

CONTENTS	1 page
Part 1 Dick Budgell Story	
Story, plus comments on attached letters	1 page
Letter from Budgell June 17, 1985.	3 pages
Response from Fisheries Minister Rideout	<u>1 page</u>
	5 pages
Part 2 Nalcor should have known about large hydro; literature	
Overview of contents	1 page
Comparing Malaysian and Canadian Experiences with Dams	6 pages
Science, Politics and Dams in Canada Dams in Canada	4 pages
Dams in Canada Parallels between Malaysian and Canadian Experiences with Dams	2 pages
Hydro's Dirty Side, The Montreal Gazette	<u>5 pages</u>
	18 pages
Part 3 Comments made 2009-2011	
Overview of contents	2 page
My comments to The Telegram Feb. 28, 2009.	1 page
My comments to Canadian Environmental Assessment Agency about environment Dec. 18, 2009.	1 page
Further comments to panel March 21/2011) on Alternatives not pursued	2 page
My CEEA presentation of March 30/2011 on Environmental Management, Monitoring and Follow-up	5 page
Themes of what I presented March 30, 2011 at CEEA hearings, on the Topic of Environmental Management, Monitoring and Follow-up, and my April 14/2011 thoughts on how those themes were received	<u>2 page</u>
	13 pages
Part 4	
Overview of contents	1 page
March 8/2011 presentation by me to the CEEA hearings, on Alternatives	3 page
Leaving Large Hydro Behind; Trends. June 22,2010 International Rivers	2 page
Natural Gas July 25,2011 commentary srpb	2 page
Ventus Energy proposal Jan 17,2006.	2 page
Comparisons Ventus vs. Muskrat, Aug 17/07	1 page
Nalcor Energy Plan stance on Wind Energy	<u>1 page</u>
	12 pages
Part 5	
Overview of contents	1 page
Excerpts/summary from Where We Stand: Labradorians' views of the Muskrat Falls Proposal March 2011, Todd Russell, MP, Survey	<u>2 page</u>
	3 pages
TOTAL 1 + 52 PAGES	

1/50

Part one: submission by Robin Goodfellow-Baikie to the Muskrat Falls Inquiry**Dick Budgell Story from the Upper Churchill between 1972 and 1980**

Importance: Demonstrating the attitude of management of the Churchill Falls Corporation towards the environment

The late Dick (Eric) Budgell*, who worked both in Twin Falls and Churchill Falls, described the following incident when he was working in Churchill Falls (CFLCo.), some time between 1972 and 1985.

It was winter, and he was driving heavy equipment to clear the snow on the bridge near the Lobstick Control Gate. He noticed that the control gates were allowing a large amount of water through them, causing the water to be a couple of feet higher. It seemed unusual, and Dick could think of the beaver lodges along the waterway that would be swept away. He called the men at the Churchill Falls control area, and they gave no explanation (although he was to later learn that they had opened the gates "just to see what would happen".)

The following day he contacted the Supervisor of Operations Ron Bowles, expressing his concern. Mr. Bowles had replied "You can have a Hydro Project, and you can have an environment - you can't have both."

(Ron Bowles is said to live now in [REDACTED] and his phone number is 709-[REDACTED]665). I have not talked with Mr. Bowles about this accounting from the late Dick (Eric) Budgell.

I include copies of two letters:

One from Dick (Eric) Budgell of June 17, 1985 to the Wildlife Division of the Government of Newfoundland, where he shows his diligent concern for the wildlife of Labrador. 3 pages

His letter was forwarded to various ministers within the provincial government, and this letter from Minister Tom Rideout is an example of the responses he received. It is notable that Minister Rideout says that "concerned citizens such as yourself should play an increased role in the management of all our resources". 1 page



June 17, 1985

Mr. D. G. Pike
Director
Department of Culture, Recreation and Youth
Wildlife Division, Bldg. 810, Box 4750
Pleasantville, Nfld.
A1C 5T7

Dear Mr. Pike:

For many years I have been receiving various forms, questionnaires from government offices provincial and federal, and I have always endeavoured to fill them out. I have occasionally enclosed a note outlining what I consider to be matters of concern regarding our wildlife, and suggesting measures which I consider will ensure there will always be some wildlife in Labrador, if not in the abundance we once took for granted.

Now, however, the absolute lack of response from either level of government to these notes and also verbal appeals to politicians of both levels, as well as to so-called wildlife experts, have led me to conclude sadly that the only interest any government department has is in the continuation of that department; and one method of ensuring this continuation is in mailing out lots of questionnaires, pamphlets, etc. I have never ever seen a report based on the findings of these surveys, nor have I ever heard of new laws or legislation enacted as a result of them.

For the record, I am not an expert on wildlife, and I have never studied biology--I just base my knowledge of Labrador wildlife on forty odd years of hunting, fishing, camping etc. in Labrador. I was born in Rigolet, Labrador in 1925. I can assure you my concern for our wildlife is genuine.

I would like to outline briefly some areas of concern. I think some of these could be corrected very quickly if some level of government could be induced to take action.

Fishing

Our inland lakes are nearly fished out. Many fish camps have had to close due to poor catches, and consequently no sports fishermen returning. In some cases these camps are re-opened to new operators who get a government grant of \$30,000 or \$40,000, open under a new name and operate for a season or two until they are in turn forced to close, and so it continues. One camp near here is opening with a new owner, the fourth in less than ten years. The problem is that there are just no fish.

Our catch limits are the same now as they were when sports fishing first

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began in Labrador:

ten pounds of brook trout plus a trophy brook trout, plus four lake trout, plus twenty-four pike per day is just too generous, and our inland lakes just cannot take that pressure. It looks great on the advertising brochure, however. Added to that is the fact that sports fishing is allowed in Labrador to continue throughout the spawning season. Most of our inland lakes will never recover from the pressures of the last fifteen or twenty years and the giant brook trout are gone forever. There are, however, some areas of the bigger rivers where spawning does take place and if these were restricted or closed to fishing, the trout could make a comeback.

Ptarmigan and partridge

Some years ago a system of tags (similar to big game tags) was introduced for the hunting of ptarmigan. It was a step in the right direction, but it was discontinued after one season. These birds' population fluctuates due to their high-low cycles, and I think their numbers are not in danger. However, one aspect of this hunt should be changed.

The open season ptarmigan continues through until the end of April. It should be closed at the end of March. In April ptarmigan are very tame and they are taken in great numbers. They are usually in very poor condition at this time of year (April). Added to this is the fact that they are usually covered in lice (small red tick), and most hunters, seeing this, throw them away in disgust. Thousands are thrown away because of this. If the season were to close earlier this would not occur.

Big game (caribou, moose and bear)

A large herd of caribou came into Western Labrador (Schefferville area) last winter where they were easily hunted by snowmobile by people from Labrador City, Wabush, Churchill Falls and Schefferville. Some people also came from Happy Valley-Goose Bay. The waste was the most disgusting that I have ever seen. Animals were wounded and left to die, gut shot animals were just not dressed, yearlings were killed and buried in the snow, and the hunter went after bigger animals. Some hunters did not know how to field dress their animals, and so the meat spoiled. I saw some hunters even shooting at caribou with buck shot.

Migratory birds. (ducks and geese)

Numbers of these birds are dwindling rapidly. I suppose the bird sanctuaries are keeping a lot of the birds south year round, but the one factor I see in our decreasing numbers is the fact that we are allowed to hunt them too early in the season. When the season opens September 1st, hardly any of the young birds can fly, they just have not had time to develop their wings. Consequently, many are taken before they have ever flown. Also, many adult birds have not yet fully feathered out from the moult in August, and so are very vulnerable. I could go on and on, but I am sure from all of this you can understand we do have wildlife problems in Labrador.

I am firmly convinced, however, that our major problem is government apathy at both levels.

I have seen lots of studies conducted on Labrador wildlife, but that is all we get. Reports on studies usually recommend further studies, and so they become self-perpetuating, a permanent form of employment for a select group

CIMFP Exhibit P-00373

Page 3 of 3 Page 5

whose main area of concern is their own survival.

We have never had a resident wildlife officer in Churchill Falls. Occasionally one arrives for a few days, but he is usually well armed for whichever hunt he is observing, and I have seen others spend their time here trapping. Currently we have a fish warden, but he is not allowed to work on weekends, when 90% of the fishing is done, and the fish laws are so ambiguous he is just not able to enforce them anyway.

When I see T.V. programs on what is being done in Newfoundland to protect the Avalon caribou herd or enhance the salmon stock in Exploits River, etc., I become very saddened by what is not being done in inland Labrador. Governments at all three levels are unanimous in the need to lure tourists to Labrador, but when they then arrive to see what is happening or what has been allowed to happen here, I am afraid they will become very disillusioned. I don't see many of them returning for a second look.

This was meant to be a short note, but I got carried away. I'm sorry to paint a picture of gloom and doom, but if there is going to be anything left for our children to see of what should have been Labrador's greatest resource, someone has to act quickly. Please not another study!

Yours sincerely,



Eric Budgell

EB/bb

cc: Minister of Tourism
Minister of Tourism--Wildlife Division
Minister of Fisheries
Dept. of Culture, Recreation & Youth
Wildlife Division, Pasadena, Nfld. & Mr. D.G. Pike, Director, St. John's
Mr. J. Kelland--M.H.A. Naskaupi District

5/50

CIMFP Exhibit P-00373

Page 6



PROVINCE OF
NEWFOUNDLAND
AND
LABRADOR

(709) 737-3705

DEPARTMENT OF FISHERIES
OFFICE OF THE MINISTER

ATLANTIC PLACE
P. O. BOX 4750,
ST. JOHN'S, NFLD. A1C 5T7
CANADA

July 18th., 1985

Mr. Eric Budgell
[REDACTED]
[REDACTED]

Dear Mr. Budgell:

I appreciate your concern for the wildlife, and particularly the fish populations of Labrador as outlined in your letter of June 17th., 1985.

As you are probably aware, the management of inland fisheries is the jurisdiction of the Government of Canada. Therefore, any changes in policy such as those suggested in your letter would have to be made by the Federal Government. The Provincial Department of Fisheries shares your concern for the conservation and preservation of the fish resources and will bring the matter to the attention of the Department of Fisheries and Oceans at the Sports Fisheries Advisory Committee meeting to be held in September.

I congratulate you on your efforts to protect the nature of Labrador and I think that concerned citizens such as yourself should play an increased role in the management of all our resources.

Sincerely yours,

TOM RIDEOUT, M.H.A.
MINISTER

450

CIMFP Exhibit P-00373

Page 7

Part 2 Nalcor should have known about large hydro; literature

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Hydro's Dirty Side, The Montreal Gazette	<u>5</u> pages

In summary:

Comparing Malaysian and Canadian Experiences with Dams 6 pages
This paper traces large hydro attitudes in British Columbia between 1950 and 1995. It covers what was learned over the years – economically, politically and environmentally, and resulting in large developments such as the 90's Kemano expansion not going ahead.

Science, Politics and Dams in Canada , Dams in Canada 4 pages
Environmental science studies were applied to hydro dams such as Quebec's and Manitoba's , resulting in the rejection by 1995 of such projects (except in Labrador?)

Dams in Canada Parallels between Malaysian and
Canadian Experiences with Dams 2 pages
Overview of comparisons of consequences of large hydro in Malaysia and Canada. A list of references, non later than 1995, covering the three articles from the internet Dams in Canada.

Hydro's Dirty Side, The Montreal Gazette April 9, 2011. 5 pages
Hydro Quebec's more recent project of La Romaine is examined in the light of changing attitudes and questions about large hydro. (La Romaine is in the region of Churchill Falls, but in Quebec.)

7/50

CIMFP Exhibit P-00373

Page 8

① ENVIRON (P.5) + Page #3 Imp. Dinosaur

Comparing Malaysian and Canadian Experiences with Dams

Canada has had far more extensive experience with dams than has Malaysia. For this reason, and because it can be useful to link study of conditions in other countries with more familiar conditions in Canada, it is appropriate to develop a basic understanding of this Canadian experience. Over the last forty years, as this experience has accumulated, attitudes towards dam projects have also evolved in Canada. By recounting briefly this experience, it can be demonstrated how i) attitudes concerning dams can change, sometimes over several decades; ii) these attitudes and perceptions reflect an integration of environmental, political and economic considerations. That is, a dam is never simply an environmental, or a political issue (for example).

My focus will be on changing attitudes towards dams and rivers in British Columbia. A particular emphasis will be on one recent project: the Kemano Completion Project, an expansion of a hydroelectric project originally built in the early 1950s, but that was canceled in early 1995.

In focusing on the rivers of British Columbia, two themes will become especially evident. One concerns the relation between the development of rivers, primarily for hydroelectric power production, and the general economic development of a province. The second theme concerns how the use of rivers relates to Canadian politics and economic priorities, and, more generally, to the values and attitudes of Canadians towards their landscape.

