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1 (9:09 a.m.) 2 CHAIRMAN: 3 Q. Good morning, counsel. Mr. Ludlow, Mr. 4 Delaney. Ms. Newman, any preliminary matters 5 before we begin this morning? 6 MS. NEWMAN: 7 Q. No, Chair, no preliminary matters, just to 8 comment for the record, I guess that our 9 breaks will be at 10:30 and 12:00 a.m. this 10 morning. 11 CHAIRMAN: 12 Q. Thank you. 13 CHAIRMAN: 14 Q. Mr. Kennedy, you can continue with your cross. 15 Thank you. 16 MR. EARL LUDLOW AND MR. PHONSE DELANEY CROSS-EXAMINATION 17 BY MR. MARK KENNEDY (CONT'D) 18 MR. KENNEDY: 19 Q. Chair, Commissioners, your indulgence. Mr. 20 Ludlow, Mr. Delaney, I wonder if we could just 21 turn to the issue of meters as a project and 22 this is project B36. And as per--I wonder if 23 we could just go to page B36. So the project, 24 if I'm gathering correctly, calls for the 25 installation of new meters and the replacement	1 of some existing meters and the total cost for 2 doing that is estimated at \$1,174,000, is that 3 correct? 4 MR. LUDLOW: 5 A. That's correct. 6 Q. Okay. And we have the absolute numbers there 7 of the number of meters at 8,000 regular 8 domestic meters and 3,000 AMR meters, but 9 that's not the total number of meters that are 10 actually being switched out, is it? There's 11 more meters than that being switched out? I 12 guess if we could go to PUB-42 and if you 13 could just scroll down, please. So, in actual 14 fact, if I'm gathering correctly, there's 15 9,800 meters to be replaced and that there's 16 8,800 meters being retired. So the schedule 17 we're looking at before showed 8,000 regular 18 domestic meters and 3,000 AMR meters for 19 11,000 as the total. And then if we could 20 look at just one more, PUB-41, immediately 21 preceding. Okay, so here we have a total of 22 11,000 new meters to be replaced which gives 23 with the B36 page that we were looking at a 24 minute ago, correct? 25 MR. LUDLOW:
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1 A. That's correct. 2 Q. And it gives us the breakdown of the number of 3 each; 3,000 AMR meters and a total of 8,000 4 regular meters, so that's as per B36. So if 5 you'd just go back to PUB-42. Could you just 6 explain, if you could, what this table is, is 7 this an all inclusive table or is this just 8 the number of meters to be replaced and 9 retired as per the five reasons above? There 10 seems to be--yes, if you could help sort of 11 shed some light on that for us, that might - 12 MR. DELANEY: 13 A. Okay, let's just look at the Math here. I'm 14 going to follow it back and--okay, we need 15 3,000 AMR meters next year, this is on PUB-41, 16 and those are meters that we're replacing for 17 existing customers due to safety and access 18 reasons. So that's that 3,000. The regular 19 domestic meters are 8,000. We need 2,200 for 20 new customers that will come on line next 21 year, to service their needs. And 5,800 for 22 existing customers. Now they would be 23 replacements due to--well there are a number 24 of items mentioned there, the most significant 25 of which is the government re-test order	1 that's required every year. So--let me just 2 read this paragraph to - 3 Q. Sure. 4 A. - get my thoughts clear. Yes, it's quite 5 clear to me here, the 9,800 meters that will 6 be replaced, okay--I'm still reading. 7 Q. Yes, no problem, take your time. 8 MR. LUDLOW: 9 A. As I look at these two RFIs, Mr. Chairman, 10 there's several things happening. First of 11 all, if I take you to PUB-41, this breaks down 12 the new customers and existing as Mr. Delaney 13 said, totalling in to 11,000. In here in the 14 AMR category we have two different types of 15 meters; one being domestic meters for access 16 and safety and the second being in the area of 17 general service demand. That's a very small 18 number, approximately 100 comes to mind, Mr. 19 Chairman. Now, what's happening in these 20 numbers as I see it, Mr. Kennedy, between 21 there and PUB-42 is that that AMR process, 22 combined with new customers, combined with the 23 government re-test order process which would 24 come back to item number one, we are basically 25 in a process here of--how would I say it--I'm

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1 MR. KENNEDY: 2 going to have to go away from the numbers as I 3 can't do it in my head at this point, it's not 4 working for me, I'm sorry, I may have to 5 straighten that out later. But we retired a 6 bulk of these meters as highlighted. There is 7 no intent here to increase inventory of 8 meters, either in AMR or anything else. 9 That's not the premise. We will only replace 10 meters that are causing issues through AMR, as 11 I said earlier, of safety and access and new 12 customers and those dictated under the GRO 13 process. My mind is not clicking as to why 14 there's a discrepancy of 1,100 meters, 1,200 15 meters. 16 MR. DELANEY: 17 A. I think I know that it is there, just looking 18 at the Math. Just to clarify the question, if 19 you look at it, we're going to--you would 20 think on PUB-41, the numbers should add up to 21 9,800, but we're going to salvage 1,000 meters 22 from the AMR project and we used them. So 23 that's--if you can consider that, the Math all 24 adds up. 25 Q. So, the total number retired per PUB-42 is	1 8,800. Per PUB-41, the total of new customer 2 meters is 2,200 so that would be the 11,000, 3 correct? Am I gathering correctly then that 4 this replaced 9,800 as you say, the 8,800 is 5 the net of actual new meters that you need to 6 purchase so you're getting--you're re- 7 installing 1,000 of the meters that you've got 8 here as replaced or - 9 MR. LUDLOW: 10 A. Exactly, Mr. Kennedy, Mr. Chairman. If I take 11 you to PUB-42, reason number four, replace 12 versus retired is 1,000 differential and in 13 effect, what that means is we're able to, and 14 I think we used the word "scrounge" yesterday, 15 I would use the word "salvage", three--one- 16 third of those meters that are re-tested, 17 rechecked and approved for re-service. And 18 hence that's taking that number to 19 approximately 11,000. That's the basis. 20 Q. So of those 1,000 meters that are being 21 salvaged as its being put, am I gathering 22 correctly that we could say that another way 23 that 1,000 of the domestic meters that you 24 currently have in service, you intend to 25 replace with AMR meters. They're functioning
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1 normal, regular meters, but you're replacing 2 them with new AMR meters? 3 MR. LUDLOW: 4 A. Well, I think the point here is that we will, 5 Mr. Chairman, replace 3,000 meters with AMR 6 meters. 1,000 of the 3,000 we're installing 7 and replacing will be re-used elsewhere. 8 Q. And so, presumably, 2,000 of the 3,000 you're 9 replacing are not useable, not salvageable. 10 A. That is correct, Mr. Chairman in that the 11 2,000 would then be retired for various 12 reasons. They would be from broken glass, 13 dials, holes drilled in them, etcetera, 14 etcetera, etcetera. 15 Q. What is an AMR meter? 16 MR. DELANEY: 17 A. An AMR meter is "automated meter read". 18 MR. LUDLOW: 19 A. This is a new process and it's bringing 20 technology into metering in Canada and in 21 effect, the whole metering industry is in a 22 state of change, Mr. Chairman. In particular, 23 under the leadership of Mr. Allan Johnson and 24 Measurement Canada, he is responsible for the 25 Weights and Measures Act. And as such, Canada	1 is still governed by the laws that would apply 2 to the electro-mechanical meters which are the 3 old springs, dials and magnets which are 4 pretty much--well, by far the majority of what 5 we have in our service territory. Now, the 6 industry internationally, south of the border 7 and Europe, has moved towards the age of 8 electronics, Information Technology. And one 9 of the key areas there is the ability for a 10 meter to communicate to a remote device. And 11 AMR provides the Utility, be it a water meter 12 or in our case an electricity meter, to 13 communicate through--I'm not sure if it's the 14 right word, but Mr. Kennedy you'd know more 15 about this, a wireless modem by VHF or by 16 radio signal or some kind of signal back to a 17 remote site and you can group read a meter. 18 For example, in this case, I could read 19 Sobeys' meter from here through the proper 20 hand held device. My signal would go out, it 21 would download its information back to me. 22 The problem that has come in is that the 23 regulatory regime in Canada is still based on 24 the government re-test order process which is 25 a six year sampling. And that's what's

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1 MR. LUDLOW: 2 described in PUB-42 under the item number one. 3 That is the sampling process to ensure the 4 accuracy of meters. Right now, personally, 5 I'm Chairing this for the utilities in Canada 6 on the issue of regulatory change regarding 7 electronic meters. And as such, to get that 8 regulation changed such that the sampling and 9 testing protocol, as it applies to electro- 10 mechanical meters, does not apply to the AMR. 11 But today, and that's an engineering term, but 12 today, under the laws of the land, it still 13 applies. So we have to be very cautious as to 14 how we migrate into the AMR piece. 15 So, right now, that's underway. The next 16 stage of this would be AMT, which permits 17 services of disconnects and other services 18 that a utility would use. That is not what's 19 being proposed here. Safety and access, to 20 give you an example, has been the driver of 21 our process here for AMR. Example being, 22 early first quarter this year, a meter reader 23 broke his leg in two places. Effectively, I'm 24 not sure if he fell into the stairwell that 25 was covered with ice, cased with snow, or snow	1 cased with ice. Dogs--I know in a GRA here I 2 had a lot of grilling on the issue of use of 3 binoculars for reading meters due to 4 inaccessible backyards. Those would be the 5 types where we would bringing AMR into place. 6 Q. I just wonder if we could go back for a moment 7 to B36 on that application itself, actually, 8 the second page of that. 9 MR. LUDLOW: 10 A. B37 - 11 Q. It would be actually B37, yes. There we go, 12 second page, yes. Okay the paragraph under 13 "Operating Experience" says "The purchase of 14 new meters", I guess that's "are necessary to 15 accommodate customer growth and to replace 16 deteriorated meters. The quantity of meters 17 for a new customer is based on the company's 18 forecasted customer growth. Quantity for 19 replacement purposes is determined using 20 historical data for damaged meters and 21 sampling results from previous years." Okay, 22 so then when we look at the project cost for 23 the period 1999 to 2003, self-evident 560, 24 564,000 and so on up to 674,000 for the last 25 two years; 2002 and 2003, if we can just go
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1 back a page, the proposal for this year is a 2 1,174,000. Then we're back in 2005 to more 3 normal; 700,000, if I could say that. And the 4 forecast for the following three-year period 5 is similar. So could you explain to me what's 6 driving the cost up this year to a 1,174,000 7 above what would appear to be your historical 8 averages, if as it's stated under the 9 "Operating Experience", the quantity for 10 replacement purposes is determined using 11 historical data? 12 MR. DELANEY: 13 A. The million one seventy-four, of course, 14 includes the AMR meters that were installed in 15 2004 at a price of \$360,000. The amount for-- 16 and that's a replacement program to handle 17 safety issues, access issues. The regular 18 Domestic which would be more in line with the 19 history, in terms of regular replacements for 20 GROs and installations for new customers, that 21 value is \$814,00. And it's based on the 22 customer growth. 2004 we see it to be a high 23 year for customer growth and that's the 24 answer. The spike or the increase is mostly 25 due to AMR.	1 Q. Now your customer growth is only in the order 2 of one or two percent a year, but your budget 3 is up for this item, almost 50 percent. Or 4 more than that, 100 percent. 5 MR. LUDLOW: 6 A. The government re-test order process is not 7 something that we control, I'll start with 8 that point as well. And the government re- 9 test order process is based upon a series of 10 specifications, testing and sampling dictated 11 by the federal government under their 12 regulatory regime. It will, in fact, hit the 13 various types, makes and batches of meters 14 that go back six, eight, ten years ago and 15 they will in turn say you pull X number of 16 meters and depending upon the failures, then 17 it will determine where you go with respect to 18 change-out of those meters. So that is 19 something--well, that's basically the way it 20 is operating. It is purely a statistical 21 sample and order process, then moving to the 22 change out or customer sampling order which is 23 the basis of that test procedure. Now, it 24 hasn't changed in the last three, four years, 25 that is one factor affecting it. And as Mr.

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1 MR. LUDLOW: 2 Delaney did say, in the area of AMR, we do 3 have a problem with respect to reading meters. 4 MR. KENNEDY: 5 Q. Okay. 6 MR. LUDLOW: 7 A. And with respect to the safety of our 8 employees, that is first and centre. 9 Q. Sure. And just before we get to that safety 10 issue, I just wanted to look at the cost a 11 little bit more. I'm wondering if we could 12 turn to, and I believe you just had the 13 numbers there, but it might assist the panel 14 to see where they can find them. And this is 15 in Volume III, Distribution, Appendix I, 16 that's it. So this is where we have the 17 breakdown between the regular domestic meters 18 and associated equipment costing 814 and the 19 AMR safety and access costing 360,000. Are my 20 calculations right that if you're replacing 21 8,000--purchasing 8,000 new regular domestic 22 meters and the project cost is \$814,000, does 23 that work out to 100 bucks a meter, roughly? 24 MR. LUDLOW: 25 A. Two things. First of all your Math is--I	1 don't usually bring calculators with me any 2 more, I learned that a long time ago here. 3 But I would think your Math is pretty much in 4 the ballpark. I would think, as well--but 5 there's a point to be remembered here and in 6 my first explanation, I didn't bring it up. I 7 refer you to your screen in front under "A" is 8 regular Domestic meters and associated 9 equipment. And the associated equipment 10 that's involved here would include things such 11 as--what's a word that's going to make sense-- 12 metering tanks or totalizers or current 13 transformers. Mr. Chairman, by far the bulk 14 of this category is new meters, but there is 15 equipment involved with metering that's in 16 here as well. And the reason it is here, it 17 has always been here and what has happened, we 18 have been finding that some of our metering 19 tanks have been failing. In the past number 20 of years we have revised our metering 21 accordingly. But, this then brings in new 22 equipment. This category of domestic meters 23 and associated equipment, you need to be 24 careful, it is not just straight meters. The 25 cost of a new AMR meter, if it will be
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1 helpful, is approximately \$86 and the cost of 2 a domestic meter would be approximately, I'd 3 give it - 4 MR. DELANEY: 5 A. \$35.00. 6 MR. LUDLOW: 7 A. \$35.00. I don't know if that will help your 8 calculation, Mr. Kennedy. 9 Q. Sure, because if we take the 360 and we divide 10 it by the 3,000 new AMR meters, you get 11 \$120.00 a meter. So - 12 MR. DELANEY: 13 A. There's another component that we have to look 14 at. It's the balance of demand meters inside 15 of that equation. And the difference between-- 16 a demand meter is a meter that we put on a 17 general service customer, a customer with much 18 higher load where we could measure the demand. 19 And in the AMR balance of 3,000 meters, 20 there's only 100 demand meters involved there, 21 whereas in the 8,000 domestic meters, except 22 for the regular meters, there's 800 demand 23 meters. So you'd have to, in terms of doing 24 your calculation as to what the per unit cost 25 was, you'd have to look at that demand meter	1 component within the two groups as well. And 2 to give you an example there, an AMR demand 3 meter costs \$600 as opposed to the regular AMR 4 meter which is \$85 or \$86 and a regular 5 domestic meter would cost \$300 as opposed to-- 6 a regular domestic demand meter would cost 7 \$300 versus 37, 35 dollars for the regular 8 non-demand meter. 9 Q. So it's clear then that the AMR meters are, 10 even on a unit basis, can be significantly 11 more than the cost of a regular meter. 12 MR. DELANEY: 13 A. Yes, that's correct. 14 Q. Okay. And the rationale provided or 15 justification provided for the purchase of 16 these more expensive AMR meters is for the 17 safety of your workers? 18 MR. DELANEY: 19 Q. Two issue here, Mr. Chairman. It's safety and 20 access. And first of all, it is in the area 21 of safety. Again, I gave an example, there 22 are others. And the access problem is in the 23 area of, I'm going to use the word at the 24 danger of it probably coming back to me, it's 25 the estimating area. We are finding areas

1 MR. DELANEY:
 2 that it's near impossible to get access to,
 3 either without going over fences or through
 4 people's houses and also some houses that have
 5 internal meters that we just can't read. So
 6 that's the basis of the two-prong drivers
 7 behind those 3,000 meters.
 8 Q. Okay, if we could go to NLH-67 and NLH-67
 9 asked to describe the employee safety
 10 improvements that would be obtained by using
 11 the new AMR meters, "Please list and describe
 12 any significant safety incidents that have
 13 occurred in the past five years that could
 14 have been prevented by use of an AMR." And
 15 the reply goes on to describe the safety and
 16 access issues that you've just described, Mr.
 17 Ludlow. Let's just leave the access issue
 18 aside for the moment and just look at the
 19 safety issue. Now, the question asked for,
 20 "Please list and describe any significant
 21 safety incidents that have occurred in the
 22 past five years." The reply to that seems to
 23 begin at line 19, "There have been a number of
 24 incidents reported over the past five years."
 25 Now that's not in reply to the question, is

1 it. The question asks "how many in the past
 2 five years", so was it that that number is not
 3 tracked by Newfoundland Power or is there a
 4 reason why Newfoundland Power didn't provide a
 5 clear answer to that question?
 6 MR. LUDLOW:
 7 A. Bear with me one second, Mr. Kennedy, please.
 8 MR. KENNEDY:
 9 Q. Okay.
 10 MR. LUDLOW:
 11 A. It's my understanding, Mr. Chairman, that the
 12 question reads, "Please list and describe any
 13 significant safety incidents that have
 14 occurred in the past five years that could
 15 have been prevented by the use of AMR." And
 16 then we actually provided the individual
 17 incidents and described them--am I missing
 18 your question, Mr. Kennedy?
 19 MR. KENNEDY:
 20 Q. Yes, I think so because I guess the question
 21 then is, is this an all inclusive list of the
 22 incidents in the past five years that
 23 Newfoundland Power feels could have been
 24 avoided by using AMR meters. And if not, then
 25 it wasn't an answer to the question that was

1 asked.
 2 MR. LUDLOW:
 3 A. I think the hinge of this question and the
 4 answer may be on "significant". When we talk
 5 in terms of accidents, we usually have a
 6 tendency to talk in terms of end results.
 7 These that I read here in my scan, represent
 8 lost time injuries or time that was not--the
 9 employee was not available for the next
 10 regular scheduled shift, rather than medical
 11 aid injuries, slips, trips, falls, soft-tissue
 12 injuries, as well as replacements to other
 13 jobs. And that's basically--it's certainly
 14 not intending to be misleading, Mr. Chairman.
 15 When we talk about significant accidents, we
 16 have a tendency to lean towards the lost time
 17 end.
 18 MR. KENNEDY:
 19 Q. Okay, so -
 20 CHAIRMAN:
 21 Q. Are you saying, Mr. Ludlow--excuse me -
 22 MR. KENNEDY:
 23 Q. Yes, sure.
 24 CHAIRMAN:
 25 Q. - that a punctured tire would be considered

1 significant, but a soft-tissue injury would
 2 MR. KENNEDY:
 3 not?
 4 MR. LUDLOW:
 5 A. No. I guess where I was going there, Mr.
 6 Chairman, as I read through these, if you'd
 7 bear with me a second here, a dog was bitten
 8 by a meter reader (sic.)--I think I said that
 9 backwards again. I hope the record gets
 10 corrected on that. I have the distinct feeling
 11 I'm going to hear that again.
 12 MR. KENNEDY:
 13 Q. Possibly once.
 14 MR. LUDLOW:
 15 A. Sorry. Let's try again. The meter reader was
 16 bitten by a dog. In that case, that was a
 17 Newfoundland dog that effectively, almost
 18 removed the calf of a meter reader. So what I
 19 was getting in that point, in the case of a
 20 soft tissue injury, Mr. Chairman, what I was
 21 saying is if the meter reader slipped and had
 22 a sprained shoulder, he could be displaced to
 23 other work or would be put in other areas. So
 24 I wasn't demeaning the seriousness of the
 25 injury, but in this answer we've provided

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1 MR. LUDLOW: 2 primarily what I would call the more 3 substantive lost time injuries which is the 4 way we would refer to these. And I'm trying 5 to get that balance in place. 6 (9:40 a.m.) 7 MR. KENNEDY: 8 Q. Okay, but for instance, the second reply 9 there, "In May 2002 a meter reader suffered a 10 knee injury as a result of falling into a 11 snow-covered fence post hole." Now, that's 12 not an access issue, that's just a hidden 13 danger issue, correct? 14 MR. LUDLOW: 15 A. That's a fair assessment. 16 Q. So, it's not a safety issue that could have 17 been resolved by the introduction of an AMR 18 meter, unless you have an AMR meter on every 19 single house. 20 MR. LUDLOW: 21 A. In this case, I have no idea where the fence 22 post hole was and, generically, the way you're 23 presenting it, or Mr. Kennedy is presenting 24 it, Mr. Chair, I would have to agree. 25 However, in this case, I don't know where this	1 was, if this was the case of an enclosed 2 fence, then I would say an AMR meter would 3 have prevented it. 4 MR. KENNEDY: 5 Q. And the third one, "In March 2003, a meter 6 reader slipped on an incline and landed on his 7 back", but that really doesn't tell us whether 8 the incline was of such a nature that it was 9 an obvious danger that you would have wanted 10 to avoid in the access issue. But it doesn't 11 speak to how an AMR meter would have solved 12 that issue, does it? 13 MR. LUDLOW: 14 A. No, I agree again with you that the wording 15 presented in the response does not speak to 16 whether this is a generic response or a 17 specific one. 18 Q. And number one and number four are dog issues. 19 So in the case where there's a dog that's 20 preventing you from being able to have 21 unencumbered access to someone's premises so 22 that they can read the meter, is that not the 23 problem of the person with the dog rather than 24 all of our problems by having to foot the bill 25 for more expensive meters to be put in their
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1 house so we don't encounter the dogs? 2 MR. LUDLOW: 3 A. It's a good question, Mr. Kennedy. But, Mr. 4 Chairman, in reality, and I would say here, 5 the amount of work and effort and the number 6 of dogs that are actually connected to meter 7 bases in this province is incredible. And as 8 you move around, it's one thing to sit here 9 and say yes, we get the dog put down. I'm 10 sorry, we've tried that, that don't work. 11 We've tried to get the dogs removed. Then we 12 estimate the meters. But that can only go on 13 for so long. And in effect, the ones that are 14 highlighted here, are, you know, a few of the 15 dog bites that we've gone into. This whole 16 issue of dogs and meter readers and if you 17 want to expand that to post--I'm going to say 18 postman, no sexist comment--postal workers, 19 the same type of problems they're running 20 into. Now the reality of this is, this is 21 much broader than just AMR and dogs. This is 22 a by-product of it. 23 Q. But wasn't it the case that Newfoundland Power 24 applied and received approval for purchasing 25 these dog umbrellas a couple of years ago that	1 you were going to hand out to your meter 2 readers, which I believe the Company indicated 3 were working quite well in order to fend off 4 dog attacks? 5 MR. LUDLOW: 6 A. That's correct, called a bit terminator. 7 Q. And so this is another project that's based on 8 dog bites? 9 MR. LUDLOW: 10 A. No, sir, I think the extension, Mr. Chairman, 11 that's been applied here is incorrect. This 12 is--we were asked to respond to one question 13 that dealt with the injuries that would have 14 been prevented. This project is being based 15 upon two issues: safety and access. 16 Q. Okay, let's go to the access - 17 MR. LUDLOW: 18 A. No, let me--if I may finish please. The 19 safety of our meter readers is something that 20 is front and center. Getting to those back 21 lots to read in a summer day is one thing; 22 climbing fences is prohibited. These are the 23 trouble spots we're into. So this is not 24 hinged purely on safety, but it is certainly a 25 factor.

