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YUKON UTILITIES BOARD
YUKON ENERGY CORPORATION 20 YEAR RESOURCE PLAN
APPLICATION TO THE YUKON UTILITIES BOARD

Held at Gold Rush Inn
Whitehorse, Yukon
November 15th, 2006
Volume 5 - Evening Session
Page 408 - 430

BEFORE BOARD MEMBERS:

- | | |
|------------------|---------------|
| Wendy Shanks | A/Chairperson |
| Brian Morris | Member |
| Richard Hancock | Member |
| Michael Phillips | Member |

BOARD COUNSEL:

Renee Marx

BOARD STAFF:

- | | |
|--------------|-----------------------|
| Pat Wickel & | |
| Dwayne Ward | Technical Consultants |
| Deana Lemke | Executive Secretary |

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APPEARANCES:

Yukon Energy Corporation	John Landry
	David Morrison
	Cam Osler
City of Whitehorse	Wayne Tuck
Utilities Consumers' Group	Michael Buonaguro
	Roger Rondeau
Yukon Conservation Society	J.P. Pinard

TRANSCRIBER:

Doug Ayers Reporting Services

1 (Proceedings resumed at 6:05 p.m.)

2 THE CHAIRMAN: Good evening. Thank
3 you for coming back on such a cold evening.

4 Welcome to the public input session in the
5 oral hearing of the Yukon Energy Corporation's
6 20-Year Resource Plan. The Yukon Utility Board, as
7 you know, will be submitting a report on its
8 findings, as a result of these oral hearings, to
9 the Commissioner in the Executive Council by
10 January the 15th, 2007. The public input session
11 is the opportunity for the Yukon Utility Board to
12 hear comments from the public with respect to the
13 Plan.

14 I would like to introduce the Board members.
15 To my far right is Richard Hancock, to my
16 immediate right is Brian Morris, and to my left is
17 Michael Phillips, and I am Wendy Shanks.

18 Board counsel is Renee Marx, and the Executive
19 Secretary is Deana Lemke.

20 Ms. Marx, would like to call the first person
21 who would like to give input to the Board.

22 MS. MARX: Sure. I can call John
23 Maissan. He has prepared a written submission as
24 well, I think that we can follow along with, but I
25 would invite him up to give his submission.

26 PRESENTATION BY JOHN F. MAISSAN:

1 MR. MAISSAN: Thank you. I have
2 prepared a submission, Madam Chair, and it is
3 fairly lengthy, and I don't propose to just read it
4 into the record. What I propose to do is just
5 summarize my comments, and I have circulated, by
6 electronic means, this submission in PDF format, so
7 you and others can read it in detail at your
8 leisure. But I will go over the highlights of my
9 presentation.

10 First of all, the first comment I want to make
11 is on the new capacity planning criteria. Yukon
12 Energy has indicated they have adopted this new
13 planning criteria, the loss of load expectation of
14 two hours a year and the N-1 emergency criterion.

15 From my perspective, these both make good
16 sense, and I would recommend that you endorse their
17 decision on those criteria.

18 Secondly, and sort of related to that, is the
19 twinning of the Aishihik power line to cover some
20 of the risk of the N-1. I have to say, on a
21 personal basis, the potential cost of 16 to 19
22 million, and probably higher now, given the
23 increased cost estimate for the Carmacks-Stewart
24 crossing line, seems like a lot of money for just
25 insurance, as it were. And my feeling is that
26 I would much rather see sound maintenance of that

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1 line, and would also like to see that money,
2 instead, put into improved diesel capacity,
3 particularly in the Whitehorse area. To me, that
4 is far more secure than just a line.

5 A lot of things I can think of that would
6 affect the power line, that is there now, would
7 also affect a second line. If we think of things
8 like -- well, things that can happen in summer are
9 forest fire, lightning, earthquake-induced
10 landslides and so on. They are only likely to
11 happen in summer when it is not an issue. But, you
12 know, big issues can happen to both lines, not just
13 one. And as we found out last January, there are a
14 number of other components of the power delivery
15 system, from the powerhouse to the Whitehorse grid,
16 that can also fail and cause outages.

17 So I guess I have to say that I am pleased
18 that Yukon Energy is not proposing to build this
19 second line, and I would recommend that you endorse
20 that decision, and instead encourage them to supply
21 that back-up diesel in Whitehorse.

22 The Mirrlees Life Extension Project I do
23 believe is good. I believe it makes sense. I
24 believe we need that capacity here in Whitehorse
25 for N-1, and for our security of supply. So
26 I would certainly recommend that you approve that

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1 project.