One can discuss these themes in terms of two seminal events, that mark, roughly, the beginning and end of a period of transformation of attitudes towards rivers in British Columbia, and their development. These events occurred in 1950 and in 1995. In each year, an important decision was made concerning large-scale river development in northwestern BC.

In 1950 the decision was made to construct a massive river diversion and hydroelectric powerplant on the Nechako River, a tributary of the Fraser (Figure 1). This project became known as the Kemano Project. It involved the creation of a reservoir, and reversal of the flow of most of the flow of the Nechako, to be sent down a tunnel, to generate electricity for an Alcan aluminum smelter at the town of Kitimat, on the B.C. coast (Figure 2). The project had considerable consequences for both the environment, and the people of this region. However, the decision to construct the project was made quickly, with a minimum of debate or controversy. By 1955 the project was in place.

In 1995 a second decision was made. This decision concerned a proposed expansion of the project's electrical generation capacity. In this case, however, and extensive, and highly visible debate took place concerning this project. Eventually, the decision was made to not continue with this project, even though construction had already begun.

In short, therefore, a strong contrast is evident between 1950 and 1995 – not only in the actual decisions, but in how the decisions were made. How can this contrast be explained? An immediate answer, of course, lies in the facts of the cases. Evidence presented during public debate prior to 1995 demonstrated that the project would likely have significant impacts on valued resources, such as the salmon stocks of the Nechako River. However, for a more complete answer it is necessary to examine the history of water development in British Columbia, and, more generally, the economic and political history of British Columbia itself between the late 1940s and 1995.

The Era of Big B.C. dams

In 1948 the B.C. government invited Alcan Aluminum to study the feasibility of developing the province's hydropower potential to support an aluminum industry. Alcan

8/50

CIMFP Exhibit P-00373

Page 9

surveyed this potential, identified the Nechako site as the most promising, and with the assistance of various and generous government subsidies, constructed the Kemano project, completing it in 1955.

At that time, several perceptions of the project were evident. On the one hand, within the Canadian business and engineering communities, there was great enthusiasm. Construction created 2,400 jobs directly, and many more among the project's suppliers. More generally, the project was seen as an important means of turning B.C. rivers to greater use. Ultimately, the project was a powerful symbol of progress. As one magazine ad of the time enthused:

"An ad in the Engineering Journal showed a huge hand reaching down out of the heavens, like the hand of God, to place a power plant at the head of the reservoir. "They've put a heart into a mountain," said the ad, in which the Bank of Montreal congratulated Alcan on completing the job. "Yes, this is among the very greatest things to happen to the West since the transcontinental railroads were built – one of the biggest strides yet in Canada's march to greatness."

Others, however, felt less enthusiasm towards the project. Among fishers, there was concern about the potential loss of salmon stocks. The Nechako River was one of the richest salmon tributaries on the Fraser river, supporting many thousands of spawning salmon. When, however, the dam on the Nechako was completed, and the dam was closed to allow the reservoir to fill, river flow dropped to zero between October 1952 and June 1954, followed by only intermittent discharges from June 1955 to January 1957. During this dry period salmon stocks were virtually eliminated.

There was also less enthusiasm among those concerned about wildlife and natural areas. The project flooded several river valleys and lakes within Tweedsmuir Provincial Park, the largest provincial park in B.C.. As a result of the project, the boundaries of the park were redrawn, removing 200,000 acres from it.

Most especially, there was very little enthusiasm within several native communities in the region. The first meeting with natives whose community was located where the reservoir would eventually be, took place on April 3, 1952. The issue to be discussed was relocation of the community, and compensation for those affected. The issue was of some urgency: the dam had already been built, and five days after the meeting, the dam was closed, and the reservoir started to fill. A settlement was reached on April 21, 1952.

Evidently, the natives were forced to move with very little advance notice, to another community that they knew little about. Many were forced to abandon their traditional occupations of hunting, trapping or fishing. One who experienced this later recalled:

"In the 1950s my people were called to a meeting on the Cheslatta Reserve on very short notice. Some of our people were trapping and did not make it to the meeting. Those that were able to attend did not know what it was about. However, they went anyway, just to find out that they had to move from their homes immediately. Not next week, next month, or next year, but they had to move out now. Some of the elders refused to move for the love of their land. They were told that if they didn't move the law would move them. Seeing that they had no choice but to move, they did."

The compensation provided to those relocated was inadequate. In 1987 (35 years after the relocation), the federal government accepted this claim; those affected, however, are continuing to seek additional compensation.

Overall, however, there was very little concern evident in official circles about these varied consequences of the project. This was reflected in the treatment of those relocated. It was also reflected in the lack of attention paid to protecting salmon stocks. The federal fisheries department had recommended some modifications to the project that could provide some protection to the salmon stocks. However, Alcan choose not to carry out

9/50

CIMFP Exhibit P-00373

Page 10

these modifications, and there was no insistence that they do so.

This pattern of development continued in B.C. for several decades. Between the 1950s and the 1970s a series of dams were constructed across the province. As Figure 3 indicates, the dams were concentrated on two large river systems: the Peace, and the Columbia rivers. This reflected the "two rivers policy" of the provincial government. Projects included:

- The W.A.C. Bennett Dam. Between 1962 and 1967 this largest B.C. dam was constructed on the Peace River, to form B.C.'s largest reservoir (Williston Lake).
- Several dams on the Columbia River. These were the product of negotiations with the United States, extending over several years, and concluding in 1964 with the signing of the Columbia River Treaty. The agreement included construction of three dams in Canada: Duncan (1967), Keenleyside (1969), and Mica (1971). Together, these dams flooded a considerable fraction of the Columbia River valley within B.C. Their purpose was to control the flow of the Columbia River, to ensure that water would be released at the right time to coordinate power production downstream in Washington state. A secondary purpose was flood control. In return, the United States provided B.C. with \$254 million to help pay for these dams.

Overall, by the early 1970s, a considerable fraction of B.C.'s rivers had been dammed. BC Hydro engineers and executives also dreamed (and had prepared a long-term master plan spelling this out) of placing a dam on every single significant river in the province. By this time, the province appeared well on its way to achieving this goal.

What factors and priorities did this development reflect?

Most obviously, it reflected a rapidly growing demand for electricity. As industry and population in British Columbia grew, so did demand for electricity. Between the 1950s and 1970s growth in electricity demand expanded by about 8% per year, effectively doubling every 7 years.

However, these dams were more than simply sources of electricity. They served as well as a key part of the provincial economic strategy. W.A.C. Bennett, premier of B.C. between 1952 and 1972, had as his chief political goal the rapid political and economic development of his province. BC Hydro was a key part in this, serving as not only an electrical utility, but as an instrument to encourage economic and industrial development. Bennett sought to promote resource development by developing the hydroelectric resources of the Peace and Columbia Rivers (the second and third largest rivers in B.C.).

This was not an objective shared by BC Electric, the private provincial electrical utility, which considered other sources of energy to be more cost-effective. Accordingly, Bennett nationalized BC Electric, to create BC Hydro. Its role subsequently became similar to hydro companies in other provinces, including Manitoba and Quebec – the development of large-scale hydroelectric projects, not only as sources of electricity, but as engines of the provincial economy.

Overall, the economic importance of hydropower was seen as two-fold: the immediate stimulus provided by the projects themselves, through thousands of construction jobs; and in addition, the provision of cheap electricity, serving as an inducement to industry (especially, energy-intensive heavy industry) considering locating in the province. (Alcan Aluminum, of course, served as a prominent illustration of this potential role of hydropower as an industrial attractant.)

But hydropower was also seen as a supplier of political power. Bennett viewed it as a means of asserting B.C.'s political autonomy relative to the rest of Canada. As a "home-grown" source of economic activity, it was viewed as lessening the province's dependence on the centres of political and economic power in eastern Canada. This was an objective Bennett was willing to achieve at any cost, as reflected, for example, in the care taken to

19/50

~~"fudge" cost estimates of the Peace River dam, to ensure that it would be built. Negotiation of the Columbia River Treaty, as already noted, also served this objective.~~

Attitudes towards the natural environment also played a significant part in shaping these views of hydro development. Rivers were seen primarily as fuel sources for the provincial economy, wasted unless turned to productive purposes. One illustration of this can be found in the writings of Bruce Hutchison, a well-known B.C. journalist. In 1950 he published *The Fraser* – a detailed examination of nearly all aspects of that most important of all B.C. rivers. After reviewing the past and present state of river, its discovery, significance to native communities, historical events such as the gold rush, the importance of salmon runs, Hutchison looked, in the last chapter, towards the future of the river:

"A river which descends from the Rockies to the coast and spills some 3,000,000,000,000 cubic feet of fresh water into the ocean every year must waste in mere motion an almost unimaginable power. It is not unimaginable to the engineers. They say the Fraser, when harnessed with dams and turbines, can give man 6,000,000 horsepower of electricity. It is probably the largest source of unused power left in the whole of North America. Not long will it remain unused." *Hutchison, The Fraser (1950)*

Hutchinson then went on to describe detailed plans for damming the Fraser. His account is particularly striking because throughout it there runs a hint of regret, at the probable loss of much of the natural quality and beauty of the Fraser, and the elimination of its salmon runs. At the same time, there is a pervasive assumption that dams are inevitable – that it cannot be questioned that a river must be more valuable as a power source for industry, than as a system supporting millions of salmon:

"a government must consider the relative values of various resources. If it has to decide between a million horsepower of electricity, operating a gigantic tidewater industry, and a portion of the salmon run, its choice is obvious."

Such views epitomize, of course, the basic and powerful idea, so pervasive in the 1950s and 1960s as to barely require even debate: that a river that descends off the mountains without turning turbines is a wasted river. Turning rivers to human use becomes, in effect, a moral imperative.

In summary, then, the overlapping values and priorities can be identified that led to several decades of intense activity, building dams across several of the largest rivers in BC:

- economic, the promotion of large-scale industry in the province;
- political: Bennett's use of hydro power as a way of asserting provincial autonomy;
- moral (and perhaps most pervasive): that rivers only have value when they have been turned to human use.

Questioning the value of dams

However, while these ideas were so influential in the 1960s & 70s, at the same time, there were other ideas developing about dams. Much of these ideas were based on practical experience with dams, in BC, and elsewhere in Canada.

Part of this practical experience was the accumulated environmental record of dams. The major B.C. dams were demonstrating a range of environmental impacts. For example, Arrow Lake (an already existing lake on the Columbia River), was expanded as a result of the Columbia River Treaty. Construction of the Keenleyside Dam added about 60 feet to the height of this lake. Ever since, periodic drawdowns and refilling of the lake have resulted in elimination of the original shoreline, and periodic wide flats of dried out mud and dust storms up & down the lake. As a second example, modification of the flood regime of the Peace River as a result of the Bennett Dam has resulted in significant changes several hundred kilometers downstream in the Peace-Athabasca Delta. In other

CIMFP Exhibit P-00373

Page 12

provinces as well, from Manitoba, to Quebec, to the St. John River valley in New Brunswick, dams have generated a range of environmental consequences. The lesson often and inevitably drawn, has been that perhaps dams are not the environmentally benign sources of power that they were once thought to be.

Another aspect of experience with hydroelectric projects during the 1970s and 1980s has been that they are often not economically sound. In part, this is because the large annual increases in electricity use experienced in the 1960s were, by the 1970s, only a memory. As a result, hydro development in B.C. slowed down greatly in the 1980s. The next planned hydro development, known as the Site C, downstream of the Bennett Dam on the Peace River, was approved in 1983. However, its construction has never gone ahead, and is now indefinitely postponed.

In strictly economic terms, Hydro projects have often turned out to not be quite the economic boons once seen. For example, Revelstoke Dam was completed in 1979, when there was no domestic demand for electricity, and only weak export markets. As a result, electricity that cost 4.2 cents/kwh to produce could only be sold for 2.4 cents/kwh. This debacle generated considerable controversy, and led to an overhaul by the province of the process by which large projects are approved. This included the creation of the BC Utilities Commission, and a formal review process for large projects.

The social impacts of dams were also becoming more evident. Numerous communities had been displaced by dams and their reservoirs. The native communities displaced by the Kemano project have already been noted. A few small communities were also displaced by the Bennett Dam on the Peace River, and in the Columbia River valley, communities with a total population of more than 2000 were removed. A sense of anger lasted for many years after that event.

The strongest underlying reason for this anger was the knowledge that these communities and their surrounding environment were being degraded for the benefit of places elsewhere, either the United States (as in the case of the Columbia River Treaty), or the larger cities in B.C., especially Vancouver. In this sense, it becomes apparent how hydro power projects have continued and extended another perennial theme in Canadian history, of the resource frontier, or hinterland, being developed for the benefit of more central regions of the country. More recently, the reaction against this notion of centre and periphery, as reflected in western Canadian resentment towards economic domination by central Canada, has also become reflected in increasing resistance to hydro projects.