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1 MR. KENNEDY: 2 Q. Okay, so let's just go to the access issue, 3 we've got NLH-67 up, yes. And it's the second 4 sentence in the reply. "These locations 5 include back lot developments, row housing 6 with fenced back yards, lots bordering on 7 treed areas or slopes, inside meters, raised 8 meter locations accessed by stairs or patios 9 and customer specific issues, such as locked 10 gates and roaming dogs." Okay, so the dogs 11 are not an access issue per se, that's a 12 safety issue? 13 MR. LUDLOW: 14 A. Well, I guess one could turn into the other, 15 Mr. Kennedy. 16 Q. Fair enough. But in the case of back lot 17 developments and row housing with fenced back 18 yards, who is it that decides where the meter 19 goes in order for a meter reader to be able to 20 have access to it? 21 MR. DELANEY: 22 A. That would be a decision that we would make, 23 our engineering technicians. And we very 24 much, with respect to the location of the 25 meter, is probably the biggest criteria in	1 terms of location of the meter, where do you 2 put the meter on the house? And we strive to 3 put the meter on the side of the house to make 4 it as easy and accessible as possible for the 5 meter readers. 6 Q. If a meter is inaccessible by virtue of being 7 inside a building, is that meter installed by 8 Newfoundland Power? 9 MR. DELANEY: 10 Q. Meters inside buildings, many of these, in 11 terms of domestic residences, some of these 12 inside meter installations dated from early 13 60's, date from way back. It is not a modern 14 thing that we do at all in the last large 15 number of years. Now in the case of 16 commercial properties, meters are typically 17 located inside--in terms of a commercial 18 property with multiple customers, there are 19 designs where the meters are intentionally put 20 inside, in an electrical room and we would 21 have access with keys in that case. 22 CHAIRMAN: 23 Q. Such as, can you give me an example? 24 MR. DELANEY: 25 A. Such as a mall where you may have individual
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1 services for each store in the mall, so the 2 electrical inside would be--now an inside 3 meter. 4 MR. KENNEDY: 5 Q. But you're not--it's an inside meter, but 6 you're not prevented from having access to 7 those meters if it's in a mall? 8 MR. DELANEY: 9 A. No, not in that case, that wouldn't be an 10 example of a problem with access. 11 Q. Right. 12 A. Not unless we - no, okay. 13 Q. You just mentioned there that some of these 14 meters date back to the 60's. What would be 15 the average life of a meter, a regular 16 domestic meter? 17 MR. LUDLOW: 18 A. Domestic meter could run, the average life of 19 the entire population we have? I'm sorry, I 20 don't have that, Mr. Chairman. 21 Q. What's the expected life, yeah, of a - 22 MR. LUDLOW: 23 A. I would suggest we can get fifteen years, 24 possibly a little longer, twenty. 25 Q. Do you know what the depreciation rate is on	1 your meter category? 2 MR. LUDLOW: 3 A. I would have no idea, that's one that I would 4 defer to Mr. Perry. 5 Q. Would you be able to provide that to us, kind 6 of an undertaking to have the depreciation 7 rate for the meter classification and your 8 asset and your rate base - (undertaking) 9 MR. DELANEY: 10 A. Sure. 11 MR. LUDLOW: 12 A. Yes, Mr. Chairman. 13 Q. If I'm calculating correctly, if you're 14 replacing 11,000 meters and you have roughly 15 212,000 customers, then you've got about a 5.2 16 percent replacement rate based on those 17 numbers? 18 MR. DELANEY: 19 A. Well with the AMR project in there. Now the 20 AMR project is for 2004, you do not see the 21 AMR beyond 2004. 22 Q. Okay. So we would go back to more normal 23 8,000 meters being replaced each year? 24 MR. DELANEY: 25 A. That's what is indicated in the forecast, yes.

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1 MR. LUDLOW: 2 A. Mr. Chairman, there's a point on this 3 regarding the access that I would like to add, 4 if I may at this point, regarding General 5 Service Customers at that point. When we 6 speak in terms of access, it's not that the 7 access is not necessarily available in the 8 General Service, however, we maintain locked 9 boxes of keys to the tunes of hundreds of 10 keys. For example, pubs on George Street, 11 stores on Water Street and that in itself is 12 posing significant--I wouldn't call it 13 responsibility, I'm not shy of responsibility, 14 but is getting in, getting through it, the 15 organization, the timing and all of those 16 issues are part of this access issue in the 17 General Service side, by far the minority 18 represented here. The Domestics, they go back 19 and any house that was built back in, I would 20 go up to the early--late 60's would be 21 interior. It is a fair statement, we inform 22 the customer where to attach the meter and the 23 service to the house, but it is not a fair 24 assessment to say that we tell them where to 25 build their fences. The meters when the	1 places are built in row housing, an example is 2 being Cumberland Crescent, you can go up to 3 Cowen Heights area in some areas, the meter, 4 when a house is built, is easily read. But 5 after development by the landowners and the 6 control of fencing that goes back in a cube or 7 a square, it's impossible to access without 8 going through the house. 9 Q. Okay, which takes a longer period of time? 10 MR. LUDLOW: 11 A. Which is sometimes impossible to do, first of 12 all, because it's in the wintertime, the meter 13 reader, first of all--you want the logistics, 14 we've got creepers, ice--what's the word I'm 15 looking for, something to increase the 16 friction (phonetic) on ice shoes. Footwear, 17 assuming there's someone home, you might get 18 through the house. Now, timing of that, I 19 don't mind having someone take their boots 20 off, that's not my point. The reality is if 21 they're not home, we can't get the reading, so 22 that becomes--I want to clarify the point 23 about location of meter verses when a house is 24 built verses where it is today and 25 accessibility today. And it is a very
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1 important point. 2 Q. Sure, but if we're just dealing with access 3 and not safety, then the introduction of AMR 4 meters in order to improve access so that 5 you're more efficient in the meter reading 6 process - 7 MR. LUDLOW: 8 A. And accurate, sorry, I didn't mean to 9 interrupt you. 10 Q. No. Would that then not require Newfoundland 11 Power to provide a net present value 12 calculation to show that spending this money 13 now on AMR meters is going to save money later 14 by increasing your operational efficiency in 15 regards to meter reading? 16 MR. LUDLOW: 17 A. Well, can an NPV be presented on the fact of 18 operational efficiency alone, Mr. Chairman? 19 I'm sure that we can look at the operational 20 efficiency; however, where this becomes a real 21 issue is what operational efficiency and value 22 do we put on multiple estimates as a result of 23 not being able to make contact with those 24 meters and read them. And what value do I put 25 on that person's leg in the safety side. So	1 do I do an NPV on the AMR meter, which is 2 based on one third of the parameters? In my 3 view, that is inappropriate. 4 Q. Okay, I'd like to change topics if I could, 5 and I'd just like to look at part of the 6 project under your distribution reliability 7 initiatives involving a lightening arrester 8 project, and if we go to volume 3 and it's 9 under "Distribution", appendix 2, let me look 10 at that first. If we could just scroll down a 11 little bit please. Okay, the total project 12 costs for this rebuilding distribution lines 13 is, on the feeder upgrade portion of the total 14 project is \$2,802,000.00. And if we just 15 scroll down, you'll see that under "Operating 16 Experience, see the following reports 17 outlining the deficiencies associated with 18 various components." And then one of them is 19 distribution lightening arresters. I'm going 20 to look at the details of that in a moment, 21 but I'm just wondering would you have at the 22 ready there how much of this \$2,802,000.00 for 23 feeder upgrades relates specifically to the 24 installation of lightening arresters?

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1 MR. DELANEY: 2 A. The amount, I don't have the exact number, but 3 we're looking in the ballpark of \$300,000.00. 4 (9:55 a.m.) 5 Q. Okay, thank you, Mr. Delaney. Okay, let's 6 just look then to the specifics for the 7 lightening arrester which would be under 8 Attachment B, and as I understand it and as I 9 think has been indicated in a response to an 10 RFI, the principle--the support or rationale 11 for this project is economic? 12 MR. LUDLOW: 13 A. Yes. 14 Q. Now the report that we have under that 15 Attachment B, provides some details about 16 what's occurring, what has occurred in the 17 past and so on, and then it conducts some 18 present worth calculations and provides some 19 alternatives. And if we turn to page 3, okay, 20 so as indicated under the heading "Transformer 21 Failures Due to Lightening", the second 22 paragraph there, it says, "Over the past 13 23 years, Newfoundland Power has lost in excess 24 of 1,500 transformers that have failed due to 25 lightening, with approximately 700 of these in	1 the last five years and the annual number of 2 units that have failed range from a low of 22 3 units in 2000 to a high of 323 units in 2002. 4 And the average over the past five years has 5 been 139." And this translates to an average 6 annual cost in excess of \$300,000.00 per year 7 and as per the foot note, it's based on the 8 unit cost from Appendix A and 139 units. I 9 wonder if we could, just for a moment, go to 10 PUB-132. And so as per the reply to PUB-132, 11 this was the actual lightening cost failure 12 rate and transformers for each of the five 13 years that were referenced in that paragraph, 14 1990--well this was 1998 to 2002, and is it 15 fair to say looking at that table or do you 16 agree with the statement that much like 17 lightening itself, these are rather erratic 18 results in the sense that there doesn't seem 19 to be any trend or predictability to the 20 number of transformer failures that may occur 21 in any given year or over any period of time 22 based on lightening strikes? 23 MR. DELANEY: 24 A. Looking at the period 1998 to 2002, we see two 25 years with a lot of failures, the 254, 323
Page 35	Page 36
1 failures and three years with a small number 2 of failures for an average of, I think it's 3 139 or 140. That's a five-year period and 4 there's a great variance there. If we were to 5 look at NLH-48, Newfoundland and Labrador 6 Hydro asked the same sort of question and it 7 gives a bit more history. 8 Q. Okay. 9 MR. DELANEY: 10 A. Here we have the lightening--the distribution 11 transformer failures going back to 1993, which 12 show a little bit more pattern to the data, 13 showing that 99, 2000, 2001 were 14 extraordinarily low in the context of a ten- 15 year pattern, so coming out of that, we have 16 an average over the ten years of about 140. 17 Q. And when you say about 140 as an average, 18 that's just a simple average of that ten-year 19 period? 20 MR. DELANEY: 21 A. Yeah, it's somewhere around there, and as a 22 matter of interest, so far in 2003, we've 23 experienced 140--exactly 140 distribution 24 transformer failures due to lightening--that's 25 so far.	1 Q. Sure. And the report itself that we were just 2 looking at, the Arrester Report at page 2, 3 said "While it may be difficult to predict 4 whether long-term weather and lightening 5 patterns in Newfoundland are changing, it 6 certainly appears that the incident and 7 severity of lightening, at least in certain 8 areas of the province, have increased over the 9 past decade." So could I ask and I assume 10 you're not the author of this report, 11 obviously, but what forms the basis of the 12 conclusion that it certainly appears that the 13 incidence and severity of lightening, at least 14 in certain areas of the province, has 15 increased over the past decade? I don't see 16 that in NLH-48 or in the previous one that we 17 were looking at. 18 MR. DELANEY: 19 A. Yeah. To give some--in a way, that answer is 20 somewhat antidotal, but there is some math 21 behind it and that's referred to in NLH-51, a 22 RFI from Hydro, where I can read the last 23 sentence which basically says the average 24 number of transformer failures due to 25 lightening over the past 13 years has been

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1 MR. DELANEY: 2 about 115, while over the last five years the 3 average has increased to 140. So that's some 4 substance behind that statement. 5 Q. But then the previous paragraph to that reply 6 in the second sentence, or actually the first 7 sentence, you go, "Other than information 8 related to transformer failures due to 9 lightening activity, Newfoundland Power does 10 not have any other evidence to support the 11 proposition that the incidence and severity of 12 lightening related damage in certain areas of 13 the province has increased over the past 14 decade, or that there will be an increasing 15 trend in the future." 16 MR. DELANEY: 17 A. Yeah, and the only evidence we have, we go on 18 to say is the comparison of the averages based 19 on how long you're going to look back. 20 Thirteen years, the average is lower than the 21 average in the last five years. 22 Q. Okay, now I'm not a statistician, thank God, 23 but it seems to me that using simple averages 24 to determine the likelihood of a lightening 25 strike in a given year, based on the data as	1 provided in NLH-48, for instance, would seem 2 to be rather simplistic, would you agree, when 3 the data is that erratic, would you not 4 normally use a more sophisticated tool to 5 determine whether there's trend lines or 6 normalizing the data somehow? 7 MR. DELANEY: 8 A. Like yourself, Mr. Kennedy, I'm not a 9 statistician either, so I would not be able to 10 answer that question. 11 Q. Okay. 12 MR. LUDLOW: 13 A. Could I just help a little, if I may, on this 14 one? 15 Q. Go right ahead. 16 MR. LUDLOW: 17 A. If we look at lightening, we base this here on 18 our past practice of installing lightening 19 arresters on distribution transformers and we 20 have not done it. That was a decision we made 21 back in the '60s and '70s. And what we are 22 finding that by the very nature of lightening 23 hits, it's happening in the summer time, it's- 24 -I guess nature is sporadic--but it's diverse. 25 I've spent myself, 20 odd years in this
Page 39	Page 40
1 business and I can speak personally, although 2 anecdotally, that we are getting a lot of 3 lightening in the last three or four years and 4 in particular spots. And that's where we 5 started this process back around 1995 was to 6 select individual areas, the Grand Falls area, 7 the Lethbridge area, Stephenville area, parts 8 of Conception Bay. But as we look at how to 9 move forward with this process, straight 10 averages, I would agree is not the best tool. 11 Should we be using correlations? I don't 12 know. But at the end of the day the 13 incremental cost to a pole mounted transformer 14 is \$53.00 approximately to put the lightening 15 arrester in place, to protect that unit. 16 Now, as we go--that's for new units as we 17 move forward, Mr. Chairman, 53, it's in that 18 range anyway. 19 MR. DELANEY: 20 A. On the unit that cost approximately \$2,000.00. 21 MR. LUDLOW: 22 A. Then as we go through and do our distribution 23 system sweeps and inspections, we go buy these 24 transformers and not to put them into that 25 type of unit when you're already up there at	1 the unit, logically is the time to move and do 2 this and it is a sound decision, both 3 engineering, catastrophic failure of these 4 units. Let me give an example, Mr. Chairman. 5 In, about three weeks ago, maybe a month ago, 6 a very severe storm went through the 7 Placentia, Argentia area and came up through 8 the bottom, I do believe of either Trinity Bay 9 or Conception Bay. We lost a fair number of 10 transformers. Now, there was probably a 100 11 to 150 fuses open, a lineman climbs that pole, 12 closes the switch on the hope that he hasn't 13 got a catastrophic failure within that tank. 14 What we have been finding, in the areas where 15 we have installed lightening arresters in the 16 past few years, we have a had a minute number 17 of failures of those transformers. The number 18 escapes me, but I've got seven in the back of 19 my head. It's a very small number. And of 20 those seven, many of them were direct hits. 21 So, we weren't looking for the arresters, we 22 were looking for the tops and the bushings and 23 the coils of the transformer that had 24 literally blown out of the pole. So, putting 25 that together, combining simple arithmetic

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1 MR. LUDLOW: 2 averages with the anecdotes of long service 3 employees and field experience, that's how we 4 arrived at our movement forward, combining 5 that with our distribution and liability 6 issue. 7 Q. Okay. Ultimately through, as you indicated 8 earlier, the justification for this project 9 has to be one base--justification is 10 reliability, but the analysis ultimately has 11 to be economic 12 MR. LUDLOW: 13 A. I agree. 14 Q. Okay. And as is indicated in the cost 15 estimates that are attached as Appendix A to 16 the Arrester Lightning Report. All right, if 17 we could just go through that so that I make 18 sure that I understand this correctly. So, 19 here what we're doing is we're calculating the 20 number of transformers lost in 2002 lightning 21 storms. And it's footnote there after 22 "Transformers Lost", it's the number of 23 transformers represents losses from August 13 24 to August 27, 2002 and the number is 233, 25 correct.	1 MR. DELANEY: 2 A. That's correct. 3 Q. Okay. Now, is there a reason why you use 233 4 transformers lost when P.U.B 132 indicated in 5 2002 it was 323 transformers lost? 6 MR. DELANEY: 7 A. The reason we use that number is to get us the 8 most accurate indication that we could of what 9 the transformer, the cost of replacing a 10 transformer. During that period we had severe 11 lightening storms coming through Newfoundland, 12 through central Newfoundland. And in terms of 13 the testing the economics on this, we thought 14 that this would represent the lowest cost or 15 if it was a conservative estimate in 16 determining replacement of the transformer 17 because we were engaged in replacing 18 transformers at that time because there was so 19 many had been lost, 233 during that week. And 20 there's a certain economy of scale, I guess, 21 that happens when you are at that activity and 22 everyone is at that activity. So, the cost of 23 replacing 233 units in one small time should 24 be the smallest cost that you will see, rather 25 than replacing, say, one unit at a time. So,
Page 43	Page 44
1 we're pretty comfortable that we've got a 2 conservative estimate as to the per unit cost 3 to replace a transformer. 4 Q. Per transformer, okay. Then you do an 5 estimate of the cost to install a lightning 6 arrester. 7 MR. DELANEY: 8 A. That's correct. 9 Q. Okay. And is this done on the same basis of 10 this is how much it would cost if you were 11 replacing, if you were installing lightning 12 arresters in quantity because there's nothing 13 to indicate that on the calculation. If we 14 could go to the next page. 15 MR. DELANEY: 16 A. The material cost will not change. If you're 17 installing arresters in quantity or if you're 18 installing them one at a time in more of a 19 sporadic manner. However, on the labour side 20 of it, it will change if you are taking an 21 organized productive approach versus 22 installing them, so to speak, one at a time on 23 occasion. The two cost estimates related to 24 the labour for installing lightning arresters 25 are based, first like I said, on just doing	1 that one activity. And second, it's doing it 2 as part of a bigger project. Now, I'll have 3 to step back and inform the Board as to why 4 we're doing that. 5 We will, over the next number of years, 6 be phasing out PCBs or doing a PCB phase over 7 our distribution feeders. And that involves 8 visiting--I don't have the exact number--but 9 it involves visiting a significant percentage 10 of the distribution transformers that are in 11 the system to test the oil in the transformer 12 as to whether it contains PCB or not. And we 13 have objectives in terms of getting PCBs out 14 of the distribution system. So, Earl eluded 15 to this earlier, that if you're at the 16 distribution transformer testing for PCBs and 17 it's on a feeder that's experienced, say, 18 we've picked more than three lightening in the 19 last number of years, last five years, it 20 would make sense from a productivity 21 perspective to install a lightning arrester 22 while you're there which is a \$50.00 unit, 23 about this high, you can install a lightning 24 arrester while the crew is there doing the PCB 25 inspection. As well, there are other things