2 In regards to the Carmacks-Stewart Crossing
3 Transmission Project, Yukon Energy has asked that
4 you allow them to proceed with the staged planning
5 for and construction of this line under the
6 appropriate circumstances, and first stage being to
7 Pelly Crossing, and then from Pelly Crossing on to
8 Stewart Crossing. I very much agree with Yukon
9 Energy, that opportunities like these, with the two
10 mines coming on very near to each other along the
11 route, do not happen all of the time. And when, in
12 the past, we, as Yukoners, and NCPC, have taken
13 advantage of these opportunities, we have inherited
14 infrastructure which has really provided
15 significant long-term benefits. And I believe that
16 a 138 kV line would provide similar benefits, a
17 line in that corridor. So I would certainly
18 recommend that you endorse their project for the
19 138 kV line. But I would not be happy with the 34
20 and a half kV line. I think that would be too
21 short-sighted.

22 I would make a second recommendation in this
23 regard, and that is that you recommend to the
24 government, to whom your report will go, that they
25 also participate in this line, because their
26 participation, I believe, is necessary to make this

1 line economic for ratepayers.

2 The next project I would comment on is the
3 Aishihik Third Turbine. This is a 7 megawatt
4 turbine at a cost of about 7.2 million. This is
5 almost certainly lower than the cost of new
6 generators in a new building of their own. We
7 understand from the submission that new diesel
8 generators, placed in the existing building, would
9 run about 930,000 per megawatt, and this is just
10 over a million dollars per megawatt. So I think it
11 is very cost-effective. It also adds new energy,
12 which I do believe has a significant benefit to the
13 system as well. I understand and can appreciate
14 that it doesn't really meet the N-1 planning
15 criteria in terms of providing back-up. However, I
16 think that, in its design and construction, the
17 third turbine can decrease the risk of loss of the
18 entire power plant if it is designed in such a way
19 that some of the electrical facilities between the
20 powerhouse and the substation, on the surface, are
21 twinned rather than all funnelling through the same
22 equipment and cables to the substation at the top.

23 So my recommendation to you would be that you
24 approve the Third Turbine Project, subject to the
25 electrical design incorporating features such as
26 the parallel electricity delivery from the

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1 powerhouse to the substation, at the surface, to
2 minimize the risk of future failures such as we
3 experienced in January.

4 Other existing hydro enhancements: Yukon
5 Energy has mentioned in its Resource Plan, in
6 Appendix B, various other opportunities to enhance
7 capacity or energy supply through upgrading at
8 various existing facilities. Examples include new
9 runners or wheels at Aishihik and at Whitehorse.
10 These measures are almost always done at opportune
11 times, such as at times when major maintenance is
12 required, and, for instance, May Hydro plant was
13 upgraded substantially prior to Mayo-Dawson line
14 coming into service, and I think it makes very good
15 sense to do these kind of projects when the
16 opportunities arise.

17 So my recommendation would be that you
18 encourage Yukon Energy to take advantage of any of
19 these opportunities to enhance the output of their
20 facilities.

21 Demand side management: The role that DSM
22 plays in the Resource Plan is small, and I believe,
23 contrary to the assertion in the Resource Plan on
24 page 4-38, that DSM cannot reduce capacity
25 requirements; I believe it can. I think there are
26 a number of cost-effective DSM measures that could

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1 be instituted effective immediately. I will give
2 two examples.

3 First is the Mirrlees life extension work is
4 going to cost about \$457,000 per megawatt, or about
5 457 per kilowatt. Now, a typical 40-gallon water
6 heater has two one-and-a-half kilowatt heating
7 elements, and one of these is typically on when it
8 is working. During peak times of the day, I
9 understand from historical information, that about
10 one third of the water heaters in any community
11 would be turned on. So turning off any given
12 number of water heaters would result in an average
13 saving of half a kilowatt per water heater. This
14 means, then, on a basis equivalent to the Mirrlees
15 extension work, \$228.50 could be spent putting
16 something in place that could trip the water heater
17 off during an emergency, during an N-1 emergency.
18 And I think given modern electronics and
19 communications, I do not think this is far beyond
20 the realms of possibility.

21 If we look at comparison to the new diesel
22 project, well, that number almost doubles, to \$465
23 per water heater, as a justifiable investment.