This reaction has also been evident in Quebec, in the aftermath of the first phase of the James Bay project. The James Bay and Northern Quebec Agreement of 1975 cleared the way for construction of the James Bay project, and gave the Cree hunting and fishing rights, control over health, education and local government, and financial compensation for relocation and development. The deal was hailed by governments as a model for future

land claims and self-government settlements. However, for the Cree it has generated considerable uncertainty, and difficult choices: between the maintenance of economic activity based on hunting, fishing and other traditional resources, or integration into the modern cash economy; between life on the land or in new settlements that resemble towns elsewhere in Canada; and between modern education systems or traditional knowledge.

The hydroelectric project itself, as well as related developments, including clear-cut logging, have generated considerable unease among the Cree about their future.

By 1990, therefore, these various issues – the environmental impacts of hydro power, its economic implications, and its social costs – had generated a different view of hydro development. One reflection of this was the evolving role of BC Hydro. Over the last 5 years, it has largely transformed its central function, from being primarily a construction

12/51

CIMFP Exhibit P-00373

Page 13

company, always looking to the next river to be developed, to a management company, that sees conservation as a more important source of energy than additional hydro dams.

It is appropriate now to return to the Kemano power project, mentioned above. How did this new view of hydro developments shape the decisions to be made in the 1990s concerning expansion of this project? In 1979 Alcan announced that it planned to expand its power production at Kemano by 50%. It would do this by diverting more of the flow of the Nechako River. Accordingly, it entered into secret negotiations with the provincial and federal governments, managing to prevent public involvement in these negotiations. In 1987 agreement was arrived at concerning the design of the project. This agreement specified that Alcan could reduce the flow of Nechako to only 13% of its original flow. At the same time, using a special facility to ensure cold water flows, and with proper timing, it was believed that even such a small flow would be enough to protect salmon stocks in the Nechako. Alcan accordingly began construction in 1988.

After that date, however, debate increased rapidly, and the issue became one of the leading environmental controversies in B.C. during the early 1990s. In particular, there was considerable doubt that salmon stocks could survive such low flows. In 1990, federal Department of Fisheries and Oceans scientists charged that their own department had disregarded the advice of its own scientists, who had said that salmon would not be protected.

The immediate outcome of the controversy was a public review of the Alcan proposal, conducted by the BC Utilities Commission. Evidence was presented at the review that suggested that it was quite likely that the salmon would indeed be strongly affected. In January 1995 the provincial government decided that the benefit of additional power did not justify the potential loss of such large salmon stocks, and announced cancellation. By this time, Alcan had partially completed the project, and compensation for this decision is still being discussed by Alcan and the provincial and federal governments.

How, then, can this episode be interpreted? Of course, as noted above, the decision to cancel the project can be interpreted in terms of the specific details of the project and its impacts, such as the risk it posed to salmon stocks. However, to understand this decision, it is also necessary to look beyond the specific circumstances of 1995, to examine what had been occurring over the last several decades in B.C. water development. Several factors had changed:

- Economics: large projects were no longer the economic benefit they were once thought to be.
- Relations had changed between the centre and periphery, or hinterland. The notion of sacrificing the environment and communities of a hinterland region, for the benefit of industrial and economic centres elsewhere, has arguably become less acceptable in recent decades.
- Environmental concerns, and awareness of the impacts of hydro projects, have grown enormously over the last forty years.
- A changing view of rivers: not just as plumbing to be rearranged to suit human needs, but as elements of the Canadian landscape that have their own intrinsic value, and so should not be tampered with carelessly.

Overall, it is evident that the immediate decision made in 1995 concerning Alcan's Kemano expansion project has roots that extend across several decades. This project epitomized economic, environmental, political, and ethical values and priorities prevalent during the 1950s and 1960s, but that, by the 1990s, were being questioned, even rejected. The decision to cancel the expansion project was therefore the product of not only an evaluation of its immediate benefits and costs, but of an evolution of values and priorities in B.C. during the decades since construction of the project's first phase.

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Page 3
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CIMP Exhibit P-00373Page 14
#3

Dams in Canada
Science, Politics
and Dams in Canada

In the early 1970s Canada, like many other countries, followed the lead of the United States and its National Environmental Policy Act, by putting in place a framework for assessing the environmental impact of large development projects. Since that time, dam projects have been subject to extensive environmental studies, intended to predict their impacts on the environment, and to identify means of mitigating these impacts.

Studies of environmental impacts imply a substantial role for environmental science, and for scientists able to take a broad perspective on hydroelectric dams; able, in effect, to consider the river as more than a liquid used to spin turbines. Developing such a role was, at any rate, one of the original objectives of those who drafted American environmental impact legislation, from which Canada and other countries borrowed. The idea was to broaden the range of expertise brought to bear on such projects; in effect, to expand the rationality applied to them. Engineering expertise, always essential to dam projects, was now condemned for its narrow perspective, and its failure to consider the significance of water in the landscape. It would now be accompanied by environmental science, that, it was assumed, could provide a more holistic, a more "ecological" perspective.

This, at any rate, was one expectation of environmental science, and especially ecology, when a role for it began to be required in considering large developments, including hydroelectric projects. But have these expectations been fulfilled? How has environmental science contributed to decisions and controversies regarding hydroelectric projects?

Three cases, two from Quebec, and one from Manitoba, can cast some light on these questions. In 1971 Premier Robert Bourassa announced the first phase of the James Bay hydroelectric project. The next year, after a Federal-Provincial committee had recommended that the James Bay region become a giant "natural laboratory" for study of the impact of large-scale development, one of the largest environmental research projects ever conducted in Canada began. Millions of dollars were spent by the James Bay Development Corporation or by the James Bay Energy Corporation, on studies of the physical, chemical and biological features of reservoirs, rivers, and James Bay itself, and on ecosystem models intended to link this information together, to predict future environmental conditions in the region.

These studies have since been described as often highly impressive, in scientific terms. However, even as this massive research effort took place, it had little effect on development in the region. It did not lead to changes in the design or operational regime for the facilities. Instead, when impacts were identified, the task became to find ways to mitigate them, or to compensate resource users affected by these impacts.

One example will illustrate this. In 1971 and again in 1975 studies concluded that in the channels of rivers diverted elsewhere, minimum flows should be maintained, so that aquatic biota would have a chance of survival. But this was not done, and diversion plans were not modified. Instead, environmental scientists recommended remedial works, such as weirs designed to maintain water levels in river channels, and the replanting of exposed river channels. In effect, environmental science supported the engineering science that was

at the core of the James Bay project, by identifying how environmental impacts could be mitigated, without actually modifying any aspects of the project itself. In effect, environmental science assisted in this re-engineering of the northern Quebec landscape.

A second example comes from northern Manitoba, and power projects initiated by Manitoba Hydro. Beginning in the late 1960s, the Churchill and Nelson Rivers -- the two largest rivers of northern Manitoba -- were re-arranged, with most of the flow of the Churchill

14/50

being diverted into the Nelson, to maximize power production at several dams on the lower Nelson. In the early 1970s, studies of the impacts of this scheme took place. As in Quebec, these studies took place only after the design and operating regime of the project had been finalized. And, again as in Quebec, these studies were therefore only of effective value as a guide to mitigating the results of re-engineering the northern Manitoba landscape.

However, during the 1970s further research on the impacts of this development was done, by scientists at a federal research institute, the Freshwater Institute, in Winnipeg. Unlike earlier studies, this research was not tied directly, in either financial or institutional terms, to Manitoba Hydro or the Manitoba government. Instead, a major motivating factor in this work was the ambition of the scientists involved to revise existing theoretical perspectives on the impact of flooding and river diversion on aquatic ecosystems. Of particular significance in the theoretical perspectives developed as a result of this research was that they viewed these impacts in terms of the disruption of the flows of energy and matter within ecosystems, impairing the capacity of ecosystems to maintain themselves in a balanced, stable state, as they would be if they were not disrupted by human activity.

re: mitigation not possible

This was a view of nature existing in a state of balance and stability; when humans interfere, their actions will tend to disrupt natural systems. These disruptions would be of such a scale that they could not possibly be mitigated. Overall, this was a very different view from that provided by environmental science that was supportive of the large-scale engineering necessary to turn rivers into economic commodities.

Finally, one can turn to a more recent example of environmental research on the impacts of hydroelectric projects. In the early 1990s the "Hudson Bay Program" assessed the cumulative impacts of all actual or potential dams on the rivers flowing into the Hudson and James Bays. It did so by drawing not only on conventional scientific studies, but on indigenous knowledge - the environmental knowledge gained through long experience of hunting, fishing, trapping and living on the land.

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Such knowledge is inseparable from inhabiting, and using the land. Its implications in terms of views of the landscape can therefore be contrasted with those views already noted: while the Hudson Bay Program, warning of the cumulative impacts of multiple hydropower projects on James Bay, provided a severe critique of the industrial transformation of this region, neither did it present a view of a balanced, stable, nature best left alone by humans. Instead, it affirmed the centrality of the landscape to those who live there, who use the landscape, without transforming it.

Thus, environmental science has exhibited several different relationships to hydroelectric technology. These also reflect different views of nature: as water to be conquered and manipulated, to serve human interests; as a system that will maintain itself in a steady state, if protected from disruption by humans; or as a landscape that should not be dominated by humans, but not either be protected from intrusion.

3 views of nature affected by

These views of nature also exemplify some aspects of the relation between science and its institutions. As the history of recent ecology and environmental science indicates, scientific views of the environment, like scientific ideas generally, are often shaped by the institutional contexts in which science takes place. The significance of such contexts are also indicated in these cases: in the close client/patron relationships between scientists and the James Bay Energy Corporation; in the professional autonomy of scientists at the Freshwater Institute; or in the ties between the Hudson Bay Program and communities of this region.

But beyond these contrasting views of nature, what has been the practical significance of environmental science? Has it influenced how Canadians have actually used their rivers, beyond providing views of nature to justify its manipulation, protection, or

15/50

CIMFP Exhibit P-00373

Page 16

use?

Consider, first, a few general patterns in the development of the science of environmental impact assessment in Canada. On the one hand, it has often been argued that it has become considerably more sophisticated over the last two decades. In the early 1970s, many impact studies consisted of little more than descriptive surveys of the environment, with little effort to predict the actual impacts of development. Such studies amply justified the notorious critique of the ecologist David Schindler, who in 1976 described environmental impact assessment research in Canada as little more than a "boondoggle," having little relation to actual decisions, and whose only apparent function was to provide employment for ecologists.

In part in reaction to such critiques, environmental impact studies have since emphasized providing specific predictions, addressing specific concerns and issues, particularly regarding mitigation of specific impacts. This emphasis on specific relevance is most apparent in studies accompanying the James Bay project.

But another view of this is also possible. Consider one event in 1994: Cree people of the James Bay region paddled a canoe out of Quebec, to New York City. This was part of their effort to force reconsideration of the Great Whale project, an expansion of the James Bay development. They did this by taking their case to the heartland of those to whom Hydro Quebec hoped to sell its electricity. By doing so, they signalled their dissatisfaction with the "official" decision process for the Great Whale project, including studies of its environmental impacts. Every paddle stroke on this canoe journey was an implicit rejection of this process. In the 1970s environmental impact studies had helped provide a basis for the compensation agreement between the Quebec government and the Cree affected by the James Bay project. In the 1990s the Cree rejected the principle of compensation and mitigation of hydroelectric power projects, and this rejection encompassed the science associated with that process.

It could be argued that the era of large-scale hydroelectric power has ended. While there may well be a few projects to come, particularly in Labrador, recent events, such as the deferral of the Great Whale project in 1994, and of the Kemano hydroelectric expansion project in British Columbia in 1995, suggest that such projects will be in isolation, no longer part of a wave of development sweeping north across the Canadian landscape. Of course, this rejection of hydroelectric power has only occurred after most of the best sites have been taken. But it also reflects how attitudes have changed, concerning reshaping landscapes, and the lives of those who live in these landscapes, to satisfy the power needs of the metropolis. And it reflects a changing view of rivers, in which they are seen not just as plumbing to be rearranged to suit human needs; but as having their own value in the Canadian landscape, to not be tampered with carelessly.

It may well be that these changes in attitudes and values reflect to some extent the influence of environmental science. But if the science has been influential in this way, it has been so by providing general lessons concerning the human impact on nature, and concerning how humans might co-exist with, without dominating, the landscape. This leads, then, to a paradox: even as environmental research on dam projects has sought to address more rigorously specific questions and problems encountered in the engineering of rivers, opposition to dam projects, and eventually decisions concerning these projects, has drawn on more general political, economic, and cultural objections. These are objections regarding which which environmental research seeking immediate relevance are silent. Struggling to be relevant, environmental science has risked its own marginalization in contemporary Canadian debates concerning dams and rivers.