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1 MR. DELANEY: 2 we're doing on feeders, sleeve replacements, 3 cut out replacement is another thing. And we 4 refer to this in several reports in the 5 document. So, we've included two labour 6 estimates in our analysis. One just going 7 there and doing the lightening arrester. 8 Second, which is approximately half of the 9 original estimate for labour, is doing it in 10 conjunction with other work. So, those are 11 the two labour estimates on that page. 12 Q. Okay. So, when we look at the next page, cost 13 alternatives, if I could just look at 14 alternative number two first and as was 15 indicated, this alternative involving an 16 arrester on every transformer within 17 Newfoundland Power's service territory as a 18 stand alone project. So, is it accurate to 19 say that this alternative is based on a 20 massive one time event of Newfoundland Power 21 going out and installing lightening arresters 22 on all 43,400 transformers that it has in its 23 system. 24 (10:13 a.m.) 25 MR. DELANEY:	1 A. That's what it is, that's go out and install 2 them. And I'll add, by the way, that we're 3 somewhat unusual in Newfoundland not to have 4 that already done. The vast majority of 5 utilities in North America have lightening 6 arresters installed on all their distribution 7 transformers. 8 Q. Newfoundland is an unusual place sometimes. 9 But if we could just flip back a page. Okay, 10 well, just before we do that, under that 11 alternative two, you've got the average cost 12 to install a lightening arrester is \$150.94. 13 MR. DELANEY: 14 A. That's correct. 15 Q. Okay. So, if you flip back a page, as I 16 understood it, that \$150.94 is if you were 17 installing--it would be the labour--I guess 18 what I'm asking is where's the \$150.00 come 19 from? 20 MR. DELANEY: 21 A. It comes from a two-person crew, I think 22 that's one hour of labour at \$63.65, that's 23 the labour, that's the salary plus the 24 overheads, the fringe overheads on that 25 labour. And then we take our standard
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1 percentages with respect to the cost of the 2 line truck that goes along with that labour, 3 the cost of the engineering which would be the 4 set up, organization, planning of the job and 5 the vehicles associated with the engineering 6 to add up to \$150.00 and that's one hour of 7 labour to install a lightening arrester. 8 Q. Okay, but I thought that the \$78.74 was the 9 number that we used to, that we should use to 10 see what the cost was to install a lightening 11 arrester if it was being conducted in an 12 unmass, you know, if it was a massive one time 13 project. 14 MR. MYLES: 15 Q. Excuse me, Mr. Chairman, there seems to be 16 some confusion here. If I can assist it might 17 help. There are two estimates shown on that 18 page, not one. 19 MR. KENNEDY: 20 Q. Two estimates shown on which page, counsel? 21 MR. MYLES: 22 Q. Page two. 23 MR. KENNEDY: 24 Q. Cost estimate to install. 25 MR. MYLES:	1 Q. Right, and that's where it gets down to 2 \$150.94, just - 3 MR. KENNEDY: 4 Q. Yes. 5 MR. MYLES: 6 Q. And then the second cost estimate is a part of 7 doing it with other work and that's your 8 \$78.74. 9 MR. KENNEDY: 10 Q. Yes, I understand that. I think the witness 11 has explained that. 12 MR. MYLES: 13 Q. It wasn't clear from your question. 14 MR. KENNEDY: 15 Q. So, the question I have, Mr. Delaney, is of 16 those two figures, one involves the labour for 17 \$150.94, correct? 18 MR. DELANEY: 19 A. Yes, that would be the labour of doing one 20 lightening arrester on a transformer with no 21 other project involved, sending the crew to go 22 out and install lightening arrester on 23 distribution transformers. 24 Q. Okay, but does that \$150.94 then include--it 25 doesn't include the cost of the material

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1 MR. KENNEDY: 2 itself? That's just the labour, isn't it? 3 MR. DELANEY: 4 A. That's just the labour, yes, the material 5 would be \$54.67 above, it's noted above. 6 Q. Okay. 7 MR. DELANEY: 8 A. And there are two ways of looking at the 9 material cost as well, just to clarify that. 10 First, the arrester bracket, that's \$6.18, 11 that would be for a new installation that 12 comes in, new transformer. Whereas the, we 13 call it without the boss, that's for an older 14 transformer unit where we have to install a 15 different type of bracket to get the 16 lightening arrester on. 17 Q. Right, but just to go back, the \$150.94 is the 18 labour component to install a lightening 19 arrester on a pole, correct? 20 MR. DELANEY: 21 A. That's correct. 22 Q. Okay. And that would be if you're doing it on 23 a ad hoc, one-by-one basis? 24 MR. DELANEY: 25 A. That's correct.	1 Q. Okay. 2 MR. DELANEY: 3 A. That is the specific project they're going to, 4 yes. 5 Q. The material is \$54.67. 6 MR. DELANEY: 7 A. Yes. 8 Q. And that's \$54.67 independent of whether 9 you're doing it ad hoc or in mass, the 10 material is the material cost. 11 MR. DELANEY: 12 A. Right. 13 Q. Okay. The \$78.74 is what you feel it would 14 cost, material included, if you were doing it 15 on a massive scale? 16 MR. DELANEY: 17 A. No, that's not correct. 18 Q. Okay, so what's the \$78.74? 19 MR. DELANEY: 20 A. That would be the labour that we would apply 21 to the lightening arrester project if we were 22 doing it unmass in addition to other projects. 23 Q. But if you look at your table, Mr. Delaney, 24 under, it says material equals \$54.67 to total 25 \$78.74.
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1 MR. DELANEY: 2 A. Oh, okay, sorry, sorry, yes, sorry. I've just 3 misread that. The material cost is \$54.67 4 including, that would be included in the 5 total. 6 Q. Right. So, we're comparing roughly \$204.00, 7 \$205.00 per lightening arrester if done ad 8 hoc, to \$78.74 if we're doing it on a massive 9 scale, is that correct? 10 MR. DELANEY: 11 A. That's correct. 12 Q. Okay. Because if we go to the cost 13 alternatives, the next page. 14 MR. LUDLOW: 15 A. Mr. Chairman, if I may just come in, when we 16 go to a pole, the lightening arrester is one 17 of maybe six projects at that pole. Fair? 18 MR. DELANEY: 19 A. There are several other projects, yes. 20 MR. LUDLOW: 21 A. Such as PCB testing, such as cut outs, the 22 sleeves and so on. And if it is done in 23 conjunction with going to the pole and 24 installing the lightening arrester, you get 25 the benefit, an economies of scale, you're	1 there. You're mobilization and demobilization 2 is significantly reduced. That's the concept 3 behind it. 4 Q. Okay. So, if we go back, this average cost to 5 install a lightening arrester, you've got 6 \$150.94 there and the number of transformers 7 is 43,400, would give you a total cost of 8 \$6,550,796.00 which is the product of those 9 two numbers, 43,400 times \$150.94 gives me a 10 total cost of \$6,550,796.00. And then you go 11 present value 30 years and I'm not sure where 12 that comes from. Could you explain what that 13 is, what the adjustment is to go from the 14 \$6,550,796 to the \$6,894,379.00. 15 MR. DELANEY: 16 A. Yes, going further on in the report in 17 Appendix B, it would be under Alternative 2, 18 there is a spreadsheet that shows the detail, 19 the present worth calculation. 20 Q. Okay. 21 MR. DELANEY: 22 A. And I can go through the intricacies of the 23 spreadsheet if you so desire. 24 Q. No, I don't think so. Just if you can give us 25 the -

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1 MR. DELANEY: 2 A. It's a prism worth analysis is, you know, the 3 big number there, the important number to look 4 at the weighed average incremental cost of 5 capital and that's the rate at which you're 6 discounting all the future cash flows back to 7 get a present value. 8 Q. Okay. 9 MR. DELANEY: 10 A. So, that's where the calculation is done in 11 detail, is on this page. 12 Q. Okay. So, just go back again though to, if we 13 could, to that cost of alternatives. It would 14 be under, I think if you just go Appendix, 15 yes, the next page and then the next page 16 again, cost of alternatives, there we go. So, 17 if we just scroll down so we've got 18 Alternative 2 and Alternative 3. Okay, so in 19 the case of Alternative 3, you've got the 20 number of transformers to be replaced over a 21 five-year program, installing an arrester on 22 every transformer would be 19,325 23 transformers. Then use the average lightening 24 arrester cost of \$78.74 and as we ascertain 25 the \$78.74 is both material and labour -	1 MR. DELANEY: 2 A. That's correct, yes. 3 Q. - but the previous Alternative number 2, 4 average cost to install a lightening arrester 5 of \$150.94 is only the labour and not the 6 material. 7 MR. MYLES: 8 Q. Mr. Chairman, I don't mean to interfere, but 9 it may be appropriate to stop at this point. 10 I think that the problem that I'm foreseeing 11 is the manner of presentation and some 12 confusion that's resulted from that. And 13 maybe if I can discuss this with counsel and 14 the witnesses, we be able to truncate this. 15 I'm reading that material differently and 16 we're taking a lot of time on this and I think 17 we may be able to sort this out very quickly. 18 CHAIRMAN: 19 Q. Well, it's just about 10:30 in any event, so 20 we'll take 15 minutes. 21 MR. MYLES: 22 Q. That's fine, chair. Thank you. 23 (BREAK - 10:23 A.M.) 24 (RESUME - 10:47 A.M.) 25 CHAIRPERSON:
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1 Q. Okay. Are we getting sorted out? 2 MR. KENNEDY: 3 Q. I believe so, Chair. Mr. Myles, counsel for 4 Newfoundland Power, is going to address his 5 witness in order to be able to straighten out 6 the record before I recommence my cross- 7 examination. We felt that would be the most 8 appropriate thing to do, if that suits the 9 Board. 10 CHAIRPERSON: 11 Q. That's fine. 12 MR. KENNEDY: 13 Q. Thank you, Chair. 14 MR. MYLES: 15 Q. Thank you. Just for the record, we are in 16 Volume 3, Distribution Appendix 2, Attachment 17 A, Appendix A which is entitled costs, and on 18 page two, we have the cost estimate to install 19 lightning arrester. Mr. Delaney, I'd like to 20 take you through the calculations at the top. 21 Under "material" you see a total material cost 22 and that is how much? 23 MR. DELANEY: 24 A. The total material cost is \$54.67. 25 Q. All right. Now actually to move down, two	1 lines under the heading "labour, working 2 foreman and lineman" and that gives you a 3 total of 48.96? 4 MR. DELANEY: 5 A. That's correct. 6 Q. All right. And the next line is doing what? 7 MR. DELANEY: 8 A. The next line is applying the overheads to the 9 labour, which brings it up to \$63.65 an hour. 10 Q. And does that represent the total labour for 11 those two people? 12 MR. DELANEY: 13 A. That's correct. 14 Q. All right. So now we'll be adding that to the 15 54.67? 16 MR. DELANEY: 17 A. That's correct. 18 Q. All right. Now the next line is for the line 19 truck and that's 13.37? 20 MR. DELANEY: 21 A. Correct. 22 Q. Okay. The next two lines, they are for 23 engineering and vehicle? 24 MR. DELANEY: 25 A. That's correct.

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1 MR. MYLES: 2 Q. Okay. And would they be added together as 3 well? 4 MR. DELANEY: 5 A. They would be added to give a total of 6 \$150.94. 7 Q. All right. So during your cross-examination, 8 you had stated at one point that you needed to 9 add total material to the total of 150 to get 10 the total cost. Was that correct? 11 MR. DELANEY: 12 A. That's what I--yes, that's correct. 13 Q. Okay. But what is the actual total cost of 14 material and labour and all other associated 15 costs for the installation of the lightning 16 arrester? 17 MR. DELANEY: 18 A. The total cost of the material and labour for 19 the installation of the lightning arrester is 20 \$150.94. 21 Q. And is that a straight comparison to the 22 number below, showing the side total of 78.74? 23 MR. DELANEY: 24 A. Yes, that is. 25 Q. Those are apples and apples, if I can say	1 that? 2 MR. DELANEY: 3 A. The 78.74 includes material and labour plus 4 overheads. The 150.94 includes material and 5 labour plus overheads. 6 Q. All right. And when we go to the next page 7 for cost of alternatives, under "alternative 8 two" you see average cost to install a 9 lightning arrester, the 150.94? 10 MR. DELANEY: 11 A. Yes, it is. 12 Q. And that's the correct number? 13 MR. DELANEY: 14 A. That's the correct number. 15 Q. And that's total material and labour? 16 MR. DELANEY: 17 A. That's correct. 18 Q. All right. Similarly, under "alternative 19 three" the average lightning arrester cost, 20 again that's the total? 21 MR. DELANEY: 22 A. That's the total, yes. 23 Q. All right. Thank you. I have no further 24 questions. 25 CHAIRPERSON:
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1 Q. Thank you, Mr. Myles. 2 MR. MYLES: 3 Q. Pardon me? 4 CHAIRPERSON: 5 Q. Thank you. 6 MR. MYLES: 7 Q. And I should also apologize for the 8 presentation. I should have picked that up 9 when I was reviewing the material. 10 CHAIRPERSON: 11 Q. Ready to continue, Mr. Kennedy? 12 MR. KENNEDY: 13 Q. I am. Thank you, Chair, Commissioners. 14 Gentlemen, just a few final questions on this 15 project. If we could go back to the--I think 16 we're already in Appendix A Costs, yes, and 17 let's just go back to the estimated costs of a 18 transformer failure. Okay. So as shown on 19 the table, Newfoundland Power calculates that 20 the total average cost per transformer is 21 \$2,221.10, correct? 22 MR. DELANEY: 23 A. Yes, that's correct. 24 Q. And this is based on a breakdown of the 25 numbers as indicated for material and labour	1 that were incurred as a result of transformers 2 lost during an August 2002 lightning storm. 3 MR. KENNEDY: 4 Is that correct? 5 MR. DELANEY: 6 A. That's correct. 7 Q. So these costs are actual costs that were 8 tracked by Newfoundland Power associated with 9 the replacement of the transformers that were 10 damaged during that lightning storm? 11 MR. DELANEY: 12 A. Yes, that's correct. 13 Q. Okay. So the next page, the cost estimate to 14 install lightning arrester. The first figure, 15 the material cost of \$54.67, you've got a 16 subcalculation in there for your surge 17 arrester, 9Kv 38.30 and 18Kv 55.20, average 18 cost of 44.05, and you say "note: the 19 transformer split is approximately 34.66 for a 20 25 versus 12 1/2 Kv." Could you just explain 21 that? 22 MR. DELANEY: 23 A. Okay. What that is, again obviously mention 24 here I came up with this table, it's a 9Kv 25 surge arrester would be applied on a

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1 MR. DELANEY: 2 transformer rated at 12.5Kv and a 18Kv surge 3 arrester would be installed on a transformer 4 rated at 25Kv. So the split in the system of 5 transformers is 34 percent, 34 percent being 6 25Kv and 66 percent being 12.5Kv. So that's 7 to determine the appropriate split amongst-- 8 between the 9Kv and 18Kv surge arresters to 9 apply the average cost. 10 Q. So when it says average cost, is that a 11 weighted average cost? I didn't have my 12 calculator. 13 MR. DELANEY: 14 A. I don't have a calculator with me here. I 15 would - 16 Q. It looks like just an average, 55 and 38 comes 17 to \$46. 55 and 38 comes to 46, so - 18 MR. DELANEY: 19 A. That would apply, it's a weighted average, 20 based on the ratio, yes. 21 Q. Weighted average, okay. And so that's one 22 assumption is that your--okay. And just down 23 in your labour, you take your gross labour of 24 \$48.96 and you grossed it up by 30 percent. 25 Is that an overhead burden?	1 MR. DELANEY: 2 A. That would be some of the fringe percentages 3 placed on labour, include things like Worker's 4 Compensation. For every hour of labour we pay 5 a Worker's Compensation fee. There's pension 6 in those and I'm not familiar with all the 7 overheads that are applied there, but it's a 8 standard number. 9 Q. And then your provision for your line truck 10 and your engineering is a percentage of your 11 labour? 12 MR. DELANEY: 13 A. That's what we do the estimating in our 14 capital projects, yes. 15 Q. Okay. So that's the same technique you use in 16 estimating a capital project? 17 MR. DELANEY: 18 A. Yes. We apply percentages of the labour to 19 come up with cost estimates for capital 20 projects. 21 Q. And I notice your vehicle is 21 percent of 22 engineering? 23 MR. DELANEY: 24 A. That's correct. 25 Q. And then engineering is 25 percent of labour?
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1 MR. DELANEY: 2 A. Yes, that's correct. 3 Q. Okay. So if our labour number--sorry, gross 4 labour number, 48.96, okay, and then we 5 provide those and we get the 150, all right. 6 Now down in the 15 minutes for the calculation 7 of how much it would cost based on a 15-minute 8 time for installation - 9 MR. DELANEY: 10 A. Yes. 11 Q. - can I ask you what that's based on, the 15 12 minutes, and what you would feel to be the 13 margin of error on that estimate of 15 14 minutes? 15 MR. DELANEY: 16 A. The 15 minutes is based on our judgment with 17 respect to how much it would cost to install 18 that lightning arrester in conjunction with 19 other jobs at that same pole, the additional 20 15 minutes. I couldn't comment on what the 21 ratio, the percentage of variance in that. I 22 think it's a fair estimate myself. 23 Q. Okay. If we just go to the next page, cost of 24 alternatives, and as is indicated with those 25 inputs using an average of 139 transformer	1 failures in a given year, the average cost per 2 transformer based on the 2002 lightning storm 3 of \$2,221, you get an average annual cost of 4 failure of \$308,719, correct? 5 MR. DELANEY: 6 A. That's correct. 7 Q. And that derives a present value over a 30- 8 year time span of 4,389,000? 9 MR. DELANEY: 10 A. Yes, that's correct. 11 Q. Okay. And if we just go to NLH-55, this 12 requested that Newfoundland Power to just use 13 the period 1998 to 2001, 1998 of 254 failures, 14 1999 44, and 2000 22, and 2001 50. You 15 therefore averaged it to 93. You just took a 16 simple average again? 17 MR. DELANEY: 18 A. Again, we took the average between '98 and 19 2001 for that calculation. 20 Q. Right, okay. But again, you didn't do any 21 normalizing or smoothing out of the data to 22 take into account the spike in 1998 of 254 23 failures as opposed to the failure rates 24 experienced in 1999, 2000 and 2001?

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1 MR. DELANEY:
 2 A. Could you repeat that again?
 3 Q. Maybe it will help just if we could just
 4 briefly go to PUB-132 again. So this question
 5 MR. KENNEDY:
 6 asked you to ignore the 2002 data where you
 7 have the 323 failures and as is indicated, you
 8 had 254 failures in '98, 44 in '99, 22 in 2000
 9 and 50 in 2001.
 10 MR. DELANEY:
 11 A. And we took the average, pretending 2002
 12 didn't exist, yes.
 13 Q. Right. So you just took a simple average
 14 again of those four years and you arrive at
 15 93?
 16 MR. DELANEY:
 17 A. Exactly, yes.
 18 Q. Okay. And so just going back to NLH-55, that
 19 when you do that and recalculate, the
 20 alternative number one, which is the do
 21 nothing alternative, status quo alternative,
 22 now gives it a present worth of 2,943,000?
 23 MR. DELANEY:
 24 A. That's correct, yes. It's still more
 25 expensive than alternative number three.

