower, there was a lot of competitive bidding

going on. Regulators like this agency say we would require the utilities to submit bids for power, rather than just going ahead and planning to build their own plant. They would look at the options and accept bids. And they would ask for bids that maybe five, 10, 15, 20 year contracts. And in the past, during the 90s, reserve margins tended to be very high and people tended to drift away from doing that application. But we found more and more utilities were going to competitive bids for capacity and energy now that reserve margins are down and they are asking for long term contracts. They may not always be able to get them, but I would say in particular if a merchant is building a plant, the merchants like to have long term contracts to lock in their capacity clause payments. And so I wouldn't say it's particularly unusual.

Q.137 - Just a tangential question. With these longer term contracts, would you not -- would you expect that there would be some provision for a review of the terms and conditions of the contracts during that duration, particularly the longer term contracts?

A. Well, I have to say I do not generally evaluate these contracts in terms of contractual terms myself. I help –

I use PROMOD to evaluate the energy and capacity impacts. I would tend to say that my general knowledge would suggest that the contracts would provide for negotiation of say operational details under the contract.

But the general terms I would say would require complete -- you know, well complete renegotiation. And it might not be laid out in the contract. It would -- if a particular -- one party decided that the contract was onerous in one sense or another, they always have the ability to go back and make a proposal for redesigning the contract and rewriting the contract. But that wouldn't necessarily be written into the contract up front.

MR. BARNETT: Thank you, sir. That's my questioning.

CHAIRMAN: Thank you, Mr. Barnett. Any other questions from the Board? Any redirect, Mr. Keyes?

MR. KEYES: Just one question, Mr. Chairman. Give me two seconds.

REDIRECT EXAMINATION BY MR. KEYES:

Q.138 - Thank you. Dr. Sustman, Mr. Theriault was asking you a question. I just want to make sure my notes are correct, because I understood the answer to be the opposite of what you said. I may be wrong.

You indicated that with respect to his questioning of you with respect to underestimating or overestimating a

number of items, and specifically he addressed the issue of heat rates. And he said when you underestimate the heat rates, what happens to the cost? And I have your answer as it results in an overforecast of the costs. My understanding was the opposite. And I just wanted you to clarify that?

A. Well there were a lot of ups and downs in that series of questions. And I was hoping I wasn't going to get confused.

If the heat rate is underforecast that means you are burning less fuel in the forecast than actual. So you would be understating the costs in that case. If the heat rates were too high, you would be overstating the fuel burn, so your forecast would be too high in costs.

MR. KEYES: Thank you. Those are all my questions.

CHAIRMAN: Well, thank you, Dr. Sustman. I guess that concludes this panel.

MS. DESMOND: Mr. Chair, could I suggest -- I am not sure if the Board wants to canvass the parties to see if there should be an in-camera hearing with respect to this particular panel or the issues arising from the panel?

CHAIRMAN: I think, first of all, is there anything else -- and I do understand that there may be a request for an in-camera session. Prior to that, is there anything else

this afternoon that would be dealt with that wouldn't be dealt with in-camera, let's put it that way?

MR. KEYES: Not with respect to this witness, that's for sure.

CHAIRMAN: Well, I guess first of all then, Dr. Sustman, you are excused. You probably have a plane you would like to catch or something.

So do any parties have anything then to bring before the Board, anything further before we deal with the request for an in-camera hearing? All right. Then Mr. Morrison, you have a request?

MR. MORRISON: I do, Mr. Chairman. I would ask the Board to go in-camera and exclude those parties who have not signed an confidentiality undertaking.

There is an issue arose yesterday --

CHAIRMAN: Well, I think before we get into the nature of that, you request those who have not signed the confidentiality undertaking and it seems to me that Mr. Wolfe has signed a confidentiality undertaking with respect to some items and is excluded with respect to other items. And I --

MR. MORRISON: With respect --

CHAIRMAN: -- don't want to single you out, Mr. Wolfe, but I certainly remember that hearing that resulted in you kind

of being in a bit of a hybrid situation, if you will.

MR. THERIAULT: In this particular case, Mr. Chairman, we would ask Mr. Wolfe to be excluded. And I did speak to him briefly a few moments ago because of the nature of what I am going to discuss.

CHAIRMAN: Well, Mr. Wolfe, we will see you on Monday morning.

MR. WOLFE: I have to come back and pack up my books.

CHAIRMAN: Well, go ahead and get your books. We are going to -- take your time in doing that.

MR. MORRISON: Take your time.

CHAIRMAN: But in the meantime, could we identify as to whether or not there is anybody else present that should be excluded? In fact if you like while Mr. Wolfe packs up his books, maybe I will just turn the microphone off and you may just have a look around the room and advise me as to whether or not there is anybody else?

(In-camera hearing)

(Adjourned)

Certified to be a true transcript of the proceedings of this hearing as recorded by me, to the best of my ability.

Reporter