Top of Page

<http://www.idsnet.org/Resources/Dams/index.html>

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...Dams in Canada
 Parallels between the Malaysian
 and Canadian experiences with dams

As the foregoing discussion suggests, there are numerous parallels between past Canadian experiences, and the ongoing experience with the Bakun Dam. Some brief examples include:

- The environmental impacts of the projects, and of related economic developments; and the implications of these impacts for the wellbeing of affected communities.
- Concerns about resettlement, and resulting economic and social disruption.
- The conflict between maintenance of the traditional economic activities of native communities, and integration into the cash economy. In particular, there are useful parallels to be explored between Sarawak and the Canadian north.
- The significance of dams as symbols of national pride and aspirations.
- The significance of activism and resistance to development, by those affected by the project.
- The interaction between federal and state environmental authorities. [The circumstances behind the transfer of authority over the Bakun Dam from the federal to the Sarawak state government, and the role of the courts in determining the validity of this transfer, may be usefully compared with recent Canadian federal and provincial jurisdictional conflicts over dam projects, including the Oldman Dam in Alberta, the Rafferty-Alameda Dam in Saskatchewan, and the James Bay project in Quebec.

Efforts to manipulate the environmental impact assessment process. For example, for the Great Whale Project, the Quebec government advocated breaking the EIA process into two parts: to assess the roads and other infrastructure first, and then the dams, thereby enabling construction on the infrastructure to begin sooner. This parallels the strategy followed the Bakun Dam proponents, of breaking the EIA into four parts, in order to accelerate construction.

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Hydro power's dirty side

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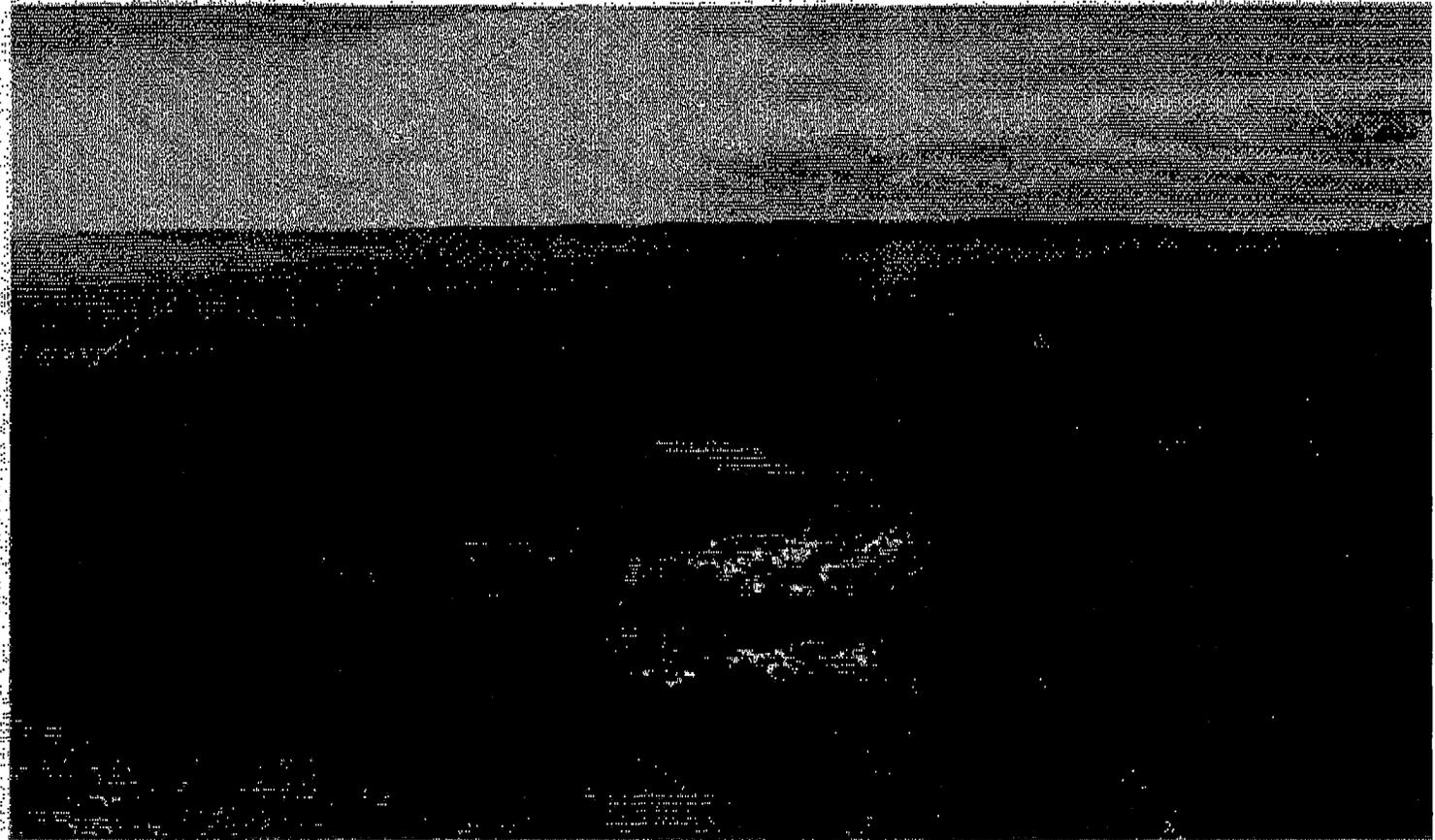
Page 19

The Gazette

Hydro power's dirty side

On July 25, 2008, two filmmakers and two environmentalist dipped their canoes into the headwaters of the Romaine River on the lower North Shore and began a 500-kilometre trip down nature's version of a condemned man. They were about to travel down a dead river flowing

BY WILLIAM MARSDEN, THE GAZETTE APRIL 9, 2011



Hydro-Québec is damming the Romaine River, shown here in a still from *Chercher le courant*, a Québec documentary filmed before construction began. Photograph by ?OF RAPIDE BLANC, The Gazette

Nicolas Bolsclair and Alexis de Gheldere photographed the river's magnificence - its raging waters, its hurtling falls, its woodland caribou, black bears, moose, salmon and trout, its spectacular mountain vistas and rocky cliffs, and dense forested valleys - capturing the river's last moments before the machines moved in. Their film, *Chercher le courant*, will be archived as a record of a lost world.

On May 13, 2009, about eight months after the paddlers completed their trip, Hydro-Québec unleashed the bulldozers for what will become the biggest construction site in Canada.

Hydro-Québec president Thierry Vandal and Premier Jean Charest were there with the local mayor to turn the first soil. They laughed and joked and delivered speeches about the 945 annual jobs the project would create and the 1,650 megawatts of energy it would produce, all for export to the United States. Flashing shiny shovels, they ceremonially turned the soil and the heavy machinery moved in.

By 2020, the river will be replaced by four new dams, seven dikes, giant spillways and canals and 279.2 square kilometres of reservoirs.

The projected cost including the power lines is \$8 billion. But if history is any lesson, the cost will rise well beyond that. As a 2009 study by the Montreal Economic Institute shows, Hydro-Québec's projects come in on average about 26-per-cent over budget.

Lost in the politics of dam building are the rivers. From the Ontario border to the Gulf of St. Lawrence, only three major or mid-size rivers have not been harnessed for their electric power. Once Hydro-

18/100
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Québec finishes damming the Romaine, it plans giant hydro dams for the neighbouring Petit Mécatina and Magpie Rivers.

After that everything dammable will have been dammed. Quebec will have reached the end of its hydro capacity having "transformed", as Hydro-Québec puts it, most of the major rivers in the province into "a modified environment" of reservoirs on one side of a dam and dried up river beds on the other.

Faced with this astonishing assault on nature, one question remains. Has hydro become an anachronism in a world where there are alternative energy solutions that do not destroy the environment?

While the industrialized world presses forward installing and perfecting clean energy systems, Hydro-Québec persists in damming rivers. It pays scant attention to alternative energy. Why?

"You try to find a logical explanation and you can't," said Real Reid, an engineer who worked for 21 years developing alternative energies for Hydro-Québec before it abandoned the field. "The only way to explain it is inertia. They don't want to change the way we do things."

Filmmaker Boisclair said in an interview: "We build dams to give contracts to satisfy the appetite of dam builders who want to make money. If it costs a lot, it's not 'serious.' Quebecers will pay with higher electricity rates. The dam builders will make money anyway. There are strong lobbies persuading the government to do these big dam projects every four years. They win voters in local ridings that keep the government in power."

Reid said energy efficiency and alternative energy programs create more employment that is longer lasting than a dam project but these jobs are dispersed and largely invisible to the public so there is no political advantage.

That politicians believe there are more votes in damming a river than developing clean energy is clear from the recent billion-dollar loan guarantee promises from the Conservative Party to help finance hydro in Newfoundland and Labrador.

So Quebecers pay among the lowest electricity rates in the industrialized world and remain among the highest electricity consumers - eating up twice as much per capita as Ontarians do. For this, rivers have to be sacrificed.

In addition is the lure of foreign sales. With the fifth highest debt-to-GDP in the industrialized world and the highest in Canada, Quebec remains dependent on hydro sales. Yet Hydro-Québec's dividend to the government has steadily declined to \$1.8 billion in 2010, from \$2.26 billion in 2006. This is one reason it's 2009-2013 strategic plan calls for an aggressive program of large-scale hydro projects, of which giant projects such as Romaine River are cornerstones. The province is seeking more sales to the U.S. of what it claims is "clean energy."

But how "clean" is hydro? The destruction of the Romaine River and at least 20 tributaries is undeniable. In addition, peer-reviewed scientific studies show that reservoirs can be large emitters of greenhouse gases. These emissions, however, are not included in Quebec's greenhouse gas inventory and are downplayed by both the utility and the government.

Premier Jean Charest frequently claims that hydro is free of greenhouse gas production. The reality is quite different.

Hydro reservoirs across Canada annually emit as much as one million tonnes of greenhouse gases. They come from the breakdown of biomass (dead trees and plants) left in the flooded area. Hydro-Québec claims these emissions taper off after 10 years and are on average 20 times less than produced by the worst emitters such as coal-fired power plants.

Eric Duchemin of the Institut des sciences de l'environnement at the Université du Québec à Montréal, disagrees. He said his work and that of his colleagues proves that Hydro-Québec's reservoirs produce about twice as much as the utility admits. What's more, he said, reservoirs continue to emit greenhouse gases for decades because they are the depositories for all the gaseous biomass in the reservoir watershed.

"(Hydro-Québec) has the tendency to minimize the importance of the emissions from its reservoirs," he said in an interview. "You transform the forest, the river, the valley into a huge immovable zone where you have enormous amounts of micro bacteria where a huge amount of methane is emitted that was not emitted before."

19/52
Page
2/2

Hydro-Québec claims the emissions are equivalent to those of a natural lake. Duchemin said his research, which he did for Hydro-Québec, shows the reservoir emissions are more than a lake produces, with the amount varying according to the depth and size of the reservoir. "And before the area was flooded there was no lake. It was river, forests." So you didn't have these net emissions. Instead you had a carbon sink.

Hydro-Québec hired Duchemin and several colleagues about 10 years ago to study greenhouse gas emissions in their reservoirs. He said Hydro-Québec refused to publish his data when it showed a lot more greenhouse gases than the utility was prepared to admit to. In 2006, Duchemin and his colleagues went ahead and published their own paper in the Journal on Lakes and Reservoirs.

He said Hydro-Québec wants to keep the numbers low so it can claim credits that can be sold through an international carbon credit trading system for millions of dollars. "It is so political for Hydro-Québec, which wants to have the greenhouse gas credits, as does the government, for not building fossil fuel plants," he said.

Duchemin is not the only scientist to claim that Hydro-Québec is not always open to public scrutiny, even though it is owned by Quebecers.

Dr. Gilles Thériault, an epidemiologist at McGill University's occupational health department, was hired by Hydro-Québec in the 1980s to study the possibility that low-frequency electromagnetic fields emitted by high-voltage power lines can cause leukemia or brain cancer.

He studied about 220,000 linemen working for Ontario Hydro, Hydro-Québec and Électricité de France in the 1970s and 1980s. The evidence for leukemia was not conclusive, he said. But he discovered a high incidence of lung cancer that could not be explained by smoking.

Thériault said Hydro-Québec was opposed to him publishing a paper on this surprise finding because it was outside the original hypothesis. He published it in 1994 in the American Journal of Epidemiology. The paper stated that "there was a clear association between cumulative exposure to (pulsed electromagnetic fields) and cancer" and added that "exposures were considerably higher in Quebec than in France."

Thériault said he wanted to conduct a follow-up study to find the reason behind this link to cancer, but Hydro-Québec refused to finance the study.

"You can understand for a company like an electricity producing company, they have to deal with the public and so it is a very sensitive issue for them," he said. "You want to avoid creating fear in the public. But you also want to know what the truth is."

Boisclair said he had hoped to interview Hydro-Québec workers studying the geology, surveying the river and gathering data on soil, fish and the ecosystems as he journeyed down the river. But the utility refused to allow its workers to speak to the filmmakers on or off camera. Hydro-Québec managers also refused to take part in the film. So Quebecers were denied a full and open discussion on the project in this film.

Hydro-Québec often appears to operate without accountability. In the film, Jacques Parizeau says that when he was premier he asked Hydro-Québec to examine whether it is cheaper to build more dams or reduce electricity demand. He says Hydro-Québec never did the study. But 15 years later the answer is clear, he says. "Saving electricity is cheaper than producing it."