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1 half hour is way too much.
 2 Q. Okay. That's all the questions I have on
 3 lightning arresters. I'm sure people are
 4 thankful. I have one question concerning the
 5 Corner Brook transformer project, and if we
 6 could go to Volume 2, Substations, Appendix 4.
 7 I just have a specific question. There's a
 8 document here that, from a layperson's
 9 perspective, seems to imply the opposite. As
 10 I understand it, the basis of your project to
 11 increase your transformer capacity in Corner
 12 Brook is that you're currently topping out the
 13 capacity of the existing transformers?
 14 (11:02 a.m.)
 15 MR. DELANEY:
 16 A. Yes. The -
 17 Q. They're exceeding their load limits?
 18 MR. DELANEY:
 19 A. The combined capacity of all the substation
 20 transformers in Corner Brook will exceed the
 21 rated capacity of those units and we've done a
 22 number of things over the years to defer this
 23 project by switching loads back and forth
 24 between the transformers in Corner Brook, and
 25 we're at a point now where that approach is no

1 Q. Sure. The 2,943,000, that's down from the
 2 original 4,389,000 which was your original
 3 alternative one based on 139 failure rate?
 4 MR. DELANEY:
 5 A. Yes, it has. If we remove the fact that we
 6 lost all those transformers in 2002 from the
 7 equation, we will get down to that present
 8 value.
 9 Q. Right, okay.
 10 MR. DELANEY:
 11 A. Which is still higher than the -
 12 Q. Sure.
 13 MR. DELANEY:
 14 A. - alternative we're proposing.
 15 Q. Would you agree with me though that, for
 16 instance, if you're off on your estimate of
 17 the amount of time that it's going to take to
 18 install the lightning arrester and that
 19 instead of 15 minutes, it would take you a
 20 half an hour, alternative three is likely to
 21 be more expensive than alternative one?
 22 MR. DELANEY:
 23 A. If you were to say a half an hour, but we're
 24 saying 15 minutes would be the incremental
 25 cost of putting on the lightning arrester. A

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1 longer feasible.
 2 Q. Okay. If we could just go to--there's an
 3 attachment or sorry, an appendix A in that--so
 4 if we go--this is one of these, substations
 5 Appendix 4, Attachment A, Appendix 4, Appendix
 6 A. That's correct, 4, yes, and the first page
 7 of that. Okay. When I look at this table and
 8 I look at the various transformers and their
 9 rating and then look at the peak 2002 and the
 10 forecasted undiversified peak for 2003, it's
 11 clear that it's, in the case of Walbourne,
 12 expected to exceed, in 2003, if it hasn't
 13 already done so, exceed the rated capacity of
 14 your transformer there, correct?
 15 MR. DELANEY:
 16 A. That's correct.
 17 Q. Now I couldn't see where there were any other
 18 ones here that would exceed your transformer
 19 capacities. When you follow up through the
 20 line for 2003, the rest of them seem to be
 21 within the existing transformer capacity.
 22 MR. DELANEY:
 23 A. Okay, I think you have to -
 24 Q. Like if I look at Walbourne's T1, I have an
 25 existing MVA capacity of a transformer there

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1 MR. KENNEDY: 2 of 20 and the forecasted undiversified peak 3 for Walbourne's in 2003 is 17.9. 4 MR. DELANEY: 5 A. 17 point--okay. 6 Q. Am I reading the table right? 7 MR. DELANEY: 8 A. Yes, you're reading the table right. 9 Q. Okay. 10 MR. DELANEY: 11 A. I just need to explain what's in there. First 12 of all, substations like Howley, Deer Lake, 13 Marble Mountain, Pasadena, we have to dismiss 14 because they're not part of this whole 15 equation. They're in different geographical 16 areas. 17 Q. Okay. Which ones are we dismissing? Howley? 18 MR. DELANEY: 19 A. Yes. Well, it would be better to look at the 20 ones we're going to include. 21 Q. Okay. 22 MR. DELANEY: 23 A. We're going to include the two units at 24 Walbourne's, T1 and T2. 25 Q. Yes.	1 MR. DELANEY: 2 A. The T3 unit at Humber. 3 Q. Yes. 4 MR. DELANEY: 5 A. Okay, which operates at 12.47Kv. We cannot 6 include the T2 unit at Humber because it 7 operates in a different voltage, and if we - 8 Q. Okay. 9 MR. DELANEY: 10 A. - were to get into that, we would be into a 11 very much more expensive job. And Bayview T1. 12 Q. Okay. 13 MR. DELANEY: 14 A. Okay. So those are the three, yes, Bayview, 15 Humber and Walbourne's, and - 16 Q. Okay, yes. 17 MR. DELANEY: 18 A. - and with Bayview, I see a--all right, so-- 19 and again, we're getting into the math here. 20 So Walbourne's, plus Humber, plus Bayview 21 exceeds the capacity of Bayview, plus Humber, 22 the existing capacity, and I see a problem 23 here with Bayview right now. 24 Q. Okay. So when - 25 MR. DELANEY:
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1 A. Let me just - 2 Q. - when I see the Bayview 3, 4 and 5 T1, 3 voltage 12.47 kilovolts, rating 15/20, 4 existing 45, and then I go peak 19.9, 22, 25.9 5 and so on, with this XFMR maximum utilization 6 percent, so - 7 MR. DELANEY: 8 A. You've got to--if we can look at note number 9 3, the existing capacity at Bayview at 45 10 assumes an additional 25 MVA unit is there. 11 Q. Okay. 12 MR. DELANEY: 13 A. Okay. So - 14 Q. So it would be without that additional unit 15 20? 16 MR. DELANEY: 17 A. Right now, as we speak today, Bayview is 20. 18 Q. So this five-year forecast includes this 19 additional one already into it? 20 MR. DELANEY: 21 A. Exactly, yes. 22 Q. Okay. And so the Bayview one will be topped 23 out according to your forecast for 2003 to 24 2008 based on the 20? 25 MR. DELANEY:	1 A. As well, yes. 2 Q. All right. 3 MR. DELANEY: 4 A. Bayview has existing capacity of 20 and it 5 will be 22 in 2003. So it's peaked out as 6 well. 7 Q. So have we--has the same thing applied for 8 Humber, Walbourne's and Walbourne's, 9 Walbourne's T1 and Walbourne's T2, do they 10 have in them devices proposed, new transformer 11 capacity already proposed into this? 12 MR. DELANEY: 13 A. When we looked at the alternatives, and there 14 are a number of alternatives to look at in 15 configuring this system for the least cost 16 going into the future, and the report goes 17 into this in enormous detail as to the 18 different configurations of the system to get 19 at least cost. We've determined that the 20 least cost alternative is to install the new 21 unit at Walbourne's. I better get this right. 22 And move--I get these two substations 23 confused. Let's go back to Volume 1 here. 24 MR. MYLES: 25 Q. Page 30.

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1 MR. KENNEDY: 2 Q. Page 30. 3 MR. DELANEY: 4 A. Page 30, yes. So yes, the project that came 5 out as least cost to accommodate the long 6 range, the long term needs of Corner Brook in 7 a least cost manner, is the installation of a 8 new 25 Mva substation transformer at 9 Walbourne's as a replacement for the existing 10 15 Mva transformer, and then moving that 11 existing 15 Mva transformer at Walbourne's to 12 Bayview sub. So this chart has the new 13 capacity in it. 14 Q. In all cases, so this chart that we were 15 looking at, that's up on the screen there now, 16 that has the additional capacity for 17 Walbourne's as well? 18 MR. DELANEY: 19 A. It has the additional capacity shown in 20 Bayview actually. 21 Q. Additional capacity in Bayview. But the 22 Walbourne's, are they the existing capacity? 23 MR. DELANEY: 24 A. Yes. To look at the existing situation, let's 25 look at the current, the capacity rating.	1 Q. Capacity rating, yes. 2 MR. DELANEY: 3 A. And right now in Bayview, we have 20 Mva. 4 Q. Right. 5 MR. DELANEY: 6 A. By 15/20 that means that the unit is 15 7 without the transformer radiators. With the 8 radiators, it's 20. 9 Q. Okay. 10 MR. DELANEY: 11 A. And in Walbourne's, we have 15/20 as well. 12 Q. Okay. So when it says "existing" then though, 13 the capacity Mva existing, and I got 45 there, 14 that's not actually what's existing then? 15 Existing is less than the 45? 16 MR. DELANEY: 17 A. The existing actually adds up to--there may be 18 something missing in this chart, but the 19 existing actually adds up, if memory serves me 20 correct, to somewhere above 60, 63. I'm just 21 trying to rationalize the chart here. 22 MR. LUDLOW: 23 A. Mr. Kennedy, if I may? 24 Q. Yes. 25 MR. LUDLOW:
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1 A. Is your question in the table as presented, is 2 the existing under capacity Mva the--if we 3 were to visit Walbourne's today, is that what 4 we'd find? 5 MR. KENNEDY: 6 Q. Exactly. 7 MR. LUDLOW: 8 A. Okay. 9 Q. And Bayview. 10 MR. LUDLOW: 11 A. And Bayview. Well, it's definitely, by my 12 understanding, that the--as per note 3 on the 13 bottom - 14 Q. Right. 15 MR. LUDLOW: 16 A. - it is showing an increased additional 17 transformer capacity at Bayview. I personally 18 don't know what's in Bayview today, but I do 19 know that in 2004, this chart includes that. 20 So whether that's in that column or not, I 21 don't know. 22 Q. Yes. 23 MR. LUDLOW: 24 A. I can certainly have a check. 25 MR. DELANEY:	1 A. I can have a check. I know that the total 2 combined capacity right now, as we sit, for 3 Bayview, Humber and Walbourne's, those three 4 substations that are interconnected that 5 serves the City of Corner Brook, I know that 6 the total combined capacity is less than the 7 peak demand we're expecting there this winter. 8 Now how this adds up exactly on the chart, I'm 9 not sure right now, but that is a true 10 statement. 11 Q. Okay. And the difficulty is your chart - 12 MR. DELANEY: 13 A. Shows some additional capacity. 14 Q. Well, some of it--it says existing, but it's 15 actually existing with the proposed in some 16 cases and - 17 MR. LUDLOW: 18 A. It's this whole premise of this proposal, Mr. 19 Chairman, was driven on the premises Mr. 20 Delaney just outlined. We have been moving 21 the load between feeders. We've been 22 optimizing the installed capacity and we're 23 running up against a brick wall in that the 24 installed transformation capacity is not 25 capable of carrying the peak. So I think we

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1 MR. LUDLOW: 2 can get this straightened away on the table, 3 but we're coming up against a wall on that 4 transformation capacity of MVA installed and 5 that's the point we're trying to put forward 6 in our presentation. Obviously, we haven't 7 done it too well. 8 Q. Okay. 9 MR. DELANEY: 10 A. And it gets very, very complicated when you 11 get down to analysing the minutia of these 12 numbers. If you look at note 4 and 5, we're 13 talking about transferring 3 MVA from 14 Walbourne's to a Bayview, and in 2007, another 15 1 MVA from a Walbourne's to a Bayview. So 16 there are lots of permeations and commutations 17 of how this data can be presented. The 18 essential fact is that the peak capacity of 19 all those transformers, what those 20 transformers are rated for, the amount of load 21 that all of them combined will be less than 22 the peak load that we expect there this 23 winter. 24 Q. Okay. I've got one more question, just to 25 wade in on this. If you look at the Bayview	1 figures and the forecasted undiversified peak 2 for the period 2002 to 2008, it shows a 3 fairly, you know, dramatic increase. It goes 4 from 19.9 MVA to 27.9 MVA by 2008. 5 MR. DELANEY: 6 A. Yes. 7 Q. Okay. If I look at Walbourne's, it goes from 8 a peak forecast in 2002 of 15 up to 16.6 9 forecasted for 2003 and then it starts 10 declining, going back down to 14 MVA the very 11 next year. So is there reason why the load on 12 Walbourne's would be decreasing, why the load 13 on Bayview is increasing, if these are all 14 interconnected as you say? 15 MR. DELANEY: 16 A. Yes. The answer to that is in note 4 and note 17 5. It's load transfers being done from 18 Walbourne's to Bayview which would have the 19 effect of decreasing the load in Walbourne's 20 and increasing the load in Bayview. 21 Q. And that's to--okay. All right. Okay. I 22 wonder if we could talk about reliability for 23 a bit, and if we could start with PUB-9. 24 Okay, these are a list as per the question of 25 projects being justified on the basis of
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1 reliability, and they're divided up between 2 system wide, distribution, transmission and 3 substation. Okay. Now I wonder if we could 4 just look at PUB No. 8, and PUB-8 provided the 5 SAIDI and SAIFI targets for 2003, but it's 6 indicated that the Company does not set up 7 time targets based on system wide, 8 distribution, transmission, feeders or 9 substation. The lawyer in me, does that mean 10 that the Company does set up SAIDI and SAIFI 11 targets based on system wide, distribution, 12 transmission, feeders and substations? 13 (11:18 a.m.) 14 MR. LUDLOW: 15 A. I'm debating between a lawyer and an engineer 16 here. What we set, maybe that would clarify 17 it for you, Mr. Kennedy and Mr. Chairman, is 18 that the SAIDI and SAIFI, as presented, is 19 done on an annual basis and we have not set by 20 transmission or by substation an 21 individualized target. This is a corporate 22 system wide duration and frequency index. The 23 up time, as it's referred to in your question, 24 is a simple reverse of downtime, is where I 25 would go on that one. And the other thing in	1 these numbers is these are what the customer 2 sees, and by that, that includes everything 3 from loss of supply to equipment failure to 4 weather and so on, and so on, and so on. So 5 that is a true reflection of what you, the 6 customer, would see. But it's a global index. 7 That is not a specific--you may have 100 8 percent. I may have much less reliability. 9 Q. So the system wide reliability target for 2003 10 is 4.75 SAIDI and 4.56 SAIFI? 11 MR. LUDLOW: 12 A. That is correct. 13 Q. Do you break that down to have a separate 14 SAIDI and SAIFI target for distribution? 15 MR. LUDLOW: 16 A. We monitor where we are and monitor it against 17 past performance, but I have not, as of to 18 date, set targets strictly on distribution. 19 Q. Now it's indicated the company has not 20 established reliability targets for the 2004 21 through to 2008 period. Reliability indices 22 SAIDI and SAIFI are used in your short-term 23 incentive program, correct? 24 MR. LUDLOW: 25 A. Yes, they are.

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1 MR. KENNEDY: 2 Q. And so you would need to set reliability 3 targets for the use of your short-term 4 incentive program for 2004? 5 MR. LUDLOW: 6 A. Yes, they would be. 7 Q. And when would they be set? 8 MR. LUDLOW: 9 A. They would be presented, if my memory serves 10 me right, either in the fall--I think it's the 11 fall, in October, early November. 12 Q. Okay. 13 MR. LUDLOW: 14 A. At the same time that the customer service and 15 the operating expense reduction and other 16 fundamental targets, including safety and so 17 on, are set as well. 18 Q. Sure, okay. Now there was--if we could go to 19 PUB-147. Okay, 147 was--the question asked 20 "what were the SAIDI and SAIFI targets for 21 2000, 2001 and 2002?" and so, we can add the 22 2003 target to that. The SAIFI 2003 target was 23 4.56, the same as 2002, and the SAIDI 2003 24 target was 4.75, a decrease from the 2002 25 target of 5.85, correct?	1 MR. LUDLOW: 2 A. Yes, that is correct. 3 Q. Okay. If we just go to PUB-148, and then 4 these were the actual SAIDI and SAIFI measures 5 for each of 2000, 2001 and 2002. So in the 6 case of 2000, the target was 6.5 SAIFI and you 7 achieved 4.93. So you exceeded your SAIFI 8 target for that year? 9 MR. LUDLOW: 10 A. That is correct. 11 Q. You also exceeded your SAIDI target for that 12 year. The target was 9.60 and you achieved 13 5.93? 14 MR. LUDLOW: 15 A. That is correct. 16 Q. Okay. The target for 2001 was a SAIFI of 5. 3 17 and you exceeded that. You had a SAIFI of 18 3.99? 19 MR. LUDLOW: 20 A. That is correct. 21 Q. I guess when I say exceeded - 22 MR. LUDLOW: 23 A. Well, hey, we did a good job that year. 24 Q. - you achieved a lower SAIFI, I guess, instead 25 of exceeded. The target for SAIDI for 2001
Page 83	Page 84
1 was 7.2 and you achieved a SAIDI of 3.73, so 2 you exceeded the target that year? 3 MR. LUDLOW: 4 A. That's correct. 5 Q. And the next SAIFI was 4.56 target and you 6 achieved 4.76, so slightly missed the target. 7 MR. LUDLOW: 8 A. Well, we missed the target. 9 Q. And SAIDI target was 5.85 and you achieved 10 4.54 so you bet your SAIDI target? 11 MR. LUDLOW: 12 A. That's correct. 13 Q. Okay. And the target for 2003 is the same 14 SAIFI target as 2002 again? 15 MR. LUDLOW: 16 A. Yes, that is. 17 Q. Okay. And the target for SAIDI for 2003 is 18 higher than what was achieved in SAIDI for 19 2002? 20 MR. LUDLOW: 21 A. That's correct. 22 Q. Okay. Now if we could go to PUB-13 and PUB- 23 14. Okay, the question in PUB-13 asked "what 24 evidence does Newfoundland Power have to 25 support the proposition that its general	1 service customers are not satisfied with the 2 current level or reliability in their 3 electrical service?" And you referenced the 4 Customer Service Survey conducted in June 2003 5 where general service customers ranked 6 reliability as one of the most important 7 attributes and 13 percent of your general 8 service customers indicated that reliability 9 of electrical supply needed some improvement. 10 And then PUB-14 is the reply concerning the 11 residential customers and the figure there 12 given is 20 percent, correct? 13 MR. LUDLOW: 14 A. That's correct. 15 Q. Okay. Now, I wonder if we could go to PUB- 16 150. 17 MR. LUDLOW: 18 A. I need a bigger table. 19 Q. And we can look to Attachment A, and I just 20 want to look at Question 31. This is the 21 Customer Survey, the actual form used by the 22 people conducting your customer surveys, 23 correct, Mr. Ludlow? 24 MR. LUDLOW: 25 A. This is the actual survey, Mr. Chair, yes.

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1 MR. KENNEDY: 2 Q. Okay. And question 31 was the question 3 relating to the gathering of information about 4 the reliability of the power supply, and 5 you've got "the power supply is reliable" and 6 then you ask people to agree or disagree and 7 they've got the choices there, and you ask 8 "how much improvement, if any, is needed in 9 that area?" and then they have a choice, none, 10 a little, a lot, don't know, not applicable. 11 Okay? All right. Just wanted to set up what 12 the question was before we actually looked at 13 the data. If we could look to Attachment F. 14 MR. LUDLOW: 15 A. Okay. 16 Q. And under "Customer Research" there's one-- 17 they're not numbered, these pages, so you'll 18 have to just skim through. One is called "How 19 well we are doing". Here we go. Okay, and as 20 stated in the first bullet, the graph 21 represents the percentage of customers who 22 either strongly agree or somewhat agree with 23 the statement, and the power is reliable; 24 among your commercials, I don't know what that 25 would work out to, about 97 percent?	1 MR. LUDLOW: 2 A. Approximately. 3 Q. Agree or strongly agree or somewhat agree that 4 your power is reliable and about 96 percent of 5 your residential customers strongly agree or 6 somewhat agree that your power is reliable? 7 MR. LUDLOW: 8 A. That is correct. 9 Q. Okay, and if we could go to--it might be the 10 next one, "How can we improve?" There you go. 11 And we've got it split between residential 12 customers and commercial customers and the 13 last bar graph there is "Reliability" and the 14 blue is none, the purple is a little and the 15 yellow is a lot. Would you agree with me that 16 based on this chart at least, it would seem 17 that the vast majority of your residential 18 customers would see that the reliability is 19 fine as it is, or could do with a little bit 20 of improvement, I mean, it would seem to imply 21 almost 98 percent of your residential 22 customers would fall into one of those two 23 groups. 24 MR. LUDLOW: 25 A. I think your assumption of the chart is
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1 accurate in that that's where the 17 and 20 2 percent is coming from in the previous 3 questions we referred to; however, keep in 4 mind that this is a global customer 5 satisfaction survey representing 800 customers 6 at this point in time. If we were in the, 7 say, 80 percent that there was a lot of work 8 required, we would have substantive change 9 required to the electrical system of our 10 province. Keep in mind where I'm going, in 11 that this survey is conducted, it is done on a 12 sampling base. There's 800 residential and 13 400 commercial customers done through a group 14 called, I believe is Telelink and that's 15 subject to check, but it is a third party. 16 What we have done, I'm quite pleased with 17 these results, I might add, Mr. Chairman. I 18 will say though that if we were to survey and 19 this was a question actually put to me by 20 Board staff at a technical conference, the 21 performance on the Walbourne's feeders within 22 the last two years as a result of a loss of 23 supply issue and under frequency and load 24 dropping, all in respect to the way we operate 25 our system, that would not be reflected. The	1 customers on the Wesleyville 02 project, which 2 is here today, have already experienced an 3 outage in the area of eight times the 4 corporate statistic which we're running in the 5 first six months. So, this satisfaction index 6 is presented and has been used as a trend 7 indicator overall on the Company. That's the 8 reason we then further investigate at, what I 9 would call the subset level, at feeder level 10 and what have you, and that's the reason we 11 haven't gone global in total overhaul of the 12 electrical system, rather pinpoint it in, I've 13 used the term "rifle shotted our approach" at 14 specific trouble spots. 15 Q. Okay, but the bullet underneath makes some 16 comments about residential customers who felt 17 that a lot of improvements were needed 18 identified these as required in meter reading 19 accuracy, than community involvement. And 20 then it goes, "Commercial customers who felt a 21 lot of improvements were needed, said this is 22 most often in relation to meter reading 23 accuracy than community involvement." So it 24 seems to note that, if I could say so, not a 25 great scramble on either part to see a lot of