24 Second example: I was shown, with some pride,
25 a new home in Copper Ridge this past weekend.
26 I have to say that my jaw almost dropped to the

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1 ground when I walked into the house and saw
2 baseboard electric heaters. This home is going to
3 add 5 to 10 kilowatts to our winter peak, and this
4 is going to cost Yukon Energy and ratepayers the
5 equivalent of between two and almost \$5,000 in
6 Mirrlees extension work, just to meet that winter
7 peak. And if we talk about new diesel engines,
8 that is equivalent to four to \$9,000 in new diesel
9 engine capacity needed to meet the requirements of
10 that new home. And that is aside from the diesel
11 energy, during peaking times, that is going to be
12 needed to serve that electric heating load. Surely
13 a DSM program could be put in place, for far less
14 than this, to discourage that kind of
15 installation. And these are two examples.

16 There are probably a number of other things
17 that could be done, cost-effectively, compared to
18 the new capacity that is being added. And that is
19 not to say that what is being done doesn't make
20 sense, because I think it does, and I do support
21 the Mirrlees extension work, but still, this kind
22 of DSM is cost-effective.

23 So I would recommend to you that you instruct
24 Yukon Energy to identify and pursue cost-effective
25 and appropriate DSM measures, for present
26 ratepayers and future new ratepayers, by working

1 with partners as appropriate.

2 Further, I would say that, in DSM, Yukon
3 Electrical has to be there at the plate as well,
4 and so does the Yukon Government. This is not just
5 a Yukon Energy issue. All three parties have to be
6 there. And I would recommend that the Board,
7 through the government if necessary, similarly
8 instruct Yukon Electric to get there and get to
9 work.

10 And my third recommendation on this matter to
11 you is that you recommend to the government that
12 its Department of Energy, Mines and Resources,
13 through the Energy Solutions Centre, work with the
14 utilities and contribute financially to appropriate
15 DSM programs.

16 Secondary sales: Yukon Energy currently has a
17 hydro surplus of over 80 gigawatt hours a year, so
18 we heard. About 21 of this is currently being sold
19 as secondary energy, so there remains in the order
20 of 60 gigawatt hours a year of surplus hydro that
21 presently is not being sold. Increasingly, though,
22 as the secondary sales go up, and fixed loads go
23 up, this energy will be available in the warmer
24 months, and eventually only in summer, and with the
25 Minto and Carmacks Copper mines on, if this
26 happens, that reduces to a period of about two or

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1 three years.

2 Now, during the first day of hearings, we
3 heard that in the mid '90s, when the Faro mine was
4 operating, we were on diesel on the margin all year
5 round. Well, I think this is a bit of an
6 oversimplification, to be honest.

7 During the mid '90s, as you may recall, there
8 were significant consecutive years of drought. We
9 set some new record low inflows to our hydro
10 facilities. And I believe that, even during some
11 of these years, and certainly in the normal inflow
12 year, we would have had surplus hydro in the
13 summertime, at night, at the very least.

14 So I think, even with additional mines on the
15 system, there is going to be secondary energy for
16 sale, surplus hydro for sale as secondary energy,
17 through the warmer months and particularly at
18 night. It is just a matter of ensuring that the
19 systems that are in place, that serve the secondary
20 energy, can be turned on and off as appropriate, so
21 it is surplus hydro that is being sold and not
22 diesel on the margin.

23 So I would recommend to you that you instruct
24 Yukon Energy that, in the event that Minto or
25 Carmacks Copper mines are served by a power grid,
26 they should pursue the continued sale of surplus

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1 hydro to the existing secondary sales customers on
2 a seasonal or time of day basis, as it is
3 available.

4 Secondly, I would suggest that you instruct
5 Yukon Energy that, in the event that Minto and
6 Carmacks Copper mines are not served by the grid,
7 that they more actively pursue the sale of the
8 remainder of the surplus hydro.

9 Rate Stabilization Fund: The Yukon Government
10 funds a rate stabilization fund that dates back to
11 the closure of the Faro mine. Since the closure of
12 the Faro mine, there have been some very active DSM
13 programs delivered through the Energy Solution
14 Centre. One of the focuses of these programs was
15 to reduce the winter peak load and reduce the
16 impact of increased rates on the hardest hit
17 customers, those with electric heat. Because of
18 the political popularity of this program, it has
19 been continued by successive governments.

20 I believe that this program has achieved its
21 original purpose, especially considering that the
22 residential customer class already pays less than
23 its full cost of service. I believe that this
24 program is now counterproductive, and I believe
25 that it is encouraging people, such as the client
26 whose house I saw in Copper Ridge this past week,

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1 to make choices like installing baseboard electric
2 heat in new homes, because that is going to cost us
3 all dearly in the longer run.