Daniel Green, director of la Société pour vaincre la pollution, says that a full and open debate on Quebec's energy future has never occurred. Instead, Hydro-Québec and the government simply work out a strategic plan, which is essentially imposed on the province. In this case it's a plan to destroy Quebec's last remaining rivers.

There are, however, any number of clean alternatives to big hydro projects. Experts say Quebec could easily get the 1,550 megawatts that it wants out of the Romaine River from energy efficiency programs or from alternative energy systems like wind, solar, biomass and geothermal.

These experts note that Quebec could save three times the amount of energy that will be produced by the Romaine project just by insulating homes and installing proper windows that meet the latest standards. The cost of this would also be three times cheaper than building the Romaine River dams.

While the government promised in 2006 to bring Quebec's building code up to Novoclimat norms set by the province's L'agence efficacité énergétique, it hasn't done it. Quebec buildings are still constructed under an old 1985 code. Homeowners may get homes that are about five-per-cent

cheaper to build, but they pay for it in the long run with higher energy costs, Boisclair said.

"There is no strong lobby to push energy efficiency," he said.

Reid worked for Hydro-Québec on wind energy after the fuel crisis of the 1970s. He said Quebec has some of the best wind corridors in the world. They are ideally located in the James Bay area where Hydro-Québec already has power lines and reservoirs.

As with any energy system, Reid said, the key is sufficient storage capacity. Quebec's 30,000 square kilometres of reservoirs are ideal. Peak energy months in Quebec are December through February when the reservoirs become seriously depleted. Only the spring snow melt refills them. This also happens to be the time when winds are strongest and most consistent. Combining wind energy with hydro would greatly reduce the depletion rate of the reservoirs, making the existing power stations more energy efficient.

But Hydro-Québec has decided not to get directly involved in wind energy claiming it lacks the expertise, which is odd coming from a utility that studied wind energy for more than 20 years. Instead, it is contracting out a planned 4,000 megawatts of wind energy by 2015 to private companies, most of which are from outside Quebec. Of the 23 wind projects announced so far, five are controlled by Électricité de France, one is from the U.S. and one from Spain and eight from Calgary and Toronto.

These companies basically prowled the globe searching for rich supply contracts, grants and loan guarantees from governments such as Quebec. They also hope that these clean energy projects will earn them carbon credits that can be sold for substantial profits on the international carbon market.

A wind company's chief asset is its supply contract with Hydro-Québec as well as permission from landowners to build on their property. Once this is obtained, the contracts are often sold off to other companies for a quick profit.

The 22 projects approved for Quebec began in the Gaspé and have now spread into the Beauce, the Eastern Townships and the South Shore where many residents are opposed to them. They fear the noise of the giant blades and consider the huge turbines a blight on the landscape. They should, of course, check out what is happening to the Romaine River, but that's too far away.

The building of wind farms in the south is not only giving wind energy a bad name but also is bad business, Riel said. "In the north, you have access to nine metres per second (wind speed) compared to six in the Montérégie and your net production increases with the square of wind speed. So if you go from six to nine metres per second, you have twice the production."

He said we have the technology to build wind turbines in the deep cold of the James Bay region. "If you gave the Cree the alternative of building a dam or building a wind farm, I'm sure they would choose wind," he said.

Boisclair points out that the \$6 billion Quebec is spending to dam the Romaine would go a long way to building a modern, clean energy economy that would not destroy the province's last remaining rivers.

But Hydro-Québec has never presented Quebecers with that choice. Too often the choice is posed only in the utility's terms, Reid said. It's either dam a river or suffer energy shortages.

He said the real choice should be framed within a much broader vision that spans the full breadth of modern alternative energy systems, where the destruction of an entire river would be unthinkable.

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HYDRO-QUÉBEC PLANS A RIVER'S TRANSFORMATION

Hydro-Québec has never included the cost of destroying the Romaine River ecosystem in its \$6-billion projections.

Eco-economists say such evaluations should be made in order to obtain a true picture of the total cost of a project and fairly compare it to alternatives.

Benoit Gagnon, who is in charge of the environment assessment for Hydro-Québec, denied the utility is destroying the river.

He said Hydro-Québec's "transformation" of the environment will lead to "a lot of economic spinoffs around our facilities because hydroelectricity is one of the only energies that permits a multi-purpose use of the environment."

Hydro power's dirty side

CIMFP Exhibit P-00373

The reservoirs will be used by local people to "practise kayaking, canoeing and a lot of recreational activities," he said.

As well, Hydro-Québec will spend \$20 million to rebuild the salmon population in the lower 52 kilometres of the river with the construction of a fish farm and spawning facilities. And the utility will also stock the reservoirs with landlocked salmon and trout.

He said Hydro-Québec will spend from \$200 to \$300 million to "upgrade the aquatic environment" and monitor the local populations of woodland caribou, bear and other animals.

"The transformation of the Romaine River is going to create a modified environment," Marie-Élaine Deveault, a Hydro-Québec spokesperson, added.

"But it is still a very living environment. It's going to be a living habitat."

William Marsden

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Part 3 Comments made 2009-2011

My comments to The Telegram Feb. 28,2009	1 page
My comments to Canadian Environmental Assessment Agency about environment Dec. 18,2009	1 page
Further comments to panel March 21/2011) on Alternatives not pursued	2 page
My CEAA presentation of March 30/2011 on Environmental Management, Monitoring and Follow-up	5 page
Themes of what I presented March 30, 2011 at CEAA hearings, on the Topic of Environmental Management, Monitoring and Follow-up, and my April 14/2011 thoughts on how those themes were received	2 page

In summary:

My comments to The Telegram Feb. 28, 2009. 1 page
In response to people of Gros Morne on the island of Newfoundland complaining about Nalcor's lines disrupting the beauty of Gros Morne National Park, my editorial about what we face in Labrador is contrasted. I mention beauty destroyed, wasted resources, poisoned fish, and no financial or social benefit to Labrador. It was published in The Telegram Feb. 28, 2009.

My comments to Canadian Environmental Assessment Agency about environment Dec. 18, 2009. 1 page
Letter to Maryse Pineau of CEAA Dec. 18, 2009, responding to part of Nalcor's JRP.26 (Joint Requirement Planning) on Alternatives, plus comments on Nalcor's Environmental Impact Statement. I note the lack information and consideration of alternatives to this project. I point out that previous large hydro project documentation show negative effects which, in Nalcor's case, seemingly are being ignored.

Further comments to panel March 21/2011 on Alternatives not pursued. 1 page
Critiquing Nalcor's approach to the project in terms of copying the Hydro Quebec, no cost analysis and no work on alternatives

1 23/58

CIMFP Exhibit P-00373

My CEAA presentation of March 30/2011 on Environmental Management,
Monitoring and Follow-up 5 pages

What has been observed with the Upper Churchill with effects on environment, human error in projects, sustainable development and monitoring requirements, and the threat of local backlash against the project.

Themes of what I presented March 30, 2011 at CEAA hearings, on the Topic of Environmental Management, Monitoring and Follow-up, and my April 14/2011 thoughts on how those themes were received. 2 pages

Environmental and heritage issues are mentioned as well as the practice of sustainable development used in theory, but not in practice; majority of presenters do not want this project to go ahead.

CIMFP Exhibit P-00373

Page 26

From: W McLean <labradorians@...>
 Subject: The other part of the hydro line
 Date: March 1, 2009 1:28:44 AM AST
 To: Clarence Blake Rudkowski <cllake_rudkowski@...>, Eldred Davis <eldred@...>, James G Learning <jamesglearning@...>, robin goodfellow-baikie <rgoodf@...>, rfbnfi@...>
 Reply-To: labradorians@...

The other part of the hydro line
 The Telegram (St. John's)
 Saturday, February 28, 2009
 Page: A20
 Section: Opinion

According to Dave Bartlett's article on the proposed 64-kilometre Lower Churchill transmission line through Gros Morne National Park ("End of the Line?", Feb. 25), local people don't like the idea.

So they feel challenged by the ugliness?

Try living in Labrador, where our threatened pristine wilderness and culture are just as precious.

The proposed destruction of the finest, most beautiful 225-kilometre long wild canoeing river is heart-wrenching. Add to that 1,100 43-metre towers with the associated 60-metre wide chemically treated right-of-ways marching through our Pinware River Provincial Park and proposed Mealey Mountain National Park on their way to the coast - it threatens what is remarkable about Labrador.

Plus, there are proposed smaller lines through the north or south side of Lake Melville affecting the current pristine viewpoints of North West River/ Grand Lake, or the Kenamu River and other spots, just to give the Island hydro line a "grounding in salt water."

On top of that, we are asked to accept not only wasted lumber, greenhouse gas creation, loss of fish species but mercury in the fish.

Compound that with a large influx of temporary workers that brings associated crime and alcohol abuse, plus excessive strain on our wildlife resources.

No Labrador benefit

And all for what? Or should I say watt, as there is no plan for any power to Labrador!

Frankly, for the cost of \$12 billion plus, I thought that the premier could be more innovative, more creative, more green and more modern in provincial energy production with that amount of money. Harnessing tidal power, perhaps? The establishment of 1000-megawatt wind farms near the Upper Churchill (as proposed by Ventus Energy/Metis Nation a few years ago)?

Nalcor Energy's Lower Churchill project, as proposed, looks like, feels like and is another plunder of Labrador, for the questionable benefit to the Island.

Robin Goodfellow-Baikie
 North West River

25/31

From: Robin Goodfellow-Baikie <rgoodfi@>
Subject: Robin Goodfellow-Baikie's comments on IR# JRP.26 and IR# JRP.38 of the Lower Churchill
Date: December 18, 2009 10:40:36 PM AST
To: "Pineau, Maryse [CEAA]" <Maryse.Pineau@ceaa-acee.gc.ca>

Maryse Pineau,

I am pleased to have the opportunity to give my opinions and I have the following comments on IR# JRP.26 Alternatives to the Project and Alternative Means:

1. Nalcor clearly states that it will consider only the 3000 MW project, because it will provide the best return to the shareholders i.e. the people of Newfoundland and Labrador; the implication is that this is 'cheap power'. However, no where is an attempt to factor in the social/ environmental/economic costs of the proposed Project to the region of central Labrador, including the contributing rivers that will be compromised by this Project as proposed.

2. Nalcor made no attempt to show us how a more environmentally conservative approach could work, with the figures e.g. run of the river, but we did want to know that. The Province's Energy Plan, with its bias towards oil and big hydro, is not justification for ignoring the greener possibilities and combinations for the central Labrador region.

And I have the following comments on IR# JRP.38 on No Harvesting Policy:

1. Nalcor considers that a 'No Harvesting Policy' in the camps is enough to protect the wildlife and fishing from the major influx of workers. Nalcor states that workers' hunting not on duty will be controlled by the Government Wildlife and Fish Departments in the region. Nalcor does not comment on the current inadequacy of such personnel in the region. Nalcor needs to suggest what changes have to happen to the government departments in order to protect the central Labrador resources from the temporary influx of hunters and fishers.

And I have the following General Comments on the EIS:

Large hydro projects have been written about and studied since the turn of the last century. And other northern Pre-Cambrian Shield large hydro projects in Canada have been done (e.g. Northern Quebec and Manitoba) and they provide the consequences of damming yet another wild river. Yet the references and statements Nalcor uses make this Lower Churchill Project appear like it is unique and surmises are made that the effect will be 'insignificant'. The damage that would ensue is not honestly described, but that damage has been repeatedly documented elsewhere. I think that more references to those studies and the residual effects of such a project environmentally, socially and culturally need to be made so that the public can really understand the consequences of such a large hydro project on the Central Labrador area.