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1 MR. KENNEDY: 2 improvement in reliability. 3 MR. LUDLOW: 4 A. Well, I think as an extension what the 5 observation here tells us is that we have 6 sampled 800 Domestic customers. I've got 300 7 feeders running out there. At the best, if 8 there was three on the Wesleyville 02 contact, 9 as an example, I'll just use that as an 10 example, that in turn will not sway these 11 results in totality. This is telling us that 12 their system on the Province of Newfoundland, 13 on the Island, in totality is running in 14 reasonable shape. That's what it is telling 15 us. What it is not telling us that as you 16 look at this system, that there are not weak 17 spots and trouble spots that require 18 addressing. That is not what this tool is 19 for. 20 Q. No, this is just giving you a blanket view of 21 statistically accurate supposed survey of your 22 customer group and how they feel about 23 reliability, correct? 24 MR. LUDLOW: 25 A. That's true.	1 Q. But depending on what customer you ask, they 2 may not have the same view on an individual 3 basis? 4 MR. LUDLOW: 5 A. This was also addressed actually on a regular 6 basis, gets addressed in several council 7 chambers around this province. And the reason 8 that we've addressed in several council 9 chambers is not because the lights are on, 10 it's usually because the lights are off. 11 Lumsden being a key point, already this year, 12 after multiple outages, one was 24 hours plus 13 over the Christmas season. We had another one 14 that happened a short while ago in June, I do 15 believe, it was 20 hours. The point I am 16 making here is that may never show up in this 17 survey. I've sat in those chambers myself in 18 those areas, I've been in Trepassey, I've been 19 in Port aux Basques, I've met with Mayor Stein 20 in Stephenville, as an example, in the past. 21 That basically may never show up in this type 22 of a document, but when you then take your 23 past performance, assess why the performance, 24 all these under-performing feeders, as we've 25 presented, is there something we should do
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1 either in the operating accounts or in the 2 capital accounts to address the under 3 performance, I think it's paramount for us to 4 move forward and try to address and improve on 5 those situations. That's the basis that we 6 use this document. If there's a global issue, 7 community effort, advertising, those types of 8 things, you would see it show up. 9 Reliability, I'm quite proud of that number, 10 to be quite honest with you. So that's the 11 kind of piece we do. 12 Q. Okay, I think it's indicated though in some of 13 your replies, Mr. Ludlow, that the Company has 14 no reliability target, for instance, on what 15 specific gains they hope to achieve through 16 their re-built substation projects, correct? 17 MR. LUDLOW: 18 A. That is correct. 19 Q. And that you have not quantified any specific 20 gains on reliability resulting from any of the 21 capital expenditures that you've made in the 22 past on rebuilding substations for 1992 to 23 2002, for instance? 24 (11:35 a.m.) 25 MR. LUDLOW:	1 A. Well let me just, if I may, address that one 2 for you, Mr. Chairman. A substation 3 equipment, if we're dealing with power 4 transformers or breakers, and I'm going to go 5 back to the analogy I used yesterday of 6 running that equipment to failure is not the 7 way to run the business. That's where we 8 bring in the information technology and the 9 ability to assess and optimize when that life 10 of equipment is nearing the time, you got to 11 get it out. Last year, we lost two--three 12 power transformers, one in Burin; we lost our 13 portable in Burin and we lost one in Port aux 14 Basques. Subsequently and just before that, 15 we had started what we referred to as a 16 predictive oil sampling process. Things that 17 aren't showing up in this capital budget are 18 three power transformers that we have found, 19 repaired and never be seen in the general 20 public as performing outages or capital 21 expenditures. We've changed our attack from a 22 calendar base maintenance program to moving 23 more of scientific analysis based. That's 24 where we then tied back into the information 25 systems that help us drive these projects. So

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1 MR. LUDLOW: 2 by using that, I won't show an improvement in 3 reliability because I won't let the 4 reliability fall. That's not a matter--the 5 other alternative to that was I've got a tap 6 changer on a power transformer that's failing. 7 Get a new one. Sorry, that's not the way 8 we've been running. We basically will go in, 9 try and identify and repair before 10 catastrophic failure. And these things just 11 don't fail and stop working. They can explode 12 and we've got all the other issues coming with 13 them. So that's, Mr. Kennedy, you may not see 14 and you won't see an improvement in power 15 system reliability as a result of a concrete 16 pad being put under a breaker in Salt Pond. 17 It won't show it because this is not all tied 18 strictly to reliability. This is prudent 19 engineering judgment and operation of a power 20 utility, minimizing the cost and capital 21 expenditures is our objective as we go 22 forward. 23 Q. Okay, but I thought we established at the 24 start that, for instance, we looked at PUB-9 25 and they were the projects that were justified	1 under the basis of if we were going to improve 2 reliability, correct? 3 MR. LUDLOW: 4 A. Where? Take me again. 5 Q. That's the principle justification, PUB-9. 6 Table 1 provides a summary of all projects in 7 the 2004 capital budget whose principle 8 justification is based on improvements in 9 reliability. So that's what we need to 10 measure it against, presumably? 11 MR. LUDLOW: 12 A. Measure it against, you may have to prove the 13 negative. And by that, what I'm saying is how 14 do I show that a power transformer that didn't 15 fail did not cause reliability to decrease. 16 Q. Okay, but that's different than saying 17 maintaining reliability as opposed to 18 improving reliability. 19 MR. LUDLOW: 20 A. That's a fair statement, fair statement. 21 Q. Right. And your safety target for 2003 is the 22 same as your actual safety achieved in 2002, 23 but there was nothing in the target set which 24 would indicate that there was a required 25 improvement in reliability.
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1 MR. LUDLOW: 2 A. Must be careful on those targets as well, 3 those targets are not--I'm going to use the 4 word that has been used here several time this 5 morning, "normalized". These targets include 6 safety in particular and a duration in which 7 we're able to impact a loss of supply issue, 8 it includes storms. A lot of utilities, as a 9 matter of fact, the majority of utilities in 10 Canada normalize these out. We will not 11 normalize them out. So hence, my ability to 12 work with Newfoundland and Labrador Hydro, 13 which I might add has been, there's been the 14 URSC committee we've been working on, the 15 Inter-utility Reliability Standing Committee, 16 has been working quite well on these types of 17 topics. So, to say that we should include 18 another factor on top of what's there, I think 19 is inappropriate. These are calculated on 20 running three year averages is the way these 21 are done. We run them on three years and that 22 way, that takes in, if I had, like last year 23 was 17 trips, I've got 17 trips I've got to 24 deal with this year, it's in my average. If I 25 had none last year, my average is decreased or	1 suppressed. So I do not set these averages 2 based on, well, this is too high or that's too 3 low. 4 Q. Okay, just so we're clear, you do not set 5 individual reliability targets on anything 6 other than your system wide infrastructure? 7 MR. LUDLOW: 8 A. That's fair. 9 Q. Okay, you do not go back and do an analysis to 10 necessarily see what reliability increased or 11 decrease reliability you may have achieved by 12 virtue of past capital expenditures? 13 MR. LUDLOW: 14 A. Not totally correct. What we would do and we 15 have done and presented in past budget 16 filings, we have in fact tracked every 17 distribution feeder upgrade on the five-year 18 average leading into the project, and then, if 19 my memory serves right, in the last year's 20 budget there was a table presented that 21 provided the subsequent year's performance 22 back against the previous average. But 23 strictly speaking, do I complete that project 24 and say I expect a 70 percent reduction in 25 SAIDI? No. But I do monitor and I will

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1 MR. LUDLOW:

2 readjust my capital budgets on a go-forward
3 basis and the approach, alternative
4 evaluation, construction standards and so on,
5 depending upon past successes or the
6 opposites.

7 Q. Okay, a couple of more questions and that will
8 be it for this. If we could just look at NLH-
9 62, because I figured I'd just be fair here on
10 where I'm getting this statement from. This
11 was the question concerning there were three
12 reconfigured feeders and it was what is the
13 predicted reliability of the three
14 reconfigured feeders and how does it compare
15 to the Company average. And it said,
16 "Newfoundland Power has not predicted the
17 reliability of the three reconfigured feeders
18 and therefore, cannot compare it to the
19 Company average."

20 MR. LUDLOW:

21 A. Okay, I just need to know where this reference
22 is, so I need to get my book.

23 Q. Volume 3, Distribution. Appendix 3,
24 Attachment B, it's the Pulpit Rock substation.
25 I imagine the three feeders would be under

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1 the reliability, and the answer was no, we did
2 not specifically predict what the reliability
3 improvement would be of the three feeders,
4 verses the two.

5 Q. I guess that begs the question why not? Why
6 wouldn't you conduct that analysis of after we
7 do this work, what result do we expect?

8 MR. LUDLOW:

9 A. Well really I'm not even convinced of the
10 value of it, to be quite honest with you. If
11 we have assessed and determined, sorry, Mr.
12 Chairman, that we have a problem in the Pouch
13 Cove through to Torbay, up as far as the old
14 airport, which is also one of the fastest
15 growing areas in the east end, which is not
16 the entire reason, the reason it's being done
17 is reliability, okay. We have got problems in
18 that area, that's the premise. Now, we know
19 that area has been prone to issues, prone to
20 problems and it's grown. You put all that
21 together, would I go or not go if I could get
22 a nine, verses a 10 percent improvement in the
23 reliability? That is not the whole basis. We
24 know we can improve. What it is, I am not
25 able to predict it, physically I am not able

1 just Appendix 3, which is the Lumsden, Cape
2 Freels, Bay Roberts, Port de Grave and install
3 new feeder, PUL 03, unless that's referring to
4 the three--I believe in the Pulpit Rock you
5 have two there now, you're adding a third?

6 MR. DELANEY:

7 A. Yes, that's what is occurring there. Right
8 now, the Pulpit Rock substation serves the
9 communities of Torbay, Flatrock, Bauline,
10 Pouch Cove and that area. And the
11 configuration of the system as it stands right
12 now, is that there are two feeders, so if--the
13 customers, I'm not entirely sure how they
14 split there, but let's take for instance they
15 split fifty/fifty the number of customers. If
16 you were to have an outage on one of the
17 feeders and that would affect fifty percent of
18 the customers. The proposal here is to bring
19 out an additional feeder and to split the load
20 three ways, rather than two ways. And that
21 will improve the reliability of the system, I
22 think just as a physical reality, it will
23 improve reliability because you have now three
24 subsets, rather than two subsets. And the
25 question here, of course, asked did we predict

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1 to do it. I've attempted, by the way, but I
2 can't do it.

3 Q. All right, but just go to page 4 of the report
4 that we have up on the screen though. There
5 was an analysis conducted and it's reliability
6 implications and it's a study showing the
7 relationship between total feeder length and
8 then the outage statistic expressed as a
9 SAIDI?

10 MR. LUDLOW:

11 A. It's a little more complicated than straight
12 average.

13 Q. Yeah, fair enough. And this will be one I'm
14 sure the statisticians would crunch and lots
15 of deltas this and deltas that, but we end up
16 with a trend line which shows that the longer
17 the feeder, the more incidence you're going to
18 have of interruptions and in this case,
19 expresses duration index, correct?

20 MR. LUDLOW:

21 A. Correct.

22 Q. So that the whole purpose of putting another
23 feeder in place is you're potentially
24 shortening the feeder length, is that correct?

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1 MR. LUDLOW: 2 A. That's in effect the impact. What we're doing 3 here, if this here shows an analysis of--or a 4 correlation between duration of outage and 5 length of feeder. 6 Q. Right. 7 MR. LUDLOW: 8 A. Now, in my brain that tells me that should be 9 a pretty, well that's pretty commonsense. But 10 it doesn't tell me that I'm going to be 11 pushing out feeders or additional feeders or 12 capacity in all my long feeders. Okay? Now, 13 we here, in this case, have a long feeder, a 14 densely populated feeder in a growing area. 15 You put all of those factors together, look at 16 past performance, on the end also of a radio 17 transmission system that is not one of the 18 seven. And this is Torbay, by the way, we've 19 got a strange name on the substation called 20 Pulpit Rock, but that's where it is. Put all 21 that together and that's the reason this is 22 being presented. 23 Q. Okay, but if we go over to the next page, 24 under the discussion and after looking at the 25 various options, the third point there, you	1 look at option two, you say that's the new 2 substation, that's quite expensive. Option 3 one and three will increase the capacity of 4 the existing system and then you go, "Option 1 5 will reduce the length of the Pulpit Rock 6 distribution feeders and consequently improve 7 the reliability." So wouldn't you then, by 8 virtue at least of this trend line and the 9 data that you have, be able to predict by the 10 introduction of this new feeder what 11 improvement you should be able to achieve by 12 virtue of its introduction into the system 13 there? 14 MR. DELANEY: 15 A. I don't think so, because the length of feeder 16 is just one of numerous variables that you 17 would have to bring into any assumptions or 18 calculations with respect to the reliability 19 of a feeder, I would want to know as an 20 engineer how many automatic sleeves are on 21 that feeder, how many cut outs are on that 22 feeder, how many transformers are there 23 without lightening arresters, what's the size 24 of the conductor, is it Number 2 AC or is it 25 4/0. There would just be a multitude of
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1 factors involved in taking together some 2 statistical analysis of making some assumption 3 as to how that's going to improve as a 4 consequence of these actions. I just think 5 it's a very difficult analysis to do. 6 (11:50 a.m.) 7 Q. One last question on this and that's PUB-149. 8 The question was, if it's stated MP is not 9 established for reliability targets for 2004 10 to 2008, how does Newfoundland Power decide 11 where it should focus its efforts to improve 12 reliability. And the second paragraph to your 13 reply, "While Newfoundland Power has not set 14 reliability targets for the 2004 through to 15 2008 period, we use reliability statistics to 16 focus on geographical areas which over a five- 17 year period experience worse than average 18 service reliability". So, I've seen the-- 19 there's a feeder report and that goes through 20 an analysis of the performance of different 21 feeders and looks at what the causes were for 22 outages and were they caused by extraordinary 23 events like a storm, you discount that and so 24 on, where it's unexplainable and the 25 engineering review indicates that the line is	1 just in a deteriorated state, then you make 2 the decision to rehabilitate that line, 3 correct? 4 MR. LUDLOW: 5 A. Correct. 6 Q. Okay, so that applies to feeders. Do you do 7 the same review on then your other components 8 of your system, substations, transmission? 9 MR. LUDLOW: 10 A. Okay. Let me start now and I'll hand off to 11 Mr. Delaney. We take our system, I think 12 we've gone through the generation portion 13 fairly substantively in the engineering 14 details. So, I'll leave that one for the time 15 being. We move it up to transmission. Every 16 year our transmission lines are controlled 17 with a detailed inspection and that's also 18 further supplemented with throughout the year 19 inspections of condition. And that can be 20 from a sounding of the poles, to shelliness of 21 the poles. We take conductor samples in 22 specific areas if we've had conductor breaks 23 and have these analyzed by laboratories. 24 Examples of that would have been the 301 25 project where we had interior deterioration as

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1 MR. LUDLOW: 2 a result of salt and sulphur showed up. We 3 have no idea where it comes from, but the 4 brittleness of the conductor was being--sorry, 5 the conductor was becoming brittle and less 6 bendable is the word I'll use. That is an 7 ongoing process. That will also include 8 right-of-way conditions. We then do in our 9 substations monthly inspections and that would 10 be to check for safety and general operating 11 procedures, the specific equipment is staged 12 through a series of processes. And where I'll 13 go with that would be, I'll take the oil base 14 maintenance or the condition base maintenance 15 as an example. Every year we will take and do 16 take samples of oil in transformers to check 17 its ability to express arc, are we getting 18 contaminants, are we getting, you know, 19 explosive gasses. We will also look at and 20 investigate alternatives to its repair or 21 removal. We will also look at radiators, all 22 the various pieces of equipment on a regular 23 predetermined basis, a transformer is 24 overhauled, from paint to bushings to the 25 internal workings of it. Abreaker, for	1 example, and the number escapes me, I will say 2 8 to 10 years is literally stripped down and 3 overhauled. It's condition is assessed at that 4 point. Prior to that you get different levels 5 of investigation into the operation of the 6 equipment. So, all through that period this 7 is an ongoing condition assessment, you're 8 looking at it, you're working it, you're 9 maintaining, you're repairing it. You go to 10 your transmission--I've done that one--go to 11 distribution and what we're doing on that 12 front is over five year period, we're taking 13 20 percent a year of our feeders to go through 14 and literally walk underneath each pole, look 15 for some things as simple as split cross-arms, 16 a loose connector that's visible, certain 17 things that these people are trained to look 18 for, automatic sleeves, cut outs. PCB 19 transformers or transformers that are oil 20 filled, we have no PCB per se that we're 21 finding. We may be finding some low level 22 contaminations that we're working on. 23 Insulators, wire, we will look at the wire. A 24 trained eye can pick up a number 4 copper 25 sitting in that insulator that's been there
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1 for 30 years that's now smaller than a pencil, 2 it's worn. That then all comes back into the 3 condition assessment. That is further aligned 4 with, I'll look at history, historical 5 performance. We will tie that back against 6 what's happening in the industry. At a 7 previous hearing we had a report where we 8 talked in terms of the BI & I Report on power 9 transformer failure rates that are being 10 predicted in the foreseeable future. And it 11 was interesting because last year I lost 12 three. Now, what can I do to mitigate that? 13 I don't necessarily want to change the 14 transformers, but I certainly want to get in 15 there, change my maintenance so I can work on 16 it and head off the failures. That all goes 17 in the pot of the capital program at the 18 manager and departmental level and that's how 19 we focus. That's how we got to Wesleyville. 20 That's how we get to the various projects such 21 as substations and radiators and what have 22 you. 23 Q. I think you said you were going to let Mr. 24 Delaney actually have a chance to talk. 25 MR. DELANEY:	1 A. I don't know if there's much I can add to 2 that. 3 Q. No, I wouldn't imagine. 4 MR. LUDLOW: 5 A. Sorry, boss. 6 Q. All right. Just for something completely 7 different, what I'd like to do is just cover 8 one last topic area. I think I may be 9 finished with the Panel after that and it 10 would be appropriate to take a break then 11 anyways and then I'll be able to advise 12 counsel whether we're set up for the IT once I 13 just review my notes. 14 CHAIRMAN: 15 Q. Fine. 16 MR. KENNEDY: 17 Q. If that's okay, Chair. 18 CHAIRMAN: 19 Q. That's fine. 20 MR. KENNEDY: 21 Q. Thank you. And I presume you probably know 22 what's coming, that's a dark skies question 23 and I have some hard copies. 24 MR. MYLES: 25 Q. You're planning on calling these people to

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1 MR. MYLES: 2 testify, are you? I'll take that as a no. 3 MR. KENNEDY: 4 Q. Yes. Chair, these are two articles, they were 5 provided to counsel for Newfoundland Power 6 previously, a couple of day ago, so I think 7 they hopefully brought this to the attention 8 of their witnesses already. 9 MR. MYLES: 10 Q. That's correct, Mr. Chair. 11 MR. KENNEDY: 12 Q. And I guess we should label them Information 13 Request Number 2, sorry, Information Item 14 Number 2 and Information Item Number 3. 15 Number 2 would be the New York Times article 16 and Number 3 is the NASA article. And 17 gentlemen it's indicated in one of the replies 18 to an RFI, PUB-45 that Newfoundland Power has 19 been aware of the dark skies initiative with 20 respect to light pollution for some time, but 21 that you have not adopted any policies in 22 regards to the matter. Just for the sake of 23 brevity, you've also indicated in PUB-46 that 24 you use high pressure street lighting, high 25 pressure bulbs in your street lighting and	1 that in PUB-47 you indicated that you don't 2 offer low pressure sodium lighting as an 3 alternative to high pressure sodium lighting. 4 I wonder if you could just comment on that 5 first. Is there a reason why you don't employ 6 the more energy efficient low pressure sodium 7 bulbs. 8 MR. LUDLOW: 9 A. Okay. There's a couple of items, I guess. 10 First of all, lighting and this is, I think, 11 brought out in the two articles. There's a 12 balance between cost and lighting, I think 13 lumens or lux are the appropriate terms that's 14 being used or candle powers, I'm not sure what 15 it is these days, the ability of the light to 16 provide the service required. We have not 17 stocked or at this point, have any intention 18 of stocking the low pressure sodium lighting 19 fixture or bulb. The reason for that is, it 20 is true, it is more energy efficient, it is 21 also true that it provides a 22 monochromatic light that also poses the 23 reverse in that there are security concerns 24 and your ability to distinguish between 25 colours after dark as a result of the
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1 absorption rate of the light emitted. 2 Q. If you could put it in lay terms, the existing 3 high pressure bulbs that you use give off a 4 white greeny glow, the low pressure bulbs are 5 known for giving off a more orange tinged 6 light. 7 MR. LUDLOW: 8 A. Close. The mercury vapour that's referred 9 gives a white or a really bright light. The 10 high pressure is a yellow light. The low 11 pressure sodium that's being referred to is on 12 the lower end of yellow to orange. 13 Q. Okay. But as far as you're aware, the low 14 pressure bulbs that are available on the 15 marketplace, are they compatible with the 16 existing cobra head lamps that you use in most 17 of your street lighting? 18 MR. LUDLOW: 19 A. I have to back up and say here that although 20 we have been aware of this, the--I have gone 21 for twenty odd year in this business, it has 22 been raised to my attention on, I would say, 23 three occasions, the low pressure sodium. 24 Once in 1994, I worked with low pressure 25 sodium lighting in Prince Edward Island and a	1 third time was by Board counsel. And when I 2 brought this to the attention of our standards 3 group, they were--how would I say--a little 4 bit dumbfounded about the whole idea, not in a 5 negative way, but it was not something that 6 was top of mind. So, I want to clarify that 7 this has not been a burning issue by our 8 customers. As a matter of fact, the reverse, 9 in my experience in PEI using low pressure, 10 there have been concerns about the type of 11 light. 12 Q. Sure. Now, in addition to the types of bulbs, 13 there's also issues about the just the 14 lighting design itself, correct. 15 MR. LUDLOW: 16 A. That is correct. 17 Q. Okay. And there's an example in the article, 18 "The Fading Milky Way" which is at page 3 of 19 the article showing the flat lens cobra head 20 fixtures, instead of the ubiquitous drop lens 21 cobra heads. Do you see that in the article? 22 MR. LUDLOW: 23 A. I do. 24 Q. And Newfoundland Power uses the ubiquitous 25 drop lens cobra head luminary?