4 So I think it is time, now, to ensure that
5 appropriate choices are being made by all people,
6 businesses, and home owners, and I believe it is
7 time that the Yukon Government got out of the
8 subsidy program, the Rate Stabilization Fund.

9 So my recommendation to you is that, in your
10 report to the Yukon Government, you very strongly
11 recommend the termination of this rate subsidy
12 program and that a portion of these funds be used
13 to fund appropriate DSM programs, that I mentioned
14 earlier, through the Energy Solutions Centre.

15 Net metering: The Resource Plan makes no
16 mention of net metering opportunities, yet we know
17 that there is certainly a percentage of our
18 environmentally conscious public that would like to
19 add some solar PV or other renewable energy
20 resources to their homes. Across North America and
21 Europe, equipment and safety standards have been
22 developed to allow this to happen in an appropriate
23 and safe manner. A number of Canadian provinces
24 and U.S. states now have laws that require
25 utilities to have a net metering policy in place,
26 and accept net metering as part of their

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1 practices. While it would be difficult to
2 determine if there is any capacity or energy
3 benefit to the system in the short term here in the
4 Yukon other than on diesel systems where the
5 benefits may be immediate. I believe there are
6 likely to be some long-term benefits, among them
7 the appreciation, I guess, of the high value of our
8 hydro systems. Because I believe the people who
9 would put these systems in would find that such
10 renewable resources are quite expensive, compared
11 to our grid hydro, and I think, in a sense, it is
12 some public education, if nothing else. And there
13 are people who are prepared to pay more to have and
14 use green energy.

15 At one time in the past, Yukon Energy was
16 working with Yukon Electric to try and establish a
17 policy for net metering. And, unfortunately, they
18 were not able to come to agreement. However, that
19 was a number of years ago, and since then there
20 have been a number of technical advances,
21 particularly with respect to electrical safety, and
22 I believe it is time for both the government and
23 the utilities to put some appropriate policies in
24 place.

25 So my recommendation is that you urge the
26 Government, Yukon Energy and YECL to implement net

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1 metering policies, as appropriate, to the Yukon.

2 Wind energy: I guess everyone who knows me
3 will know that this subject is a matter near and
4 dear to my heart, but I also believe that I am a
5 fairly pragmatic person in respect of what makes
6 sense and what doesn't. It is my view that wind
7 energy can play a more prominent role in the
8 Resource Plan than it currently has.

9 It is certainly true that wind energy does not
10 have a firm dispatchable capacity. It is also true
11 that we have some significant challenges with
12 respect to cold temperatures and, most
13 particularly, icing. Wind turbine icing
14 mitigation, although getting an increased amount of
15 attention across North America and Europe, still
16 has not been resolved in a consistent way on a
17 commercial basis. However, despite these
18 limitations, I do believe that there are
19 opportunities for cost-effective wind generation in
20 Yukon.

21 Page 5-11 of the Resource Plan refers to the
22 load fit of different energy supply options being
23 considered, and refers to the energy rather than
24 capacity in particular. I did not see in that
25 discussion, anywhere, the fact that runoff hydro
26 peaks seven months before the electrical load

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1 peak. And Whitehorse is the exception, it is a
2 glacier runoff, and its peak is in August, five
3 months before the peak electrical load in January.

4 I also did not see anything about the profile
5 of wind energy. Wind energy is most available in
6 the wintertime when our electrical loads are
7 highest, and is least available in the summer when
8 our electrical loads are lowest. As far as I know,
9 it is the only energy resource available that
10 matches our electrical load pattern.

11 The Resource Plan, on page 5-21, describes
12 scenario 1, which is a 10 megawatt mining load,
13 roughly equivalent to Minto and Carmacks Copper on
14 the system, and the need for an average 2 gigawatt
15 hours a year of energy for this scenario. Now that
16 Marsh Lake top storage is off the table, for the
17 time being at least, there is an additional 7.7
18 gigawatt hours a year, for a total of 9.7 gigawatt
19 hours per year, of diesel energy that would have to
20 be supplied over the 20-year average period. A 5
21 megawatt wind plant operating at 25 percent
22 capacity factor would fill this void. And
23 certainly all information in my possession
24 indicates that this energy could be supplied at
25 costs substantially lower than diesel energy, even
26 under Yukon conditions.

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1 Furthermore, there have been opportunities for
2 the sale of green energy at premium rates, for
3 example the federal government has committed to
4 purchasing 20 percent of its energy from green
5 sources. And so far Yukon Energy has not or has
6 not been able to take advantage of this, despite
7 some interest from local federal departments. So
8 there is the potential for additional revenue from
9 green resources such as wind.