24/50

-Comments/questions in response to March 21²⁰¹¹ panel request to Nalcor, and Nalcor's response

1. Who said the Provincial Energy Plan could not and should not be changed?

- the process was three years overdue, and not transparent
- in the consultations, many 'alternatives' were suggested, including the 'Avalon Wind Farm' of 600 mw: why was that ignored?
- Is it that Nalcor is not interested in 'alternatives', but will not anyone else do them (e.g. Ventus Energy)
- Quebec Hydro studied alternatives for 20 years and did nothing. But now has let out 23 private wind projects creating 4000 megawatts of power.
- Nalcor/Newfoundland is 'anachronistic' because of its lack of paying attention to alternatives [Anachronistic meaning 'anything out of harmony with its period' - 'an old fashioned or out of date (person) or thing']

2. Nalcor/Newfoundland is mimicking Quebec Hydro

See The Marsden Montreal Gazette article on Hydro Power's dirty side

<http://www.montrealgazette.com/entertainment/movie-guide/Hydro+power+dirty+side/4586649/story.html>
<http://www.montrealgazette.com/entertainment/movie-guide/Hydro+power+dirty+side/4586649/story.html>

-it will dam every river

- Quebec is totally dependent on Hydro revenue, but this revenue is going down
- Quebec Hydro says that it 'belongs' to the people, but does not keep them informed, nor does it offer choices
- Quebec Hydro says to its customers " a dam, or suffer shortages".
- Quebec Hydro does not tell the truth about Greenhouse Gas Emissions from reservoirs
- Quebec has never included the costs of destroying the eco-system of the river, but eco-economists say they should
- Muskrat Falls is the 'tipping point' (and slippery slope) into Quebec-style Hydro development

3. Nalcor has not documented alternative visions

-former Finance Minister John Collins suggestion that a transmission line be put from Labrador to the island to take 300 mw recall power to the island and, meanwhile, develop alternatives on the island

[http://bondpapers.blogspot.com/2011/04/another-cheaper-greener-alternative-](http://bondpapers.blogspot.com/2011/04/another-cheaper-greener-alternative-to.html)

[to.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+TheSirRobertBondPapers+%28The+Sir+Robert+Bond+Papers%29](http://bondpapers.blogspot.com/2011/04/another-cheaper-greener-alternative-to.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+TheSirRobertBondPapers+%28The+Sir+Robert+Bond+Papers%29)

-Nalcor is not open to 'buying' power from small producers

-Nalcor does not apply the adjacency principle to benefits from a project

In summary, Nalcor is:

- Out of step with the rest of the world
- Is mimicking Hydro-Quebec, which is proving to be a poor model
- Doesn't try hard enough/won't let alternative power sources to be developed
- Has incomplete costing in its proposal

28/15

Qualified monitoring committee

CIMFP Exhibit P-00373

Page 30

7B 2B

To: lowerchurchill.review@ceaa.gc.ca

From: Robin Goodfellow-Baikie rgoodfl@ [REDACTED]

Re: Topic-Specific Session on Environmental Management, Monitoring and Follow-up;
Presentation for Wednesday March 30.

March 28, 2011.

**ENVIRONMENTAL MANAGEMENT, MONITORING AND FOLLOW-UP:
Previous Large Hydro Observations and Experience Lead to Personal Comments
plus a Monitoring Recommendation for Nalcor if the Project is deemed both
Sustainable and Recommendable by the Panel**

Intro:

My name is Robin Goodfellow-Baikie ~~and~~ I live in North West River and am married to a local retired trapper and fisherman. However I am originally from Montreal/Labrador therefore is not my original culture, but I 'listen' and 'hear' a lot. Some of what I will be telling you is anecdotal, but it does reflect specifically what local resident Dick Budgell, who worked on both Twin Falls and Upper Churchill projects, already knows about large Hydro Projects and their effects.

As well, I am on the local (District 19) forest management monitoring committee and was a part of the process in its establishment.

#1 Dick Budgell, background

'Labrador' is the culture of North West River resident Dick Budgell. He spent much of his life worked ⁱⁿ on both Twin Falls and subsequent Upper Churchill projects, so the changes that a large hydro project brings are not new to him. He has given me permission to repeat to the panel what he said.

#2 In his words: Dick Budgell

In the late 70's, Budgell was working very early in the morning clearing the road with heavy equipment between Churchill Falls and Esker. It was winter and pitch dark (about 5 am), and he had stopped his machine on the Brinco bridge to investigate something on his equipment. (The older, one-lane bridge is located about a mile upstream from the former falls.) He heard a "slushing sound" from the bridge. He looked over and the whole mass of the winter's ice and snow and a flood of water was moving down the river, going down towards the falls, taking ice. He couldn't believe it. He called the control room on the radio - did they know that the gates were open upstream of the bridge? "yah, we know", and they later admitted that they were experimenting to see if the water would break up the ice on the shore", but what they really accomplished was to disturb the habitat of the shore animals.

A day or so later, Budgell spoke with superintendent of CFLCo, telling him what he had seen, and said that it was pretty hard on the animals (beaver, otter, mink and muskrat) that were under the ice. Budgell couldn't imagine that the animals would get ashore so he supposed would they would have gone over the water fall.) In response, the superintendent said "You can have a hydro project or you can have wildlife -you can't have both".

#3 The Effect of the Changed Flow Regime

Budgell observed and understood that the flow regime, as dictated by Hydro-Quebec, interfered with animal habitat. Nalcor's graphs of flow regime do not show an absolute mimic of a Natural Flow regime, so even though they may look good on paper, the animals die. It appears that the only way to not affect the animals is to emulate natural flow of the river, BUT is that possible with the proposed Lower Churchill Project; what influence would Hydro-Quebec's flow regime ^{have} on the Lower Churchill?

#4 The Noticed Effect of the Orma Lake Dyke the Lake Trout

Budgell, who, all his life has been familiar with the wilds of Labrador, also observed that when the Orma Lake Dyke (closing off the Naskaupi River) was created, that there were large lake trout gathering at the dyke "so many one could almost walk

across them in the water". People fished them out over the next couple of years, Budgell recounts, but after that there were no more lake trout, and they did not seem to reproduce. Budgell concludes that the former spawning areas were damaged by the reservoir.

#5 The Effect of Human Error and Hydro Experiments

Hydro projects bring the danger of human error. For example, in Budgell's describing the instance of the gates opening in winter and allowing a flood of water to go over the falls, it was seemingly a case of hydro experiments. Another example of human miscalculation was the Caniapiscau River Reservoir in the La Grande Hydroelectric complex in northern Quebec in 1984, where ten thousand caribou were drowned because Hydro-Quebec had not planned to actively manage water flow in such a way as to protect the caribou herd from exceptional floods caused by heavy rains.

http://en.wikipedia.org/wiki/Migratory_Woodland_Caribou

When working in Twin Falls, Budgell also tells of how the Twin Falls residents were asked to go to Churchill Falls to have their hair samples collected in order to check their mercury levels, as the Twin Falls people were eating a lot of fish. The samples were duly collected, with each resident's sample put in an envelope with their name on it, and forwarded to St. John's for analysis. Subsequently, Budgell asked Dr. Price about the results of the tests, to which Price replied that the samples had been 'mixed up', and so there were no results – not even general ones!

#5 My Lack of Confidence in Proposed Mitigation and Monitoring

With the aforementioned scenarios, I lack confidence in any proposed mitigation measures and handling on the complex biodiversity of the river. I wish that every member of the panel could and would experience paddling the river to see its unique beauty, even in its Upper Churchill-tampered state. Nalcor's 'Before and After' photos cannot show close-up what would be lost.

And even if I did have confidence in the proposed mitigation measures, I find both the lack of a comprehensive list of mitigation measures, and the description of subsequent Monitoring measures, as outlined in JRP 111 and JRP 112 very confusing. It

is clear, however, that Nalcor's Mitigation Measures, Monitoring and Follow-up are to be directed by Nalcor.

I am aware that Nalcor has stated in its presentation that Monitoring/regulatory compliance would be finalized in consultation with relevant agencies. There is already a 'failed reliance on a government agency for regulatory compliance' in central Labrador, the example being the cutting practices of Labrador Linerboard in the 70's, as overseen by the province's forest department.

#6 Judging Sustainable Development

According to the CEEA website, CEEA (and the panel)'s role "is to provide Canadians with high-quality environmental assessments that contribute to informed decision making, in support of sustainable development." Additionally " *...The Government of Canada seeks to achieve sustainable development by conserving and enhancing environmental quality and by encouraging and promoting economic development that conserves and enhances environmental quality*". Of course, members of the panel are very familiar with the sustainable development theory on which their recommendations on this project will be based. (In contrast, Nalcor appears to me to have a differing understanding of Sustainable Development, as the 'sustainable' part appears related to 'income' rather than environment).

#7 Sustainable Development and Monitoring using Public Participation

From development literature, it is clear that 'sustainable development' and 'public participation' are linked.

I cite from the literature:

Receiving widespread endorsement during and since the 1992 Earth Summit, public participation has become something of a prerequisite for sustainable natural resource management (Heyzer et al. 1995; Ghai and Vivian 1992).

The "participatory principle" embodies the idea that the "gap" between executive decisions and the "natural resource" needs of individuals, households and communities can be overcome by consulting with the people who actually use the natural resources, thus improving natural resource management.

Without a stake (or even an interest) in collective activities, experience suggests, individuals are unlikely to voluntarily provide their capabilities or cooperation, opting instead for conflict and resistance (Christensen 1994; Mingsarn 1995).

(http://www.tdri.or.th/library/quarterly/text/197_3.htm)

Locally, the Department of Natural Resources does have an apparently successful forest management monitoring committee of people who are interested in the forest. / DNR took the time and effort needed to educate the interested public on the issues, and now, for years, they have had a public participation monitoring committee in District 19.

The 'best practice' of handling issues of mitigation, monitoring and follow-up is to involve a local monitoring committee. Such a committee for the Lower Churchill would have volunteer members of the public who are interested, who know the land and are willing to learn more about the issues.

#8 In Summary

Local people are already aware of the ~~possible~~ environmental degradation on the region and the price to be paid, should the Lower Churchill Project proceed. / Is this proposed project really 'sustainable development'?

If it is 'sustainable development', then the proponent should involve the public in the monitoring. A local, public, well-versed monitoring committee would be essential to review the promises and deal with the issues. Without a local monitoring committee, there is greater chance for local backlash against the project (and the province).

Themes for the April 14²⁰¹¹ presentation

These are just themes, based on what I mentioned in my March 30 presentation (Topic-Specific Session of Environmental Management, Monitoring and Follow-up) at the hearings and now, knowing more, how those themes have been developed by hearing others.

1. I mentioned the negative environmental experiences of North West River resident Dick Budgell who worked both in Twin Falls and the Upper Churchill. What I heard at the hearings was how the majority of individuals DON'T WANT THIS PROJECT as proposed by Nalcor. The local value of the 'outdoor' culture and importance of fishing and wildlife in Central Labrador was also emphasized.
2. Errors, human and mechanical, were mentioned. Additionally, there was a definite lack of confidence shown in the environmental mitigation measures, as proposed by Nalcor, as well as great disappointment in the method of not clearing the reservoir, thereby causing more greenhouse gas and methyl mercury affects.
3. The possible loss of this canoe-able river and its heritage saddened many. Others attributed climate and river change to the proposed activities. My own community (North West River) was already increasingly aware of the major changes the Upper Churchill had had on their rivers and lake. Additionally, they thought that this project, if done, would cause enough disruption that Impact Benefit Agreements with municipalities affected in Labrador would be necessary. These costs evidently are not factored into Nalcor's costs.
4. The panel's decision about this project is to be guided by the concept of 'Sustainable Development'. On CEEA's website, that definition is
...The Government of Canada seeks to achieve sustainable development by conserving and enhancing environmental quality and by encouraging and promoting economic development that conserves and enhances environmental quality".
Again and again Nalcor's idea of sustainability is related to monetary factors and shareholder return. The ecological, social and economic costs related to the 'loss of a river' were not worked out in a cost benefit analysis.
5. I find the incomplete accounting for the losses serious. It is also serious to dam a river, as one can only do it once, so it should not be done in haste and without proper analysis.
6. IF this project is judged 'sustainable' by the panel, then sustainable development practice of local, public, well-versed monitoring committees (divided into several areas of interest/concern) must be set up, and be listened to; this is not

34/50

the old age of the Upper Churchill methods, but one of public participation in all spheres of concern and change.

After hearing and learning as much as I could from these hearings Lower Churchill(which have been very informative) I still consider it 'bad development'. What I am surprised about is that so many local people also understand that there must be a better, more environmental and community way of creating power.

35/50

CIMFP Exhibit P-00373

Page 37

Part 4 Alternatives Proposed

March 8/2011 presentation by me to the CEEA hearings, on Alternatives Leaving Large Hydro Behind; Trends. June 22, 2010 International Rivers	3 pages
Natural Gas July 25,2011 commentary srpb	2 pages
Ventus Energy proposal Jan 17,2006.	2 pages
Comparisons Ventus Wind vs. Muskrat, Aug 17/07	1 page
Nalcor Energy Plan stance on Wind Energy	1 page

In summary:

My March 8/2011 presentation to the CEEA hearings, on Alternatives 3 pages
Nalcor's much awaited Energy Plan did not take Alternatives seriously. In fact, island small hydro alternatives were ignored. The Muskrat proposal is 'bad development', but with inspiration and imagination and study, it could have been 'good development.'

Leaving Large Hydro Behind; Trends. June 22,2010 International Rivers 2 pages
Big hydro is being replaced around the world by smaller projects such as solar and wind.

Natural Gas July 25,2011 commentary Sir Robert Bond Papers 2 pages
Nalcor ignores use of natural gas for Holyrood, and also ignores local studies showing natural gas would be a cheaper alternative to the Muskrat Falls project.

Nalcor Energy Plan stance on Wind Energy 1 page

Taken from Nalcor's Energy Plan, 2007

Ventus Energy proposal Jan 17, 2006. 2 pages
Wind Energy Proposal for establishment in Churchill Falls in conjunction with the Metis Development Corporation (later known as Nunatukavut Group of Companies)

Comparisons Ventus Wind vs. Muskrat, Aug 17/07 1 page
Comparing Ventus proposal with the complete Lower Churchill proposal.