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1 MR. LUDLOW: 2 A. We've used both. We have, in fact, 3 experimented or tried the flat lens cobra head 4 with the high pressure bulb. It was amazing 5 that this do produce a more focused light. 6 Whereas the dropped head cobra head luminair 7 has a tendency to disperse light and give more 8 of a softer edge. And I guess after reading 9 the articles and doing a little research, it 10 also reflects some back up as well. The 11 problems that we were receiving, Mr. Chairman, 12 was that we were sending trucks because people 13 thought the lights were out. They were so 14 focused and the breadth on the roadways or 15 that they were used to either mercury vapour 16 or high pressure, we were using high pressure, 17 but it was the direction of the light, if you 18 can picture it. They, in fact--we would get 19 calls, there's something wrong with the light, 20 we're not getting the coverage that we would 21 traditionally get here. 22 Q. That wouldn't be a reason though, would it, to 23 not use the more light sensitive flat head 24 fixtures? 25 MR. LUDLOW:	1 A. Well, customer concerns or customer complaints 2 would certainly drive or direct our attention 3 as to how we proceed with these items. 4 MR. DELANEY: 5 A. There's one practical example that I've heard 6 of, if you were to light a parking lot with 7 low pressure sodium lights, you cannot tell 8 the difference in the colours of the cars on 9 the parking lot. So, I would suspect that 10 that would be a concern to the RNC and some 11 others. 12 Q. That's all the questions I have at this point, 13 Chair. 14 CHAIRMAN: 15 Q. All right, thank you, Mr. Kennedy. I guess, 16 it's 12:00, so we'll take the scheduled 15 17 minute recess and come back. Thank you. 18 (RECESS - 12:00 noon) 19 (RESUME - 12:28 p.m.) 20 CHAIRPERSON: 21 Q. Okay, Mr. Myles, I guess you perhaps have some 22 questions for redirect. 23 MR. MYLES: 24 Q. Mr. Chairman, I have one question and one 25 point. The point is that in reviewing the
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1 table, which is found as Appendix A in the 2 Walbourne report, which is Volume 2, 3 Substations Appendix 4, Attachment A, the 4 Appendix A, I think at least one of those 5 numbers is wrong, and what we plan on doing is 6 filing a revised table for you in the morning. 7 And I have one question, and it's for Mr. 8 Ludlow. Mr. Ludlow, based upon the 9 engineering and the testing that's been done 10 to date with respect to the steel penstock at 11 New Chelsea, can you advise the Board as to 12 what alternatives are available to 13 Newfoundland Power, other than replacement of 14 the steel penstocks? 15 MR. LUDLOW: 16 A. Mr. Chairman, from our perspective, based upon 17 all inputs, there are no alternatives other 18 than to replace this penstock. The report, as 19 we went through yesterday, did make a 20 statement that there was anticipated to be ten 21 to fifteen years of remaining life in the 22 penstock, in the steel section. However, when 23 the actual inspection, ultrasonic inspection 24 was done, as well as the external visual 25 inspections were completed, it became very	1 clear that this was at the end of its useful 2 life. Also, the point that was made very 3 clear to me, was if any work were to proceed 4 around the penstock and have it unearthed, the 5 actual structural integrity of it being 6 supported and so on under working conditions 7 would be a real concern. Hence, the 8 replacement that has been put forward. 9 MR. MYLES: 10 Q. Thank you, Mr. Ludlow. I have no further 11 questions, Mr. Chairman. 12 CHAIRPERSON: 13 Q. Thank you, Mr. Myles. Commissioner Powell, do 14 you have any questions? 15 COMMISSIONER POWELL: 16 Q. Thank you, Chair. I have a lot of questions. 17 I don't know if I'm able to ask them all. I 18 was told many years ago that most a person 19 ever understood of any subject is five 20 percent, and all you have to do is sit here, 21 you realize how accurate that was. The Dark 22 Skies initiative is the last thing counsel 23 brought up. Has Newfoundland Power done any 24 economic analysis to see if it was feasible to 25 do it, what it would cost and what the

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1 COMMISSIONER POWELL: 2 potential saving would be, from a generation 3 side? 4 MR. LUDLOW: 5 A. No, Commissioner Powell, we have not at this 6 point in time completed any economics 7 regarding the use of low pressure sodium. The 8 point here that we did move though from a 9 mercury vapour or the white light to the 10 yellow light or the high pressure sodium in 11 the last ten to fifteen years and are still in 12 that change out process, and that was based 13 upon lower energy consumption with the high 14 pressure versus the mercury vapour. To go to 15 the other step, to move it to the low 16 pressure, as is raised by the Dark Skies 17 group, and I'm not even sure they're 100 18 percent behind this area, it's the whole 19 concept of light pollution is my understanding 20 of it. One of the alternatives may be that 21 end. We have not looked there, sir, and 22 because there are security and safety issues 23 as well. 24 Q. Do you have any data to show the savings going 25 from the mercury to the high?	1 MR. LUDLOW: 2 A. Yes, we do, and as a matter of fact, to give 3 you an example, I'll lead and then you can 4 fill, Phonse, if you would, is that a 150-watt 5 mercury vapour light will throw off the same 6 candle power as a 100-watt high pressure 7 sodium light, and the wattage that I'm 8 referring to is the energy consumption. So it 9 is much more efficient to be using the high 10 pressure sodium versus the mercury vapour. 11 That's on the actual operating costs. The 12 other side of that equation, Commissioner 13 Powell, is the actual purchase cost of the 14 light itself is different. It is not as 15 simple a matter as changing a bulb in that, if 16 I go back in my--a bulb, a mercury vapour bulb 17 would be in the four to five dollar range. A 18 high pressure sodium bulb is in the \$25-30 19 range. So there's the operating side from the 20 generating perspective and then you have the 21 actual cost of the head and the maintenance or 22 the purchase of the bulb. So that's some 23 factors. 24 MR. DELANEY: 25 A. Just to add a little bit to it. The exact
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1 value that we've determined is that high 2 pressure sodium saves about 37 percent of the 3 energy for the same amount of light versus 4 mercury vapour, and in the system now, there 5 is about 54,000 street lights and 80 percent 6 of them are high pressure sodium and 20 7 percent are mercury vapour. 8 Q. So there have been significant saving then, in 9 terms of the amount of power that need to be 10 generated to keep the street light going? 11 MR. DELANEY: 12 A. Yes. Over the years, from the move from 13 mercury vapour to high pressure sodium. 14 Q. So this is the same calculation that you see 15 the--trying to get homeowners to switch from 16 the normal light bulb to the fluorescent light 17 bulb and they say after seven years, or 18 depends on which you believe, that they do 19 have on the package some sort of an economic 20 analysis of why I pay \$8.00 for a bulb as 21 opposed to getting three for \$1.00. 22 MR. LUDLOW: 23 A. Pretty much the same scenario, Commissioner 24 Powell, yes. 25 Q. But you have no indication if you drop down	1 another level that the savings would be as 2 high? 3 MR. LUDLOW: 4 A. This next step is broader than straight energy 5 dollars, I guess is the point. We haven't 6 gone there as of yet, and actually there are 7 very few utilities that--matter of fact, I 8 don't know of any utility in Canada that have 9 gone with all low pressure. I referenced my 10 work in Maritime Electric or in Prince Edward 11 Island, I'm sorry. There, the roadways are 12 owned or the lighting is owned by the 13 Provincial government. It uses a low pressure 14 sodium light. Now that's a--I'm going to-- 15 bear with me, I might be off a foot, but a 10 16 to 12 foot fluorescent tube type of fixture, 17 you know, it's a long overhanging style 18 because of the low start required to do this. 19 That's a totally different head than the cobra 20 head that counsel and I were discussing 21 earlier. That has brought its difficulties in 22 operating and management because we also ran 23 that contract and handling a 10 or 12 foot 24 fluorescent bulb on a line truck becomes a 25 challenge, if you can picture it. UPEI has

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1 MR. LUDLOW: 2 also used the low pressure lighting, low 3 pressure sodium lighting on some of their, I 4 guess what do you call it, that ground 5 lighting and those types of things. As late 6 as yesterday, I did check with my counterpart 7 at Maritime and his comment was there is some 8 concern. Now whether that concern is with the 9 difference in lighting, everybody with a 10 change needless to say, that's not being 11 negative, you know, to go from a bright yellow 12 to a deeper yellow, that's a concern. And 13 also, the focusing of the light and the 14 colours and the security are also issues that 15 have been raised, other than the straight 16 economics. 17 Q. No thought then to sort of doing a public-- 18 excuse me, a pilot project and informing the 19 public what you're doing at such an area so 20 they wouldn't be alarmed, assuming the lights 21 were out when they're actually on? Because 22 the highways now, you drive down, at least my 23 part of the country, you get the feeling that 24 different street lights give different light. 25 There are times you, as you say, you think the	1 street light is out but it's--that must be a 2 different bulb you have in there? 3 MR. LUDLOW: 4 A. This may very well be the difference that I 5 was explaining to Counsel Kennedy earlier. 6 The difference between, I think the word is 7 ubiquitous, the dropped head versus the flat 8 head, where we referenced cobra-style 9 lighting, and what it is, it's the piece that 10 sticks out on the end of the steel arm, and 11 where they're flat, the actual reflector of 12 that light is up in the head, so there's a 13 metal reflector pushing down which gives it 14 very firm parameters, if you think about the 15 lighting pattern. With the ubiquitous head, 16 the reflector is up here, but there's a 17 refractor in the glass, such that when the 18 light hits the glass, it goes on a much 19 broader scheme. That has ramifications from 20 lighting design, from closeness of design in 21 parking lots and those types of things as 22 well. If we were designing a highway, just 23 say the crosstown arterial, that would have 24 impact on how close or how far away you would 25 put your standards as well. So these are just
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1 factors that come in. 2 Q. So I have security lighting in my yard, 3 compliments of Newfoundland Power, which I pay 4 them a small fee, would I have a choice 5 between wanting more focus as a broader, or do 6 you have a standard one that you - 7 MR. LUDLOW: 8 A. Right now, in our inventory, we would 9 basically carry one type of standard for that 10 style of lighting and that most likely, if 11 it's a yellow light, it's a 100-watt high 12 pressure sodium light with a dropped 13 reflector. We did have some of the flat type 14 of glass, but we had to--we discontinued it is 15 what happened. So we don't carry sort of a 16 wide range of lighting, and that's another 17 item that would come into play. 18 Q. Good. Thank you. I started with that one 19 because the questions were in my head from the 20 previous discussion. The one question I 21 wanted to talk with you about is when I read 22 the application and read all the evidence that 23 was submitted, and then listening to the 24 counsel for Hydro, I was left with the 25 impression that, I don't have the figure here,	1 but \$6.9 million in energy off of your 50 odd 2 billion dollar. I didn't get the impression 3 that the communications with Hydro was there. 4 I mean, Newfoundland Power is primary 5 distributor of power, even though they have 23 6 various generation sites, but in the whole 7 grid, it's a relatively small portion of it, 8 and so the one on like Chelsea, we'll just use 9 as an example, certainly detail in why it 10 needs to be replaced and that, but my question 11 was do you need to replace it, and do you 12 really need to replace it that is the least 13 cost, and I was interested in your discussion 14 with Hydro in terms of least cost and not 15 obviously the first dollar you see. There's 16 so many dollars you have to look at, and I 17 appreciate that. That's just good business 18 management. But, am I right in assuming that 19 Newfoundland Power developed the Chelsea 20 project on their own because they felt that 21 they needed to replace it without sitting down 22 with Hydro and saying "do we need to? Do you 23 have a better alternative for us?" In terms 24 of energy to the grid and costs for the rate 25 payers.

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1 MR. LUDLOW: 2 A. We would not, in the Chelsea project as an 3 example, have sat down with Newfoundland and 4 Labrador Hydro and discussed, how would I say, 5 what we're doing or where we're going with 6 respect to Chelsea. We would however be 7 continuously discussing with Hydro on load 8 forecasting, energy production and where we 9 see, on an annual or, you know, throughout the 10 year in system operations. So I certainly-- 11 I'll come back to that point, Commissioner 12 Powell, if I may, but I certainly wouldn't 13 want to leave you with the impression that 14 discussions between Newfoundland Power and 15 Newfoundland Hydro are not occurring. They 16 definitely are, on every aspect of operations, 17 engineering, planning, outage management, 18 standby generation. Even this summer, to give 19 you an example, we were in discussions as late 20 as July regarding the planning and outage 21 management for next July's outage to the 22 southwest coast when they are doing their work 23 on 214, 214L which is a long radial. So I 24 just wanted to make sure that's clear. 25 There's a lot of work on that front. On the	1 forecasting of energy production and load and 2 energy purchase, that discussion we forward 3 and discuss the load profiles on an annual 4 basis with them, where we see loads growing, 5 where we see things happening, and part of 6 that would also be then our ability to 7 generate. That's also part of that exercise. 8 With respect to the economics of the project, 9 that is something we have done in-house and 10 have always done so. You know, it's not that 11 we wouldn't talk to them about it. We just 12 haven't. 13 Q. The issue of duplication is an issue, I guess, 14 that came up with Newfoundland Power's General 15 Rate Application. It came up at Hydro's rate 16 application. It came up on the Capital Budget 17 hearing. And the Board, in PUB-36 on Schedule 18 C, Item 1X, as condition for future filings - 19 MR. LUDLOW: 20 A. I wouldn't have it. 21 Q. I'll read it. 22 MR. LUDLOW: 23 A. If you would. 24 (12:45 p.m.) 25 Q. 1X said "Newfoundland Power shall file future
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1 Capital Budget Applications in accordance with 2 the following guidelines," and there's 13 or 3 12 of these listed. No. 9 is "a description 4 and related documentation outlining the 5 results of any discussions of the project that 6 have taken place between the utilities in an 7 effort to reduce expenditures by avoiding 8 duplication of services or increased sharing 9 of resources and expenses." So when I read 10 that, the generation, and I said, you know, 11 Hydro is the generator in the province, so 12 therefore all your generation projects would 13 have captured under that. And then, we talked 14 about least cost and one of the things that 15 there's been a lot of money spent by both 16 utilities over the last number of years, at 17 least applications came to have expenditures, 18 was fairly sophisticated computer models, 19 talking about the efficient use of the 20 resources, the ability to look at sources of 21 generation and running them at the optimum 22 level. Holyrood, from my understanding, years 23 ago it was just there for peaking. Now it's a 24 basic part of our generation. The ability of 25 this computer modelling, my understanding, was	1 ability to be able to use Holyrood and 2 essentially take it and get the efficiencies 3 up. 4 So just like a car, you run around town 5 and you get 10 miles to the gallon. You can 6 run around the highway, you get 30 miles to 7 the gallon and different engine configurations 8 you can be able to optimize, depending on what 9 you want it for. So some of the figures 10 thrown in justification using \$20 a barrel or 11 \$28 a barrel of oil, to me it didn't mean it 12 was pertinent, because maybe if New Chelsea 13 wasn't there Holyrood probably would be 14 running for half an hour every day and 15 therefore it mightn't cost any more oil 16 because you're getting more efficient because 17 you're running it longer. That's just a 18 layman. So these are the sort of things that 19 I would have thought that Newfoundland Power 20 would have to get with Hydro and saying, you 21 know, we have this generation. We've had it 22 for 50 years. We're going to spend \$4 million 23 to refurbish it, but do we need to? Because 24 would that not make your system more reliable 25 or more efficient and therefore the need is

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1 not there. 2 MR. LUDLOW: 3 A. Two things, if I may start. I would agree 4 with your premise that Newfoundland and 5 Labrador Hydro is a generator. They are also 6 responsible for the 230 Kv grid on the island. 7 There's also, I think, how would I say, we are 8 also a generator and have been for in excess 9 of 100 years, and I just want to make that 10 point. 11 Q. I realize that. 12 MR. LUDLOW: 13 A. And that's 23 small hydro are very valuable 14 from low-cost energy production. So that's 15 one piece I would put out to the table. Also 16 I think it's important that on this island 17 there are other generators in people. We have 18 Deer Lake Power and also Abitibi Consolidated 19 and there's a NUG in Rattle Brook, which the 20 name escapes me. 21 The second point is that when we look at 22 the cost of running New Chelsea, and we do 23 our, and I'm saying our, extended costs 24 through capital in keeping the systems going 25 and everything else, and we're in the three	1 and a half cent range, the last production 2 facilities to come online on this island, it's 3 my understanding, was in the five and a half 4 plus range. So from a straight economics on 5 that side, that should show, at least to our 6 way of thinking, Commissioner Powell, that 7 that's a very positive project. 8 Back to your point of generation, whether 9 it's \$20 a barrel or \$28 a barrel or \$32 a 10 barrel, the fact is, as I would see it, is 11 that if we produce X number of gigawatt hours 12 of energy at Chelsea, it's going to come from 13 somewhere and if it comes from--and it will 14 eventually come from Holyrood, depending upon 15 the time of the year and water usage, it will 16 cost money to generate that energy. It's not 17 so small that it'll run when the machine is 18 shut down. The point I'm making, to generate 19 energy will cost money. So to step back from 20 where I'd sit, we basically run our hydro 21 systems, but in full, constant communication 22 with Newfoundland and Labrador Hydro. On 23 their dispatch, for example, we can get a call 24 today, all hydro on, all--whatever you got. 25 Needless to say, if we don't have water, we
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1 can't run them. But that's the type of 2 operations that are in place to minimize peak, 3 to minimize the production. That conversation 4 is happening continuously between our two 5 utilities at the control centre level. So the 6 dispatch of hydro, the dispatch of the gas 7 turbines is not something that we do totally, 8 how would I say, removed. That's like that 9 with Newfoundland Hydro. So I'm not sure that 10 that's clear in these discussions. 11 Q. That wasn't the--I appreciate that, and I take 12 that as a given. My only question is that 13 it's just like if I get in my car now and I 14 drive down Elizabeth Avenue and I go two 15 kilometres, Elizabeth Avenue is that long, or 16 if I was up there on the arterial route and 17 drive two kilometres, I have all the same 18 costs, but I'll probably - 19 MR. LUDLOW: 20 A. That's fair. 21 Q. - only have to burn half a gallon or litre of 22 gas to do it, as opposed to going down there. 23 So I'm saying it's more efficient. I mean, 24 for the same litre of gas, I can probably go 25 four kilometres on the arterial route, but the	1 maximum, if I hit all the lights on Elizabeth 2 Avenue, I'm only going to get - 3 MR. LUDLOW: 4 A. Fair assessment in the operating efficient-- 5 sorry. 6 Q. Yes. So that's where I'm saying the question-- 7 -when I looked at New Chelsea, it's not that 8 the costs are reasonable or anything else like 9 that, but given the total thing, do we need 10 it, at this point in time. And so that's 11 where the experts at Hydro are saying, "gee, 12 put this in our equation. We'll run this 13 through," and maybe we'd eliminate a bunch of 14 street lights because we know now, with our 15 computer models, we should only be running-- 16 and that's what's missing. That's what I 17 said--and I thought that's what we were trying 18 to capture in PUB-36 in Schedule C was that 19 little nub that there. It's an irritant as 20 much as anything else, but you think that that 21 needs to be done. 22 MR. LUDLOW: 23 A. When you look at the size, the relative sizes 24 of these plants, your point is well taken 25 regarding operating efficient ranges, and I

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1 MR. LUDLOW: 2 think that's the - 3 Q. Yes. 4 MR. LUDLOW: 5 A. - and I think that's the--you get in a range-- 6 I'm not--I can't talk to you about Holyrood. 7 I don't know the details of the operating, but 8 I do know the fundamentals of operating 9 efficiencies for thermal plants. I agree with 10 what you're saying. Subject to check, if a 11 unit is on 150 megawatts at Holyrood, we're 12 talking approximately, I got 3.7 in my mind or 13 4 megawatts is what we're saying here. Now 14 that little piece, in relative sizing, is huge 15 differences, and I fully acknowledge your 16 point. When we looked at this project, I 17 wouldn't use the term 'permission' but 18 discussion, I guess, with Hydro, we have taken 19 as a given that any energy source that can 20 produce energy at an operating rate of .5 21 cents to .6 cents a kilowatt hour, that's 22 outside the capital side, which is rough 23 range, this one would be about .6 cents, that 24 has been functioning and running, would make 25 solid future long-giving benefit to the	1 customers of our province. And I know I'm 2 walking around your point, because I don't 3 have the exact point on the efficiency ranges. 4 Q. Yes, because one of the things that's 5 happening, and I think you sort of told us in 6 different things is that no question a lot of 7 your plants, they're older plants. The cost 8 in today's terms, today's dollars, are 9 peanuts. But as you're going, putting more 10 and more money into them, real dollars, and if 11 you had to rebuild them all, the cost of the 12 energy would be significantly higher per 13 kilowatt. 14 MR. LUDLOW: 15 A. That's fair. 16 Q. And the figure you just quoted earlier, 17 there's no reason to think that they would be 18 the same costs for Newfoundland Power that 19 would be for me. So I guess the thing that 20 I'm saying is, okay, we know they're going to 21 fail eventually or we have to rebuild them. 22 Let's not nickel and dime ourselves to death. 23 Maybe we should look at maybe they serve as 24 well, but they're just not the way we want to 25 go in the future, and you get into total cost,
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1 as you say, and you got to look at the whole 2 ball of wax, everything from the ongoing 3 environmental problems to the actual cost of 4 buying barrels of oil, and I just get the 5 feeling that that wasn't in the mix. 6 MR. LUDLOW: 7 A. I think your observation is pretty much 8 accurate in that on an individual plant basis, 9 Commissioner Powell. However, on the mix 10 between our available Hydro production 11 facilities is certainly built into the long 12 haul estimates of when additional capacity is 13 required for this island as well as energy 14 dispatch and so on. That was the point I was 15 coming to earlier. So if there is a--you 16 know, the \$4 million expenditure at New 17 Chelsea, okay, for 3.7 or 3.8 megawatt plant, 18 to rebuild that would run us, I would 19 estimate, in the 15-16, maybe even 18 million 20 dollar range. So to forego the opportunity 21 and shut it down, which was one of the options 22 I looked at a plant a while ago and again, 23 before--I have one or two plants now that when 24 they get to the stage that Chelsea's at, 25 personally I'm going to have an awful hard	1 time justifying sitting in this seat. I know 2 I'm at the smaller picture versus the bigger 3 picture, but I'm trying to give you the 4 flavour that the overall system is run as a 5 system. Now whether or not the financial 6 gurus sit down and go through all of the 7 details and crunch the numbers, the energy 8 cost, the investment point, and we do have a 9 substantive investment in Chelsea that has 10 served us well for the last, you know, 60 11 years. So maybe I'm not answering, but I'm 12 doing the best I can with it. 13 Q. No, no, I appreciate, you're just a humble 14 engineer and - 15 MR. LUDLOW: 16 A. Thank you, sir. 17 Q. I know there's people coming behind you that-- 18 we're always giving you fellows a hard time. 19 But, that leads me into another question about 20 that, that threw me off and I'll throw it at 21 you and I'm sure somebody else will answer it 22 later on. Just bear with me for a moment 23 there, I flagged it. Yes. P.U.B. 124 we 24 talked about--there was a question there about 25 New Chelsea, and they asked about the

1 COMMISSIONER POWELL:

2 levelized cost for kilowatt power produced and
3 various things. But, that--and some figures
4 thrown at me. But it said in brackets, "(This
5 number does not include any carrying charges
6 from the existing plant as those are sunk
7 costs)." And I appreciate that there would be
8 because, you know, the idea of something being
9 totally written off or replaced, I mean,
10 that's utopia, that's in an accountant's
11 dreamland or something. But I went--then I
12 had no problem with that until I read the next
13 one, P.U.B. 125, and the question was, "What
14 is the current un-depreciated capital costs in
15 the New Chelsea plant?" And then it says,
16 "The Company does not maintain a record of un-
17 depreciated capital costs of each hydro
18 plant." So, I went back to 124. How could
19 they answer that and say there was some costs
20 and you have no record of them?