10 There has also been a wind power production
11 incentive program in place, nationally, that
12 provides a cent per kilowatt hour production
13 subsidy, and right now the Canadian Wind Energy
14 Association is actively pursuing, with federal
15 officials, a program which, if implemented, could
16 provide a production subsidy of some 3 cents per
17 kilowatt hour to wind energy produced in the
18 north. So there are some factors and some
19 potential to reduce the cost of wind energy from
20 where the perception might be that it is now.

21 And I would recommend that the Board instruct
22 Yukon Energy to look more seriously at the benefits
23 that wind generation can provide to the system, in
24 scenarios involving mining loads being added to the
25 system, and to consider the timing of wind energy
26 availability as well as the opportunities for

1 additional revenue and cost recoveries in its
2 economic evaluations.

3 The last subject I want to comment on is
4 independent power producers.

5 Section 5.3.1.4 of the Resource Plan,
6 principally pages 5-36 and 5-37, reads like these
7 are all reasons why Yukon Energy would prefer not
8 to have an independent power producer as a
9 supplier. And a lot of these were concerns raised
10 in the 1992 Resource Plan hearing. Many of those
11 concerns are valid. However, I believe they are
12 manageable concerns, and I think IPPs can provide
13 cost-effective power supplies for ratepayers in the
14 appropriate circumstances. B.C. Hydro has made
15 extensive use of IPPs for a number of years. They
16 are also now much more common in Ontario. I think
17 it is a matter of negotiating the appropriate
18 contracts and in the appropriate circumstances.

19 Some of the risks that are mentioned I think
20 exist whether it is an IPP or Yukon Energy that
21 builds a project, because if Yukon Energy builds a
22 project and it becomes redundant, the costs will
23 need to be paid for. No different than an IPP.

24 I think there are some other good reasons to
25 consider IPPs. First of all, financial risk of
26 construction cost overruns or major failures stay

1 with the IPP. They do not transfer to the
2 utility. Once locked into a contract, if a
3 developer finds he has a cost overrun, he has to
4 eat that. And so it is not a risk to the
5 ratepayers. The ratepayers are then protected from
6 that risk.

7 The other issue is at times of major failure
8 or downtime. When an IPP project has downtime
9 because of a failure or scheduled maintenance,
10 whatever, they are not getting paid. No energy, no
11 money. And therefore they have a very high
12 incentive to minimize the risk of failures, of
13 shutdowns, and to maximize their availability.

14 A couple of examples of success stories would
15 include the New Era Hydro's Fraser Micro Hydro
16 project. I know that, in its first ten years, it
17 has achieved well over 99 percent availability.
18 There are not many hydro plants that can boast
19 that. I do not know what has happened in the last
20 several years, so I don't know if that has
21 continued.

22 I can also tell you that virtually all wind
23 power projects in Canada are IPPs. And there is a
24 good reason for that. The operators are people who
25 are involved in the wind business. They know it
26 intimately, and they know the technology

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1 intimately, and they are focused on it. If a wind
2 turbine goes down, they can focus on it and get it
3 repaired. They do not have a lot of other
4 facilities of different types to worry about, and
5 in terms of setting priorities for repairs.

6 So my recommendation would be that the Board
7 instructs Yukon Energy to develop, within the next
8 year, a policy that sets out the circumstances,
9 including supply technologies and project size, in
10 which IPPs would be solicited, and the principles
11 with respect to power pricing and other matters, as
12 necessary, of any contract that would apply, and to
13 consider IPPs seriously for supply projects of the
14 appropriate technology and scale in load scenarios
15 that require new capacity or energy supplies other
16 than enhancements to the existing facilities.

17 Thank you, Madam Chair. That concludes my
18 submissions.

19 THE CHAIR: Thank you very much.

20 It is obvious you put a lot of time and thought
21 into a very thorough presentation. Thank you very
22 much.

23 MR. MAISSAN: You are welcome.

24 THE CHAIR: Ms. Marx, are there any
25 other individuals that would like to make a
26 presentation?

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1 MS. MARX: Madam Chair, I am not
2 aware of any other individuals, but if there are
3 any, perhaps they can just come up to the
4 microphone and make their presentation and
5 introduce themselves.

6 THE CHAIR: Well, on that basis, we
7 will adjourn until tomorrow morning, 9:00.

8 (Proceedings adjourned at 6:45 p.m.)

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