36/52

To: lowerchurchill.review@ceaa.gc.ca

From: Robin Goodfellow-Baikie rgoodfl@ [REDACTED]

Re: Outline of Presentation on Alternatives for Tuesday March 8.

March 7, 2011.

ALTERNATIVES TO THE LOWER CHURCHILL PROJECT: Where and what are they?

Intro: (My name is Robin Goodfellow-Baikie.) I am a citizen of this Central Region of Labrador. I have taken a long-standing interest in, and studied this Lower Churchill Proposal. I have read thousands of pages of description, and attended all available NALCOR 'consultations'. I researched and wrote about the potential of Wind Power in Labrador for the magazine 'Labrador Life' (Wind over The Big Land, Vol.1, No. 4 Fall 2007). As well, I have seen and read about hydro projects across Canada. I have paddled the length of the Churchill or Grand River. Additionally, I have long history in the area of community economic development, both practically, and academically, with a Masters from St. Francis Xavier University.

#1 NALCOR Consultations and Alternatives

As I mentioned, I attended all NALCOR so-called 'consultations' offered. Every time I mentioned 'alternatives', NALCOR people at first said "Wait for the Energy Plan". Well, I did wait—three years beyond its due publication date! With the Energy Plan, it was apparent that the 'alternative power generation' subject was not taken seriously. The subject of alternatives was clearly stated in the Gov't of Canada and Gov't of Nf & Lab. Guidelines for the EIS July 2008. I, with others, asked that the 'alternatives' be further explored, as they had not been in the EIS. But all I saw in response were numbers for justification of the big payoff of the Lower Churchill, and no real work done, as per Guidelines July 2008 on Alternatives.

#2 Lower Churchill as proposed in the World Context

So how does the Lower Churchill proposal stack up in the world context? In the study the World Commission on Dams 2000, large hydro projects are not considered 'green', due to their large scale environmental destruction, among other factors such as greenhouse gases and local unsustainable economic factors. So, in my mind, the proposed Lower Churchill was beginning to look like 'an ill-conceived project.'

The Upper Churchill had left unrectified salination problems affecting our town of North West River, many miles away from Churchill Falls. As well, the trapping and tourism potential of the Naskaupi River has been adversely affected (I had heard that over the years from local talk, plus recently the report of engineer Ted Blake.)

#3 Lower Churchill as proposed in Canadian Context

In the Canadian context, the Lower Churchill project is not at the forefront of hydro projects; northern Quebec and Manitoba have many. However, the weak voice of those communities that lose hunting/fishing and culture is barely acknowledged. And how many wild rivers across the country must be blocked? Some suggest that northern areas should 'feel good about' providing power to distant southern consumers – Are the southern users going to notice the sacrifice being made if the Lower Churchill proceeds? I have seen, e.g. around Montreal and Winnipeg, where all signs of natural water courses have been diverted into humming power plants – perhaps those city dwellers accept that as the price for their electricity, but who says that we in Labrador have to sacrifice for them.

Many of the large northern hydro projects were started in the seventies. However, now, when such projects are proposed, people have learned about their cost; an example of this is the northern British Columbia Kemano hydro project that was successfully opposed and stopped by the people.

#4 Lower Churchill as proposed in Provincial Context

The Lower Churchill River (Grand River) is the heart of Central Labrador. This NALCOR proposal would destroy 7 to 8 rivers such as Mencion, Mininipi, Cache, Elizabeth, Wilson, and Travespine. The Churchill River itself is one magnificent canoeing river (I know). One of the major economic engines for this region is tourism – the newly-created Mealey Mountain Park, plus the waterways and wildlife constitute that. Would two 'dead' reservoirs in the waterways' place be attractive? (Tennessee Valley Authority eventually had to put aerators in the reservoirs they created).

NALCOR's Gilbert Bennett recently told Labrador municipalities that " All hydro sites are used up on the island, except for those 'environmentally-sensitive' ones" ; is Central Labrador not environmentally sensitive?

Imagine my shock when I learned that, in fact, NALCOR did indeed survey its small hydro potential on the island. Professor Andy Fisher of Memorial had those figures verified (see <http://www.mun.ca/harriscentre/policy/memorialpresents/>, Our Energy Resources: for export only, or also for development?)

All the island really needs, to replace Holyrood oil is 350 mw, yet small island hydro could more than do that, as verified by Fisher. NALCOR seemingly withheld that information.

#5 Less Destructive, Better Planned and More Modern Ways to Use the Lower Churchill

But let us return to better planned and more modern ways to use the Lower Churchill. The Ventus Energy Inc. wind energy proposal, situated around Churchill Falls would cost 2.5 Billion for 1000 mw, would create 2,000 jobs during construction, 200 direct and indirect ones after, of which 50-100 would be skilled, well-paying jobs. Compare this to the Lower Churchill Proposal!

38/02

Wind power is a good fit with hydro-power. If this alternative power supply were developed, then the technology could also be marketed. Why not start with wind power? Imagine if even a portion of those billions were to be spent wisely on wind power development that would not destroy the tourism potential of the Churchill River. NALCOR is aware of the principles example of good, stable local industrial-related development, and sees it in action at its Bull Arm site. So why propose the 'boom and bust' scenario of the Lower Churchill?

#6 Beyond Wind Power

But wind is not the only alternative to small power generation. Rigolet has an 11 knot current in their river that is open all year round, yet they burn diesel; what a place to develop tidal power technology! And what about tidal power technology for the small communities on the island. 'Run-of-the-river' projects on the Lower Churchill may have good potential, but NALCOR to date has not publicly determined its potential. And solar power in some regions of Labrador e.g. Central, would compliment the present hydro sources. Developing these alternatives would put the province in the forefront of alternative technology.

#7 Good development/Bad development

Did anyone say that NALCOR had to create a 'cash cow' of the Lower Churchill? (as the oil and gas seemingly is designed to do) Would the Lower Churchill, in fact, be a cash cow?? And for whose benefit – 5% of the total provincial population that lives in Labrador? If the scheme was developed by the 'Department of Profit', where were the Provincial Departments of Rural Development and Environment? I am aware that the coastal communities of the province are threatened by the collapse of the inshore fishery. Is 'leaving all coastal communities to die' a good strategy for the province? (Formerly this province was renowned for its rural community development.) Is this the way, as in the Lower Churchill proposal, to create thousands of labour jobs for ten years, causing young people to have to leave their small communities. And then will these bull dozer operators etc. have to commute to Alberta post-Lower Churchill?

In contrast, small alternative power project can create a few good, local jobs, plus the potential for the transfer of technology of developed alternatives to other places in the world. And what Labrador community does not want their dependence on dirty diesel power replaced by something cleaner?

#8 Lower Churchill proposed project lacks Inspiration and Imagination, but a Focus on Alternatives could change that

The province's Energy Plan is based on the risky off-shore oil and gas, excessively-large hydro projects and uncomfortable feuding with the Province of Quebec (I am originally from Quebec). The Lower Churchill proposed project lacks Inspiration and Imagination. But by focusing on green, smaller power supply alternatives, the province could be in the forefront of green trends and technology in the province and the world, rather than repeating a same old destructive dinosaur of a project.

37/50

*International Rivers
Big Hydro replaced
by smaller projects*

June 27, 2010

Patrick McCully

International Rivers, Executive Director

Posted: June 22, 2010 09:05 PM

Big Hydro Falls Behind

The big hydro industry always used to consider the "new renewables" as Mickey Mouse technologies that could never match the billions of kilowatt hours humming through the lines linked up to the world's megadams.

But times have changed. Big Hydro is learning that lots of small projects can add up to a lot more juice than a small number of very big ones.

In 2002, new installations of wind power worldwide exceeded the capacity of new big hydro for the first time ever. Wind power engineers installed more megawatts than their big hydro competitors three times over the following six years. And in 2009, it looks like wind power blew (so to speak) big hydro right out of the water.

Solar installations are rising even faster than wind, but from a much lower level. Solar installers added nearly half as many nels in 2009 as the year before, making solar the world's fastest growing power source.

The 2009, wind and solar numbers come from BP's recently released "Statistical Review of World Energy 2010." (The "Cost of Energy" blog notes that the review provides "a veritable gusher of data and an undersea volcano of graphs, all summarized in a blowout of an Excel spreadsheet.")

British Petroleum's review doesn't provide large hydro data and no 2009 data are available elsewhere. But data on trends in new big hydro capacity from the last decade suggests that 2009 wind installations were likely at least a quarter more than big hydro -- and that the dammers will never again get close to wind power's annual additions.

Of course, the dam builders have been steadily blocking more and more rivers every year for more than a century, so today hydropower still generates a lot more electricity each year than the wind or sun. But the trend is definitely in favor of the new renewables rather the old and often non-renewable (big hydro with reservoirs is not renewable because reservoirs eventually get clogged with sediments).

Indeed, the percentage of the world's electricity generated by hydropower has fallen over the past decade from 19% in the 1990s to around 16% today. (This declining hydrodependency means that the world's energy supply is slowly becoming less vulnerable to climate-change induced droughts).

The fact that wind is now a bigger and more dynamic industry than hydro is more than just symbolic of the times a changin'. It means that the new renewables industries will increasingly have more economic and political clout and that the lobbying power of Big Hydro will steadily wane. (It also means that the new renewables industries will also inevitably be able to wield their power in self-interested ways that are detrimental to the greater good. Wind and solar executives can no doubt be just as corrupt and greedy as can their hydro counterparts. But the technologies that they push will not be as inherently destructive as river-wrecking and community-evicting and often greenhouse gas belching big dams).

Of course, by far the biggest part of our non-renewable electricity comes from CO2-spewing coal. It is no exaggeration to call coal the great enemy of humanity and life as we know it. So thank goodness that the era of big coal, like the era of big river-recking hydro, may be gradually coming to an end. Some solar industry executives believe their technology will be generating electricity as cheaply as coal plants in a few years time - and even the always-conservative International Energy Agency predicts solar as being cost-competitive within a decade.

Given that the financial cost of big-dam hydroelectricity is in the same ballpark as coal, solar is also going to soon be

49/5

competitive with big hydro dams. And given that it can easily take 7-10 years for the planning and construction of a megawatt, it means that dams currently in the planning phase could find themselves financially obsolete from their first day of operation.

The energy revolution is happening. We just need to do all we can to make it happen as quickly as possible.

[A graphic and spreadsheet and some more analysis of the data behind this blog is available on my International Rivers blog]

Books & More From Patrick McCully

More In Green...

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14

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4/19

CIMFP Exhibit P-00373

Page 43

Natural Gas vs Muskrat

25 July 2011

Nalcor ignores natural gas, local studies back cheaper alternative to Muskrat Falls project

The provincial government's energy corporation didn't study natural gas as an alternative to using Muskrat Falls to replace the Holyrood generating plant according to the company's final written submission to the environmental panel reviewing the project.

Nalcor dismissed natural gas as "purely hypothetical" since the major oil companies have not identified a "viable business case" (p. 20). The company cited testimony given to the environmental panel to justify its decision.

But information given to the panel in testimony at a hearing into the project in St. John's on August 4 didn't come from the major offshore companies. Some of the information came as hearsay comments from two private consultants interested in developing a natural gas storage facility near Stephenville and from Nalcor's own vice president Gilbert Bennett.

Neither Bennett nor the consultants could cite specific information. Neither told the panel, either, that assessing development of offshore natural gas is hampered because the Government of Newfoundland and Labrador still hasn't developed a natural gas royalty regime, despite commitments to do so in 1997 and again in the provincial energy plan issued in 2007.

That's the same plan that committed the provincial government to developing the Lower Churchill.

The other source Nalcor cited to dismiss natural gas is testimony by NOIA president Bob Cadigan at the same April hearing.

The panel was interested in the prospect of using natural gas from the offshore just for Holyrood and not for export. And when asked by the environmental assessment panel for specifics on a natural gas development, Cadigan didn't have any information about the viability of natural gas as a replacement for Muskrat Falls of any sort.

Instead, he relied on the project proponents and *their* assessments:

And in terms of that feasibility, I think -- you know, I believe that the province and Nalcor have looked at a global -- from a global perspective or high level at the opportunities available, and I would be surprised if it was an economically viable source to replace electric 18 generation from Holyrood [p. 141]

NOIA is comprised of supply and service companies for which Muskrat Falls represents a very lucrative business opportunity.

What none of the project boosters talked about were studies done within the past decade on offshore gas development.

A 2006 discussion paper prepared for NOIA by Dr. Stephen Bruneau looked at six options for getting additional electricity for the island grid. Bruneau concluded that development of only 60% of the known gas reserves at Hibernia, White Rose and Terra Nova

42/50

CIMFP Exhibit P-00373

Page 44

would give enough natural gas to power a Holyrood size generating plant at full capacity, 365 days a year for over a century. That would displace 500,000 tons of greenhouse gases each year.