21 MR. LUDLOW:

22 A. I don't often do this Commissioner Powell, but
23 this is one I am going to have to bow out on.

24 Q. Yeah, okay. No, but -

25 MR. LUDLOW:

1 money spent on computers and that, they don't
2 know what individual things sort of cost, you
3 know, sort of -

4 (1:00 p.m.)

5 MR. LUDLOW:

6 A. Well, it's an interesting piece because--I
7 will try as an engineer veering into your
8 realm of expertise, and that's dangerous at
9 the best of times, Commissioner Powell, I'm
10 sure. From the depreciation of hydro plant
11 assets, as I understand it, is grouped into
12 one big group with the 23 or 24--23 plants in
13 there. And that is depreciated over as per
14 whatever. I think the reference that you're
15 referring to is that there are some costs.
16 Whether they can be quantified is the
17 question. And when I read that answer and
18 read it before, I don't think we're in a
19 position to quantify it. Although we may have
20 computer systems today, a lot of these
21 computer systems are ten years old. And, I
22 mean, I don't know how far back. I mean,
23 these assets depreciate over, what, 40 years,
24 I guess, 30, 40, years.

25 Q. Um-hm.

1 A. I'm sorry.

2 Q. Then it goes back to me. I realize you're
3 crunching numbers, you're doing it in, you
4 know, in your best effort. And I have no
5 doubts about it. Matter of fact, I should
6 compliment you on the detail that probably
7 gets you in trouble, in a sense. I mean, it's
8 a very good presentation. But I'm sometimes
9 wondering, are you working with the right
10 numbers. I mean, you know, because you have
11 to go back and rely on various things, for
12 somebody to crunch the numbers to you and
13 say what's this cost in kilowatt, because this
14 is what needs to be done, from an engineering
15 point of view -

16 MR. LUDLOW:

17 A. Very much so.

18 Q. - there's no questions that's what needs to be
19 done. Somebody else got to tell you whether
20 the economics are there, I mean, in terms of--
21 so, I'm just left with saying, okay, how can
22 you have it in saying there are some costs.
23 And I have no doubts there probably are, but
24 then an operation like Newfoundland Power, and
25 we'll talk about it later on, with all the

1 MR. LUDLOW:

2 A. If we were to go back and try and recapture
3 all those costs and how that breaks down, I'm
4 in over my waders, Commissioner.

5 Q. Oh, no, I know what you're saying. Somebody
6 at sometime make that judgment and we, we have
7 so much into the system and these costs are
8 dead now. We'll talk to, when we get to your
9 financial people, how that's handled from an
10 accounting point-of-view, is it's a cost. But
11 then I just get looking at the figure. You're
12 talking about kilowatt, and I go back to Hydro
13 and they say, oh, yeah, if that power wasn't
14 there, we could run Holyrood and get that
15 extra miles to the gallon and therefore our
16 cost would be there. Trying to get the apples
17 and apples together and let's throw out the
18 oranges and the grapefruits sort of thing.
19 And I--that's what I--you know, again, it's
20 not--from where you sit, I have no problem.
21 But I'm just wondering with--like all the
22 players are not at the table, sort of thing,
23 that's the impression I'm getting here, and -

24 MR. LUDLOW:

25 A. Well, you know, I'm not here and I'm sorry, I

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1 MR. LUDLOW: 2 can't defend Hydro. But I will say that I 3 returned to this business in 1997 and when we 4 talk about cooperation between the two 5 businesses, I keep coming back to that point 6 because there's an error that there's not the 7 cooperation. Let's be careful between 8 duplication and cooperation, there's a 9 fundamental difference. 10 Q. Um-hm. 11 MR. LUDLOW: 12 A. And, you know, right down to line crews being 13 called, to construction projects in St. 14 Patrick's and I mentioned--that's not a 15 shopping list I'm reading from. These are day 16 to day. For example, the lightening arrester 17 failure on Christmas day here, the loss of 18 their EMS system, I mean, we're involved in 19 those types of things through discussions, 20 we're updated immediately as to where things 21 are. The offer goes out to help, sometimes 22 it's taken, sometimes it's not. Sometimes 23 we'll ask, sometimes they'll offer, sometimes 24 they won't. But that to me is true 25 cooperation between two public utilities. You	1 know, there's equipment sharing out there. So 2 that's the reason why you say it's not all 3 together, it may not appear on that energy 4 side to be the case, but I certainly wouldn't 5 want it to go broader. Back to the numbers - 6 Q. I'm not suggesting--you know, I have no doubts 7 on a day-to-day basis the vast majority of 8 personnel in and around Hydro and Newfoundland 9 Power. I mean, they're in the common business 10 and they have a lot of things to share, no 11 question about that. One other thing on the 12 generation side, it sort of struck me on the 13 reading the attachment on the Morris plant 14 turbine and stationary steel inspection, let 15 me just read it and you probably got the 16 answer. It just struck me as--they talked 17 about the assessment of the turbine 18 inspection. And it said the turbine was 19 opened up and inspected and was found that the 20 stationary steels in this turbine were mild 21 carbon steel and not type 410 stainless steel. 22 And what struck me as funny, and I made a note 23 of it, why were you surprised? I mean, don't 24 you know what's inside your equipment you got? 25 It sort of struck me, I said, okay.
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1 MR. LUDLOW: 2 A. When you read it, I sort of anticipated where 3 your question was coming from. 4 MR. DELANEY: 5 A. I think it may have to do with the person who 6 wrote the report. 7 Q. Okay. 8 MR. DELANEY: 9 A. Being a surprise. 10 Q. Okay. Must be an accountant who wrote the 11 report. 12 MR. DELANEY: 13 A. I think it was an engineer. You know, we have 14 the different--the stainless steel inside the 15 runners and this was a mild carbon steel and I 16 guess I can't testify as to his amount of 17 surprise, but I guess he didn't expect to see 18 it there. And, you know, other than that - 19 Q. Because this goes back to other questions you 20 talked about. And I appreciate this. The 21 challenge is to anticipate. It's just like 22 you're running a car, I mean, I don't want my 23 car in the garage if I'm--or I promise to meet 24 a client halfway across the town and I expect 25 to get in that car and go there, and you know,	1 I just put it in regularly, get everything 2 checked and I don't want the muffler falling 3 off halfway across town. And the challenge is 4 even greater given all the other things going 5 on. So I would think, you know, pieces of 6 equipment like that. I mean, if you--I assume 7 from this the fact that they were of carbon, 8 they're more apt, yeah, to run out, so 9 therefore--so if you got them somewhere in the 10 middle of your system and people really don't 11 know, you're sort of wondering - 12 MR. LUDLOW: 13 A. I think the element of surprise that you're 14 bringing forward, Commissioner Powell, you 15 know, maybe it's the wording, maybe it's not, 16 I don't know. But when this unit went in 17 place in 1983, you know, it was been running 18 pretty consistently through, I think it was 19 '83, '82, '83 range Morris went in place. And 20 from there, upon one of these inspections, 21 subsequent to sticking of the wicket gates 22 they knew there was something wrong. Now, 23 whether they were surprised over the rate of 24 corrosion of the mild steel or whether they 25 were surprised over the fact that it wasn't

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1 MR. LUDLOW: 2 stainless and would we have--if we were to do 3 this today what would we buy. Most likely 4 knowing what we know now we'd correct our 5 specification and go forward. I'm not, I'm 6 not overly bothered by the fact that they 7 found a mild steel corroded seal in that it's 8 something that's been running for, you know, 9 20 years. They found it, they got to it, we 10 were able to manage it in and bring it forward 11 now. So, that's - 12 Q. Do we have more turbines out there with the 13 same, assuming that it's stainless but it's 14 not? I mean, would you--would that bother you 15 now, you should check all our turbines or - 16 MR. LUDLOW: 17 A. Exactly where we would go, we would go now and 18 cross check every--this happens to be a Barber 19 unit that was installed in '83. We would then 20 go and check subsequent purchases and see 21 whether or not they were the same problem. 22 Maybe it's got something to do with the 23 salinity or chemical composition of the water 24 that's causing the mild steel to deteriorate. 25 So, that's exactly the whole idea behind--I	1 referenced the asset management of the 2 computer systems. Right now we've inspected, 3 we would log, we know where all other units of 4 this type, date, vintage, manufacturer is. We 5 would go check to ensure that we are not going 6 to have a repeat stuck wicket gate. 7 MR. DELANEY: 8 A. Yeah. Well, Barber, just to build on that, 9 the Barber turbine subsequent to this and 10 other things that we have them located in, 11 Lookout Brook plant, at our Lawn plant, 12 Topsail and Morris and (unintelligible) 13 Barbers out of business, are no longer in 14 business, our hydraulic turbines. 15 Q. The lightening arresters, sort of interesting. 16 Do you have any figures on the percentage of 17 failures of transformers that got hit that had 18 arresters on them as a percentage of the total 19 versus the percentage that got hit that didn't 20 have arresters in the area that you would 21 expect them? 22 MR. DELANEY: 23 A. Okay. I can answer this one from a personal 24 experience. In 2002 we had a very severe 25 lightening storm come across Newfoundland. We
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1 had failures from one end of the island to the 2 other. And in the Grand Falls area was 3 particular hard hit. And we know from our 4 records that in Grand Falls approximately half 5 of the distribution transformers have 6 lightening arresters and half do not. 7 Q. Um-hm. 8 MR. DELANEY: 9 A. Okay. And we had in the order of 200 10 lightening--transformer failures due to 11 lightening in Grand Falls. And 100--well, all 12 right, all but one were on transformers 13 without lightening arresters. So if you look 14 at that ratio, you think, all right, half your 15 transformers have lightening arresters, half 16 don't. The lightening storm came right 17 through the whole area. You had 200 fail 18 where you didn't have lightening arresters and 19 you had just one fail where you had lightening 20 arresters, so that would give you some idea of 21 the percentages there. And the one that did 22 fail, Earl alluded to afterwards, we were 23 trying to find the transformer. It was a 24 direct hit on the--lightening arresters, I 25 just want to back it up into the operational	1 experience on why lightening arresters are 2 such a concern. And as lighting strikes-- 3 lightening occurs in summer, of course, in 4 August, and it's a time of year when a lot of 5 people are on vacation. We have a lot of our 6 line staff are on vacation. And if I were to 7 have, say, 500 customers out due to a feeder 8 outage, well, that's one location to go to. 9 I'd send a crew, get the 500 customers back 10 on. If I have 500 customers off due to a 11 lightening storm, I may have as many as 100 12 different locations to go to, you know, 13 because you have--there's small pockets. Now 14 you got small pockets of problems all over the 15 place, and it's very labour intensive. You 16 send a crew there, you may need four people at 17 the pole, we could be using technology that 18 they used to build the pyramids is what some 19 of the guys say. If they're in the back 20 yards, we have to use block and tackle stuff 21 to get these transformers replaced. So you're 22 combining all of that with a time of year when 23 your resources are, you know, on vacation and 24 it's that time of year when you could be hit 25 with a storm that's causing widespread damage,

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1 MR. DELANEY: 2 it's pocketed all over and, you know, it's a 3 concern. I know in the Grand Falls experience 4 we called everybody, got everybody in that 5 was--got them back off vacation, the ones that 6 you can reach. Nowadays with people in 7 cottages and stuff, in cabins, they're 8 sometimes very difficult to reach. And every 9 available person from St. John's to Port aux 10 Basques was mobilized for that particular 11 incident. 12 Q. Do you have any data within your system 13 outside the province comparable, like you say 14 in Grand Falls essentially you almost had 100 15 percent success with the--where you had 16 arresters. 17 MR. DELANEY: 18 A. Yeah. 19 Q. Versus--is that - 20 MR. DELANEY: 21 A. I don't have no data that I can refer to now, 22 only that I think we're the only ones, really, 23 that don't have lightening arresters. I'm not 24 sure if there's any other utility that doesn't 25 install lightening arresters. It's a matter	1 of - 2 Q. It's all part of it. 3 MR. DELANEY: 4 A. Of practice. 5 Q. One other area we talked about meters. The 6 AMR? 7 MR. LUDLOW: 8 A. AMR, yes. 9 COMMISSIONER POWELL: 10 Q. Do they have the same life expectancy or is 11 there any benefit in terms of life expectancy 12 or - 13 MR. LUDLOW: 14 A. There is no indication, Commissioner Powell, 15 that there would be any difference in the AMR 16 meter, verses the electrical mechanical, if 17 anything the jury is out, they should last 18 longer, from at least the internal workings. 19 And that's not based on, if they haven't been 20 around long enough to find out, but - 21 Q. No, no. 22 MR. LUDLOW: 23 A. Here you're dealing with ones and zeros, or 24 zeros and ones, a digital type technology 25 verses, like I said, springs, dials, meters
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1 and so on, so that's the sense of the 2 industry. 3 Q. Have you given any thought to doing a project 4 with, just taking the General Service 5 customers and installing AMRs and all of them 6 because, as a business person, I would think 7 they would want to have the least number of 8 people having access to their place, as 9 possible. So they would, to me, it would be, 10 once explained, would be more amenable to 11 sure, do it if it's going to save me money and 12 convenience and things like that. 13 MR. LUDLOW: 14 A. Commissioner Powell, there has been a great 15 deal of thought given to and monitoring all of 16 the meter reading industry in general, and 17 before we actually, I would say jump in, I'd 18 like to wade in very slowly because of the 19 regulatory overtones that I described this 20 morning and the changing, I call it landscape 21 regarding environment, Federal rules, because 22 metering under the Weights & Measures Act is a 23 federally regulated entity. Those are 24 currently behind where we are today in 25 technology, so that's one thing. However,	1 that's for a full-blown all out type program. 2 The second piece here that's important is that 3 the business owners would most likely be in 4 the demand style meter--they would be in the 5 demand style meter. And there's a hundred in 6 this budget to test and gain the access and to 7 see how we can in fact talk with the meters, 8 work with the meters and get this--you can 9 almost call this a pilot on its own, I guess, 10 with--while dealing with the accessibility and 11 the safety issues as well. So the long 12 answer, no, we have not gone to a full-blown 13 pilot, but it is not--it wouldn't be a full- 14 blown pilot but a full-blown implementation, 15 but the benefits of moving in that direction, 16 if we can get the other blockages that I just 17 highlighted out of the way, would be a 18 possible consideration. 19 Q. That's all my questions. Thanks very much 20 gentlemen. 21 (1:15 p.m.) 22 MR. LUDLOW: 23 A. Thank you, sir. 24 CHAIRMAN: 25 Q. Commissioner Martin?

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1 COMMISSIONER MARTIN, Q.C.; 2 Q. Most of mine are answered, I've just got a 3 couple. There was some discussion about the 4 replacement of a roof in Stephenville because 5 of wind damage and I think you also referred 6 to a vehicle, a few hundred thousand dollars 7 which had been destroyed in an accident. My 8 question is, I was wondering, first of all, if 9 you carry insurance covering those two risks, 10 and if so, if it is factored in the figures 11 we've seen? It's not referred to as a 12 separate item? 13 MR. DELANEY: 14 A. In respect to the insurance question, I can 15 answer you on the vehicle. I actually have 16 the numbers here, I jotted them down, having 17 the same question that you've had. That was a 18 vehicle that was involved in an accident in 19 Port aux Basques earlier this year. It was 20 January, February time. It was a very serious 21 accident, by the way, we had a couple of 22 linemen, one lineman in particular was 23 severely injured in that accident. So we had, 24 I think our claim, I'll give you the value of 25 the vehicle at around seventy-five thousand.	1 There was a \$25,000.00 deductible, so the 2 \$50,000 is a result there, in that area. The 3 roof in Stephenville, I'm not sure - 4 MR. LUDLOW: 5 A. Generally, I would come back to say that we 6 usually do have insurance for these types of 7 issues, the specifics of the Stephenville 8 case, I don't know at this point. The genesis 9 though, of all of this, is that what we 10 present before this Board is not a net budget, 11 it's a gross budget in that it's not net of 12 insurance proceeds. If that sort of--like the 13 truck, for example, that would be based on the 14 market value at the time of the accident and 15 then the insurance, I think it was \$75,000 16 less the 25 deductible, so there's forty-odd 17 payment back. That in turn goes back against 18 the rate base to reduce the rate base 19 accordingly, but we would not file before this 20 Board for the replacement truck, less the 21 insurance proceeds as a line item in our 22 budget. Is that sort of - 23 Q. I think so, but the figure that I'm recalling 24 now, and I can't find it here, I thought the 25 figure on the truck was somewhere in the range
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1 of 300,000? 2 MR. LUDLOW: 3 A. It is 300,000, sir. 4 Q. So that would be a replacement cost, not 5 netted out of insurance proceeds or anything? 6 MR. LUDLOW: 7 A. That is the total replacement cost of that 8 vehicle to put a new vehicle on the road. And 9 to give you a flavour of that, first of all, 10 we felt we weren't going to put it back in 11 because we figured we could absorb, but we 12 needed that tandem on the southwest coast. 13 But that is the purchase price, not--there's 14 no netting of any insurance proceeds. That 15 insurance proceeds come back in and go back 16 against rate base and my learned friend, I'm 17 sure, can lead you through that piece a little 18 later on. 19 Q. And the same thing with the Stephenville one, 20 you're not sure, but the figures in any event 21 would not be netted out. 22 MR. LUDLOW: 23 A. Yeah. 24 Q. In terms of Walbourne's and the situation out 25 in Corner Brook, Bay View and Humber	1 substations. There was a load forecast there. 2 I was wondering if factored into those figures 3 would be the loss of the cement plant? The 4 cement plant closed in Corner Brook, I don't 5 know, two or three years ago, something like 6 that, and I was wondering if that is still 7 included as part of the load forecast? 8 MR. DELANEY: 9 A. The cement plant, if I can answer that, the 10 cement plant had its own substation 11 transformer and its own supply off of the 12 Bowaters--I keep calling it Bowaters, but 13 Kruger's transmission line - 14 Q. Corner Brook Pulp & Paper, what it was called. 15 MR. DELANEY: 16 A. So, there would be no effect in the Corner 17 Brook transformer capacity, the substation 18 actually was located by Brookfield, McPherson, 19 it'd been taken out of commission just 20 recently. There was a little substation there 21 and that would serve the North Star Cement. I 22 think all my technical questions have been 23 answered, but there was one reference I saw 24 somewhere to a RF technology. What is RF 25 technology?

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1 MR. DELANEY:

2 A. RF technology is the radio frequency
3 technology and it's the way we would read the
4 AMR meters. A meter reader would go along -

5 Q. Yes, that's right, that's where I saw it to.

6 MR. DELANEY:

7 A. - and the information is sent over the
8 airwaves, actually at 900 mega hertz if you
9 want the technical. Apart from the fact that
10 I can't read my own writing here, I think
11 I've--that probably covers all the questions
12 I've got for this panel. Thank you.

13 CHAIRMAN:

14 Q. Thank you. I see we're rapidly approaching
15 1:30, so I'm going to try and narrow down to
16 probably just a couple of questions. One
17 flows from a question, Mr. Ludlow, that was
18 raised by Mr. Young in his cross and it had to
19 do with the amount of engineering study or
20 engineering detail that took place as part of
21 the budget preparation process for a
22 particular project and what have you. And
23 obviously, you know, I appreciate the fact
24 that, you know, it's not going to be feasible
25 or practical to do a full engineering study

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1 decades of work. Like, we know that we've got
2 to build a single paved line for ten miles, we
3 would take that to the stage of the general
4 routing of the line and we know that we can
5 build, a per kilometre base would cost us X
6 dollars, that type. And that's where we are
7 in these budget here. To take it to the next
8 level would cause a total shift in where we
9 are today in completing 2003 stock, do all
10 your engineering for almost two years in a
11 row, to go forward, that's the secret. I'm
12 not convinced we'd want to move ahead too much
13 further. It could contain a variance
14 somewhat. And I guess that's back to the nub
15 of the question.