Bruneau estimated the cost of a pipeline to bring the gas ashore to be \$300 million. Another \$400 million would build a natural gas generating plant, with another \$112.5 million needed to build a short on-land pipeline and build natural gas handling facilities at sea. Total cost would be less than \$1.0 billion.

Nalcor estimates the Muskrat Falls project will cost at least \$6.2 billion, with the resulting electricity costs at least 14.3 cents per kilowatt hour.

In contrast, Bruneau estimated the cost of electricity from a Holyrood natural gas plant at five cents a kilowatt hour. Surplus gas could be converted to liquid natural gas and stored, according to Bruneau, or exported to the American market:

Associated gas transferred to the Island via pipeline is economical and is a wise choice for Newfoundland and Labrador energy strategy. It will result in lower electricity prices, improved environmental stewardship, will attract major industry including LNG export opportunities, and, is economical to begin IMMEDIATELY.

Bruneau's conclusions are supported by a 2001 study for the provincial energy department that looked at the feasibility of piping natural gas and gas liquids from the offshore using a pipeline. That study concluded, among other things, that the resources examined by the study could be developed economically even in a low price environment.

- erbp -

*decoded from semaphore by Edward Hollett at 07:30
Tags: Muskrat Falls, natural gas*

43/32

CIMFP Exhibit P-00373



Labrador Ventus Limited Partnership

NEWS RELEASE

Canadian Wind Energy Developer Announces Canada's Largest Wind Farm to be Built in Labrador

For Immediate Release

St. John's, Newfoundland - January 17, 2006

Toronto-based wind energy developer, **Ventus Energy Inc.**, and **Metis Energy Corporation**, a subsidiary of Metis Development Corporation, announced today plans to develop a \$2.5 billion wind farm near Churchill Falls, Labrador.

Through a newly-created partnership, Labrador Ventus Limited Partnership [labradorventus.ca], the wind farm will be the largest in Canada with an installed nameplate capacity of 1,000 megawatts. This new generation facility, to be called "Height of Land Wind Park", is expected to produce over three terawatt hours of electricity per year. Development plans include a phased construction approach over a three-year period. Pending regulatory approval, construction could begin in 2007.

"We spent much of the last year carefully evaluating our potential partners for this innovative development opportunity," says John Douglas, President and Chief Executive Officer of Ventus Energy Inc. "Over time, the choice became obvious. Who better to proceed with than the people of Labrador?"

Ventus Energy forged a relationship with Metis Development Corporation, and had preliminary discussions with the Innu, Government of Newfoundland and Labrador and Newfoundland and Labrador Hydro. "We are very keen to ensure that the concerns of the Innu and Innu business community, and other residents of Labrador, are fully considered in this development," says Mr. Douglas. "We look forward to participating with the province in the evolution of its energy plan and firmly believe there is a viable role for an independent power producer."

Labrador Ventus Limited Partnership will conduct public consultations throughout the province beginning in February 2006.

"We agreed to partner with Ventus Energy because they have a strong wind energy development team and have been well capitalized by reputable institutional shareholders," says Jamie Snook, General Manager of MDC. "Development plans have been structured to ensure that every dollar possible is spent in the province and that maximum economic benefits accrue to the people of Labrador."

Labrador Metis Nation President Chris Montague says the development will advance Labrador into the 21st Century as a world leader in wind energy. "We are very impressed with Ventus as a developer, and we look forward to working with them in this exciting project," he says. "This is a sound environmentally-friendly project that will result in benefits for the people of Labrador, the province, and the entire country."

44/02

The Height of Land Wind Park will have the capacity to produce enough zero-emission electricity to power 500,000 homes and displace the equivalent of three million tonnes of carbon dioxide per year. Local, regional and provincial economic benefits will be significant, providing over 2,000 direct and indirect construction jobs and over 200 direct and indirect long-term operation and maintenance jobs in Labrador.

~~This private-sector solution to energy development will not require any provincial or federal grants or loans in order to proceed. Negotiations of a power purchase agreement to sell the expected annual production are currently under way with potential customers.~~

Development activities to date include:

- ▲ the completion of a comprehensive wind prospecting field trip throughout Labrador and Newfoundland in the summer of 2005;
- ▲ the installation of wind monitoring equipment in the project area, which included obtaining permits from Transport Canada, NAV CAN and Crown Lands (Newfoundland and Labrador Department of Environment and Conservation and the Department of Natural Resources);
- ▲ the submission of an interconnection application to Newfoundland and Labrador Hydro in October 2005;
- ▲ the filing of an Environmental Registration Document with the provincial Department of Environment and Conservation; and
- ▲ the filing of a Project Description with the Canadian Environmental Assessment Authority.

Ventus Energy Inc

Ventus Energy [ventusenergy.ca] is developing over 5,000 MW of potential wind power projects at 25 sites in Ontario, Quebec, Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador.

The Company has secured rights to over 17 million acres of land to conduct wind energy developments, and believes this represents the largest portfolio of potential wind energy projects in Canada.

Ventus Energy has also secured partnerships with the Cree Nation of Chisasibi, along the La Grande River Hydro Complex in Northern Quebec; ~~Kwesawek Energy Inc.~~ in New Brunswick; and the Pays Plat First Nation on the north shore of Lake Superior. The partnerships make Ventus Energy the largest developer of wind energy projects with Aboriginal people in the world.

The Company expects to begin construction of three wind farms representing 160 MW of new generation throughout the Maritimes in the summer of 2006.

Metis Energy Corporation

Metis Energy Corporation [metisenergy.ca] is a new entity established by the Metis Development Corporation to pursue energy development opportunities in the Labrador region. The Metis Development Corporation was incorporated on May 21, 2003 by the Labrador Metis Nation to pursue economic and business opportunities for the Labrador Metis.

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CIMFP Exhibit P-00373

Aug 17/07

Page 47

Newfoundland & Labrador Hydro
Lower Churchill proposal

Ventus Energy Inc./Metis
Energy Corp. 'Height of
Land Wind Park' proposal

Time to complete	9 years	3 years
Projected cost	6 to 9 Billion dollars	2.5 Billion dollars
Public money required for start-up	yes	no
Projected capacity	2800 Megawatts	1000 Megawatts
Projected annual energy output	16.7 terawatt hours	over 3 terawatt hours
Construction jobs during set-up	2,000 jobs	2,000 jobs
New full time jobs, once in operation	-	200
Area disrupted by project	121 sq. km. land flooded, two reservoirs 307 sq. km. total created, replacing river	1.5 to 2 sq. km.
Greenhouse gas emissions, once in operation	yes	no

44/502

From the Energy Plan (Focusing our Energy) page 38, "One of the goals of this Energy Plan is to aximize the value from resource developments, including the benefits from wind generation. To maximize these benefits, the Provincial Government believes the Energy Corporation should control the development of all wind projects and determine when to develop alone or with private sector partners. We will enable this by adopting a policy that no new leases for wind development on crown land will be issued except to the Energy Corporation or another company acting in partnership with the Energy Corporation."

www.nr.gov.nl.ca/nr/energy/plan/index.html

June 18/18

47/52

**Part 5 Where We Stand: Labradorians' views of the
Muskrat Falls Proposal March 2011, Todd Russell, MP, Survey**

Excerpts/summary from Where We Stand: Labradorians' views of the
Muskrat Falls Proposal March 2011, Todd Russell, MP, Survey 2 pages

This is a summary of the survey that Todd Russel, MP for Labrador, had done in March, 2001. A similar survey was done with a Virtual Town Hall format where 20% of all households in Labrador participated. The results of both were comparable.

Generally, sixty percent were against the Muskrat Falls Project, and thirty percent approved of it, with 10 percent not sure. Of the other results, the public had serious concerns about the economic and environmental aspects of the project. The majority (83%) also felt that they did not have enough information about the proposed project.

The pages 22 and 23 summarize the results of the 25 page report. (the full report is available if requested.)

48/50

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APPENDIX II: Press releases

The Labrador M.P. mailed out survey response forms to every household in Labrador in late December. The survey asks twelve questions related to the proposed Muskrat Falls development, including a question on support or opposition to the project.

Russell says that survey sheets that are mailed back, must be postmarked no later than Friday, February 4th in order to be guaranteed inclusion in the final tally of results.

Surveys can also be delivered by email or fax, or dropped off at any of his three local offices in L'anse au Loup, Labrador City, or Happy Valley-Goose Bay.

Additional survey forms, and contact information for the return of completed forms, are available on-line at www.toddrussell.ca

-30-

RUSSELL RELEASES PRELIMINARY RESULTS OF MUSKRAT FALLS SURVEY

OTTAWA, February 9, 2011 — Labrador M.P. Todd Russell today released some preliminary figures from his Labrador-wide opinion survey on the proposed Muskrat Falls project. The survey began on December 8th, 2010, with surveys made available to all Labrador residents by direct mail and on-line.

The overall response rate is higher than similar mail-back surveys conducted by Members of Parliament. While not a random sample, the size of the response is as large or larger than the number of Labrador residents interviewed during province-wide public opinion surveys.

More than 200 submitted surveys have been data-entered so far. The conversion of the survey responses into digital format will allow for more detailed analysis and cross-tabulations.

Detailed results will be made public in the near future, once all survey forms have been received and processed and the full results are analyzed.

Results for those surveys processed as of February 8th are as follows:

On the main question, "Do you support or oppose the proposed Muskrat Falls agreement?",

- 45% of respondents strongly oppose and 13% somewhat oppose;
- 12% strongly support and 20% somewhat support;
- 10% are not sure.

Results from other questions reveal public concerns about the economic, environmental, and other aspects of the proposed project:

- Q1.** Does the proposed Muskrat Falls development provide enough benefit for the people of Labrador? — 83% NO.
- Q2.** Are you concerned about the environmental impacts of the proposed Muskrat Falls project? — 78% YES.
- Q3.** Have Labradorians been properly consulted about the proposed Muskrat Falls project? — 78% NO.
- Q4.** Do you feel that you have enough information about the proposed Muskrat Falls project? — 83% NO.
- Q5.** Should Muskrat Falls power be available in Labrador for residential and commercial customers? — 95% YES.
- Q6.** Does the proposed agreement respect the Aboriginal rights of Innu, Inuit, and Metis in Labrador? — 67% NO.
- Q7.** Are you satisfied with the proposed employment benefits for Labrador residents? — 66% NO.

APPENDIX II: Press releases

50/167

Q8. Do you believe that Labrador will receive a fair share of revenues from Muskrat Falls power sales? — 86% NO.

Q9. Should a dedicated Labrador development fund be a condition of a proposed Muskrat Falls project? — 83% YES.

Q10. Do you support federal funding for transmission lines to Newfoundland or Nova Scotia? — 46% NO, 40% YES. (This was the only question on which opinion is “split”.)

Q11. Do you feel that Labradorians will be the “primary beneficiaries” of the proposed Muskrat Falls project? — 87% NO.

-30-

RUSSELL ANNOUNCES LABRADOR “TOWN HALL” MEETING ON MUSKRAT FALLS

LABRADOR, February 16, 2011 — Labrador MP Todd Russell will hold a telephone “virtual town hall” next Wednesday, February 23, to get further input from Labradorians concerning the proposed Muskrat Falls hydro-electric project.

“Throughout Labrador, I find that people still have many questions and concerns about this proposed development,” Russell said. “This virtual town hall meeting will provide another forum for people to make their views known and their voices heard.”

The virtual town hall will be carried out by phone from 7:30 to 9:00 p.m. (8:00 to 9:30 p.m. south of Black Tickle). Labrador residents will receive a telephone message at home, shortly before the start of the town-hall session, inviting them to participate. Those who miss or do not receive an invitation message will also be able to call in toll-free. The toll-free number will be provided to the public next week.

Participants will be able to make comments or ask questions in a format similar to open-line radio call-in programs. The virtual town hall will also include push-button survey questions so that participants can provide instant feedback on a number of specific questions.

This is believed to be the first time in Canada that a sitting federal Member of Parliament has used such a virtual town hall to gain feedback from their entire riding.

The virtual town-hall meeting follows on Russell’s recent mail-in survey on the proposed Muskrat Falls project. The results of the mail-in survey will be released when the final tabulation is completed.

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RUSSELL RELEASES VIRTUAL TOWN HALL RESULTS

LABRADOR, March 2, 2011 — Labrador M.P. Todd Russell today announced the results of the “virtual town hall” meeting on the proposed Muskrat Falls project, which he conducted by phone throughout his riding last Wednesday night.

“The sheer volume of participation was astounding,” Russell said. “It resulted in a large amount of data which took several days to fully process.”

Over 2100 callers participated in the virtual town hall, either by listening in to some or all of the 90-minute phone-in, going live with their comments and questions, leaving voice messages, or “voting” in touch-tone polling questions.

This means that about 20% of all households in Labrador took part in last Wednesday’s event.

“I thank everyone who took part in this process,” Russell said, “and I regret that the sheer volume of calls meant that not everyone who wanted to could come ‘on the air’ with their comments.”