16 I would suggest here, we may be able to
17 trim that variance--I'd be half afraid to put
18 a number on it, to be quite honest. But if I
19 could step up my engineering, it may come
20 ahead, I don't know, 15, 20 percent type
21 range, but even then I don't have it to final
22 engineering stage.

23 Q. Right.

24 MR. LUDLOW:

25 A. I've never looked at the numbers to be quite

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1 for a project, as part of the budget process,
2 but I'm wondering, to the extent that, on
3 average, you know, if it's possible to say
4 that a detailed or an engineering study is
5 done in the preparation of the budget process
6 for a particular project. In your opinion,
7 can you indicate what percentage of projects
8 might not subsequently be reflected as over
9 budget if some higher level of engineering of
10 process had been factored in, in the project
11 preparation, you know, for your presentation
12 for the budget.

13 MR. LUDLOW:

14 A. I guess ultimately the final stage would be to
15 have your market pricing complete and
16 hopefully there due, unless it were
17 unforeseen, to if, 100 percent on the mark,
18 that's in the budgeting allotments and so on.
19 The approach we've used and I'll come right
20 back to your question shortly, is that when we
21 do penstocks, we would have parameters of cost
22 for 100 meters or, you know, some type of
23 parameter such as that. Similarly with
24 distribution in transmission lines, we would
25 base this on proxies that we gathered over

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1 honest with you.

2 Q. I'm just wondering is it worthwhile to try and
3 achieve that 15, 20 percent.

4 MR. LUDLOW:

5 A. Well, my goal, to be quite honest with you, as
6 we sit here now is to get the budget before
7 the Board, it gives us half a chance to do
8 some preliminary work from the fall on our
9 long leave time. Like a power transformer,
10 for example, if we were to talk Walbourne's is
11 not a shelf item sitting in Ontario. It's an
12 item, the last one, I do believe, came from
13 Israel and it was something that takes, it
14 takes specifications on resistance and how it
15 ties into the system and then there's whole
16 bunch--that type of detail. Some of that can
17 be done up front, but the market pricing will
18 vary as well. That will impact it.

19 We're trying to get as much done early in
20 that fall such that we can come out of the
21 blocks early in the year. So, we've caught up
22 a nice bit there, Chairman Finn, but we're not
23 on top of the game yet. My goal is to move
24 it.

25 Q. I was wondering as well, Mr. Ludlow, I think

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1 CHAIRMAN: 2 in Volume 1, Schedule B, page 61, referencing 3 real property, the renovations and additions 4 to the company, buildings and property, that's 5 not part of the electrical supply to 6 customers. And in 2004 the budget is 174,000 7 and then the 2005 to 2008, it appears to jump 8 to an annual of \$600,000.00 range, if I'm 9 correct. I'm just wondering what the, in 10 general terms what would be creating the 11 substantial increase? 12 MR. LUDLOW: 13 A. Sorry, if you could just bear with me one 14 second please. 15 MR. DELANEY: 16 A. There was an RFI on this that I was trying to 17 find. 18 Q. And just while you're looking for that, I 19 guess as an addendum to that particular 20 question, if it's related to new buildings or 21 additions to buildings, if consideration had 22 been given to any sharing facilities with 23 Hydro and what have you, that would take away 24 the necessity of any of those additions or 25 extensions.	1 MR. LUDLOW: 2 A. Basically, Mr. Chairman, there's several 3 things underneath here, I can give you those 4 examples and then I can go to your second part 5 of that question if you so wish. One of the 6 things we're attempting to do within our own 7 organization right now is to work on 8 consolidation of some properties, areas such 9 as Grand Falls. We currently run a building 10 on Cromer Avenue as well as on the Trans 11 Canada Highway. Depending on where we can go 12 with this, if everything works right and we 13 will be before the Board with the details of 14 that next year, can we, in fact, close one of 15 those buildings, move our cash or whatever and 16 consolidate it down. There are no additions 17 of new buildings within this budget. As in, 18 we wouldn't build another building, we would 19 renovate or change or get--there's enough room 20 there, but we got to make some changes, that 21 type of thing, sorry, no new buildings. I 22 have a two-room building in Holyrood 23 allocated, I'm sorry. But when I think of 24 office buildings, I think much larger. This 25 is a district crew establishment in Holyrood,
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1 extremely preliminary at this point in time, 2 but to service the bottom of Holyrood, Harbour 3 Main, Conception Harbour, it's about a quarter 4 of the size of this--it's a small shed. It's 5 almost like a baby barn type of situation with 6 a concrete floor and a loading door in the 7 back. We've got--in 2007 we'd be into a HVAC 8 system at Kenmount Road and there's some 9 parking lot repairs that are highlighted there 10 as well. So, that's generally what's 11 underneath this from a - 12 MR. MYLES: 13 Q. Excuse me, Mr. Ludlow, Mr. Delaney asked a 14 moment ago about and RFI, I think the RFI is 15 PUB-68 and may assist everyone in going 16 through the numbers. 17 CHAIRMAN: 18 Q. That was in relation to AMR meters. 19 MR. MYLES: 20 Q. PUB-68. 21 MR. LUDLOW: 22 A. PUB-68 is in reference to the general 23 properties included in subsequent years, Mr. 24 Chairman. 25 MR. MYLES:	1 Q. That was in direct relation to the question 2 posed. 3 CHAIRMAN: 4 Q. I'm sorry, I'm looking at the NLH - 5 MR. MYLES: 6 Q. I know the feeling. 7 MR. LUDLOW: 8 A. The reference in PUB-68 to the Grand Falls 9 service building would be the consolidation. 10 CHAIRMAN: 11 Q. Okay, thank you, Mr. Ludlow. A final area, I 12 guess, I just want to get into is in relation 13 to the portable generation and I want to make 14 sure I have a flavour for this. If I refer 15 you to NLH-24 where Hydro requested a table to 16 show the use of Newfoundland Power's previous 17 two portable generators over the past five 18 years indicating for each occasion the reason 19 for its use and the amount of energy 20 generated. If I look at Table 1 and Table 2, 21 does that indicate to me that these portable 22 generators over that five year period were 23 never run for the benefit of Newfoundland 24 Power customers?

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1 MR. DELANEY:

2 A. I can answer that. No, it doesn't. Where you
3 see unscheduled outage for Newfoundland Hydro,
4 that would have been an outage that, let's
5 say, originated on the Newfoundland and
6 Labrador Hydro system, but by running the
7 units we were able to keep the customers of
8 Newfoundland Power, well some of the customers
9 serviced. Okay. The outage, it was an
10 unscheduled outage, so we kept the customers
11 serviced by bringing this unit up. And as
12 well, under scheduled runs for Newfoundland
13 and Labrador Hydro, that's when those units
14 were used to support the system.

15 MR. LUDLOW:

16 A. These units are parked now in, most of them
17 are parked actually, one of them is not
18 roadworthy, in Port aux Basques which is at
19 the end of a long radial system, which is the
20 one I referred to earlier. And as such, when
21 we see a scheduled run, that would appear,
22 that who's requesting a run and they would
23 come up to supplement the gas turbine Rose
24 Blanche and the other stationary diesel that's
25 down there, to try and support the load from

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1 Q. All right. So, that 2.5 more than replaces
2 those two portables.

3 MR. DELANEY:

4 A. That's correct.

5 Q. So, when you say that, in your pre-filed here
6 that the 2.5 portable diesel that you're
7 looking to acquire under the 2004 budget will
8 replace capacity that was lost when the two
9 existing portable generators are
10 decommissioned. That's not entirely accurate,
11 but you do indicate that you do include there
12 that the St. John's diesel generator, you
13 include that there, but the St. John's diesel
14 generator is virtually non-used anyway.

15 MR. LUDLOW:

16 A. It's a fixed unit -

17 Q. Okay. Now, I know that in some discussion
18 that took place in evidence in the 2003
19 budget, you made mention of the fact, you gave
20 examples of your typical feeder system being a
21 4 megawatt system and going to use some of
22 these system, you know, these two generators
23 in tandem. But I'm just wondering, if you
24 didn't have that 2.5 megawatt portable
25 generator that you're looking to purchase in

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1 Long Lake up through as far as Doyles, but
2 we're not able to do it. We can only carry
3 about 40 percent or 50 percent on peak.

4 Q. And if we jump back to the east coast, I guess
5 now, and the portable generator that's
6 included in the '04 budget. It's probably
7 just for some clarification, as well, Mr.
8 Ludlow, it may lead into another question
9 related to this. In your pre-filed evidence,
10 you indicate on page 6 that the 2.5 megawatt
11 portable diesel generator proposed to be
12 acquired at a cost of 1.7 million, will
13 replace capacity that was lost when two
14 existing portable generators and the St.
15 John's diesel generators are decommissioned is
16 2003. My understanding, I think is that the
17 2.5 megawatt diesel that was purchased under
18 the 2003 budget, it was indicate then that
19 that particular diesel generator had the
20 benefit of replacing most of the capacity that
21 would be lost with the decommissioning of
22 portable 1 and portable 2, is that correct?

23 MR. LUDLOW:

24 A. It would be much more than two of those,
25 that's correct.

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1 the 2004 budget and you don't have the tandem
2 process and perhaps you could just elaborate
3 on what you mean by the tandem and how that's
4 going to benefit the east coast. What are you
5 currently doing, you know, when you have an
6 emergency situation and given the fact that
7 you're going to be spending a fair bit of
8 money to refurbish the New Chelsea plant and
9 what have you and that will be in much better
10 shape as part of the '04 budget? You know,
11 how do you handle these emergency situations
12 now and as part of that, assuming that--
13 obviously you do have a sharing process with
14 Hydro, what portable capacity do they have,
15 you know, that you can benefit from on the
16 east coast and obviously this new portable
17 that you will take delivery of in December
18 '03, you'll be able to transport that from the
19 west coast to the east coast, if you need it.
20 So, if you can just kind of relate these
21 things together for me.

22 MR. LUDLOW:

23 A. I'll do my best, Mr. Chair. First of all, in
24 the 2003 Capital Budget Hearing which would
25 have been last November, the proposal was

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1 MR. LUDLOW: 2 filed regarding the site and the sizing of the 3 diesel requirements. And you are correct, Mr. 4 Chairman, when you reference the four to five 5 megawatt range of a typical feeder that's been 6 experiencing these types of outages within our 7 system. And the reason we didn't apply for a 8 single four or five is because of the physical 9 actual weights just will not permit its 10 portability. So, that's the first point. The 11 reference to the loss of generation as a 12 result of the decommissioning of the, it's a 13 670 kilowatt and a 700 kilowatt, that's the 14 two portables that are sitting in Port aux 15 Basques, keeping in mind that totals to 1.3 16 megawatts. That's where I was getting to. 17 These were bought at a time in the '70s when 18 feeder levels and loads were much lower and 19 could handle appropriate carrying capacities. 20 A 700 right now will do nothing for you in any 21 size of a load. So, that's that piece. 22 From what we do today, if we lose--let's 23 take Trepassey, I'll keep going back there for 24 a minute because it's near and dear to my 25 heart over the years. The Trepassey system is	1 one of these long radial transmission systems 2 that I've spoken of here. It's back country. 3 Just to control it can take us eight to ten 4 hours on a good day on bike. If it's foggy, 5 you can't fly it, so--that's the danger zone 6 on the east coast. Old Perlican, that's a 7 separate one I've highlighted. New Chelsea 8 being refurbished, that's status quo. So, I'm 9 leaving that one for the time being. If I 10 have an outage in Trepassey this fall, what am 11 I going to do? Well, I have the options of 12 calling on Hydro's portable generation which, 13 to the best of my knowledge, and I don't have 14 the equipment sharing agreement with me, I'm 15 not sure, I've got two units, I've got one, I 16 do believe up north. I don't know where the 17 other one is, I don't have it in my head, but 18 they're available. I think it's in Roddickton 19 to be exact. We would have 7.2 megawatt gas 20 turbine in Port aux Basques, a mobile. To 21 transport that or the diesel in Port aux 22 Basques to Trepassey would be a minimum of 48 23 hours down time, assuming we can get there. 24 That's okay. Not okay that it's 48 hours, but 25 its' going to take time. With the parking of
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1 the two and a half megawatt diesel on the east 2 coast, what it would provide me with is the 3 capacity to provide some basic essentials down 4 in Riverhead, Trepassey, Portugal Cove South 5 and those areas which is firefighting, water, 6 food, some heat in some community centres. 7 Can I support the full load on that? No, I 8 can't. I can probably take, it's about a 4 9 megawatt, three and a half, 4 megawatt load, I 10 can carry a piece of it. It will get me going 11 if I had it; if I don't have it, I'm flat 12 broke. 13 Now, I can transport my other two and a 14 half from Port aux Basques, but I am still in 15 a process to at least limp that system along 16 for 48 hours or three days or whatever. 17 That's the basis. 18 Now, that's its parking point. Here in 19 the east coast there are locations, Branch, 20 St. Brides, that's a 100 kilometre feeder, 21 Twillingate, I'll go to Old Perlican as a 22 second. That line between New Chelsea and Old 23 Perlican, that transmission line, if that line 24 breaks or fails, Chelsea is useless to me, 25 it's on the wrong end of the wire. I got to	1 get something down there. Do I pull it from 2 Port aux Basques? I've got one unit, if I 3 have one unit, I can still only carry a 4 portion of the load. That's the sizing 5 relationship, Mr. Chairman. 6 So, that's how I'd--today I'd manage, I 7 would be into multiple day outage and I'd be 8 hauling the gas turbine or the two and a half 9 out of Port aux Basques. I don't know if 10 that's any help to you, but it's that type of 11 dynamic in where we located, how we manage, 12 where we put our install capacity and how it's 13 mobile. That is also available under the 14 sharing agreement as well. 15 Q. Okay. So, in your own wording that you use, 16 you're not looking for a cadillac system, but 17 you want a system that will run. You don't 18 see that as a cadillac system in terms of - 19 MR. LUDLOW: 20 A. No, sir. I would not--as I look at this 21 generator, I would be looking at alternatives, 22 I would look at refurbs, I would look at small 23 gas turbines. I mean, it's that type of 24 thing, to me--when I look at Trepassey, we 25 talk a lot about alternatives here the last

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1 MR. LUDLOW:
 2 few days, there are several alternatives. One
 3 alternative is to attempt to build a line from
 4 Fermuse cross country to Trepassey to create a
 5 loop system, okay, that's one. Second
 6 alternative is to build from Blaketown to
 7 Riverhead through St. Catherines into
 8 Trepassey, that'll secure the system. A third
 9 alternative is to have some sense of mobile
 10 generation that will pick up 50 percent better
 11 of the load. The other two alternatives are
 12 in the seven and a half to eight million
 13 dollar range. And what we're trying to do
 14 here is provide security in general to a
 15 broader base than just Trepassey and hence the
 16 mobile unit. So, that's where I'd say a
 17 system that'd work.
 18 Q. Right, okay. Leasing this type of equipment
 19 is not a possibility, is it?
 20 MR. LUDLOW:
 21 A. Well, I don't think so. I mean, we've looked
 22 at some, you know. One, we lease a small
 23 unit, but nothing of this type. These are
 24 custom made utility pieces. If I can a
 25 cheaper way to get them, I'd certainly look.

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1 think there's probably one answer to the whole
 2 subject matter. I'll just refresh that, just
 3 briefly. So, you're talking about--you are
 4 aware generally and you didn't give me any
 5 specifics and perhaps you don't have them yet,
 6 as to some projects in the future that you're
 7 going to have to look at closely to see if
 8 they're justifiable.
 9 MR. LUDLOW:
 10 A. That's correct.
 11 Q. And I'm just wondering if you can briefly
 12 describe the kind of analysis you go through,
 13 the kind of figures you look to, and would it
 14 be a number of this sort that you'd use when
 15 you did that analysis to see if it was
 16 justifiable.
 17 MR. LUDLOW:
 18 A. We would certainly use this style of analysis,
 19 but whether this is the final determining fact
 20 is something that I would have to bring in my
 21 accounting team or the financial people of the
 22 organization to address. The ones I'm
 23 referring to, these are very small plant as
 24 well that have some factors that--they're very
 25 small. It does make New Chelsea look large.

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1 I haven't been able to find one yet, that's
 2 the way I would answer it.
 3 Q. Thank you. Any questions arising from the
 4 Panel.
 5 MR. YOUNG:
 6 Q. I have just one, Mr. Chair. At least, I
 7 believe it's just one. I'll see if there's a
 8 follow up from the follow up. And this arises
 9 from a question asked by Commissioner Powell
 10 in an answer Mr. Ludlow gave. The context was
 11 the small hydro plant's energy supply issue
 12 and Mr. Ludlow, you said something to the
 13 point that you had a couple of small hydro
 14 plants that you'll have to look at more
 15 closely in the future to see if they can be
 16 justifiably upgraded, refurbished or whatever.
 17 I'm just wondering what sort of analysis that
 18 uses and would you use--probably refer you to
 19 PUB-124 because that was also in the same
 20 context, the same question--a levelized cost
 21 approach based on the incremental -
 22 MR. LUDLOW:
 23 A. I'm sorry, I missed your reference.
 24 Q. PUB-124, sorry I'm running this altogether,
 25 I'm trying to economize on time here because I

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1 The actually financial analysis that we would
 2 apply to do a decommissioning of that plant,
 3 I'm not in the position to go through the
 4 details at this point, Mr. Young, I don't
 5 know.
 6 Q. When you put forward the projects that you had
 7 put forward, both the New Chelsea one and the
 8 one in the general rehabilitation, sort of,
 9 the catch all group, project, if I can call it
 10 that for a moment. Do you do this kind of
 11 analysis for each of those projects to see, in
 12 fact, particularly when they're not something
 13 which is say, safety or reliability related,
 14 but an economic advantage of keeping a good
 15 sound economically run, hydro project running
 16 into the future. Do you do this kind of
 17 analysis in those cases to the projects that
 18 you've put forward in this budget?
 19 MR. LUDLOW:
 20 A. We would test the continued future viability
 21 of the individual plants on certain types, if
 22 they were significant expenditures that had
 23 financial implications. I would not run it
 24 though on a 71 year old head gate. I think
 25 that's getting to the extreme. I would run it

Page 177 1 MR. LUDLOW: 2 if I had a turbine issues or anything of that 3 type and they were substantive in relation to 4 the plant, yes, I would be monitoring my 5 future flows. 6 Q. I don't think you've produced any in this 7 application, is that correct? 8 MR. LUDLOW: 9 A. That is correct. 10 Q. That's all, thank you. 11 CHAIRMAN: 12 Q. Thank you, Mr. Young. 13 MR. KENNEDY: 14 Q. Chair, just one question, it's on dark skies. 15 Mr. Ludlow, did I gather correctly that your 16 chief concern with some of the proposals under 17 the dark skies are safety and security issue 18 related? 19 MR. LUDLOW: 20 A. That's two of the items. The third that I 21 have not done any research on is the 22 additional cost from inventory, how this would 23 be managed and the additional training 24 involved. And there's a whole raft of things 25 that would also creep into the specification	Page 178 1 of designs. This is--if it was as simple as 2 changing a light bulb in a light fixture, I 3 would go, but I'm not ready to say that. 4 Q. Okay, thank you. 5 CHAIRMAN: 6 Q. Thank you, Mr. Ludlow and Mr. Delaney. 7 MR. LUDLOW: 8 A. Thank you, Mr. Chairman, Commissioners. 9 Q. It's been a long morning, I'm just trying to 10 get some sense now if we are breaking at this 11 time and going to adjourn until 9:00 tomorrow 12 morning. Are we going to finish with the 13 other panel tomorrow? 14 MR. KENNEDY: 15 Q. Subject to what my learned friend has, I don't 16 think he has anything for the individuals on 17 the information technology portion. I'm not 18 sure if he has any questions for Mr. Perry. 19 MR. YOUNG: 20 Q. I may have, you know, perhaps very little. It 21 depends on what comes up on the presentation, 22 but it's a blank page right now, Mr. Chair. 23 CHAIRMAN: 24 Q. I'm taking it appears that in all probability 25 we will be able to finish tomorrow.
Page 179 1 MR. KENNEDY: 2 Q. I think we'll be able to finish both panels 3 tomorrow if we run right through, yes. 4 CHAIRMAN: 5 Q. Okay, well then, we'll adjourn at this time 6 until 9:00 tomorrow morning. Thank you. 7 Adjourned at 1:48 p.m.	Page 180 1 CERTIFICATE 2 I, Judy Moss Lauzon, hereby certify that the foregoing is 3 a true and correct transcript in the matter of 4 Newfoundland Light & Power's 2004 Capital Budget 5 Application, heard before the Board of commissioners of 6 Public Utilities, Prince Charles Building, St. John's, 7 Newfoundland and Labrador on the 11th day of September, 8 A.D., 2003 and was transcribed by me to the best of my 9 ability by means of a sound apparatus. 10 Dated at St. John's, Newfoundland and Labrador 11 this 11th day of September, A.D., 2003 12 Judy Moss Lauzon