From: Gilbert Bennett <"cn=gilbert bennett/o=nlhydro">
Sent: Saturday, November 3, 2012 10:53 AM
To: Gideon John Samms
Cc: Dawn Dalley
Subject: Re: Water Management

Importance: High

John:

Here's a little more detail on this exchange:

What would limit HQ from requesting all the power from the UC during the peak winter day time period when we need it?

Nothing prevents this, but we're not worried.

If HQ is requesting maximum CF production, we get water to produce downstream. In the short term, we can also be sure that our System Operations team will be holding the MF reservoir at full supply in anticipation of a peak day based on our short term operating forecast.

If CF is not producing for HQ, then the water management process will see us release energy from CF.

Gilbert

From: Gideon John Samms [john.samms@[redacted]

Sent: 11/03/2012 02:05 AM GMT

To: Gilbert Bennett

Cc: Dawn Dalley

Subject: RE: Water Management

Gilbert,

Thanks so much for getting back to me so quickly with this!

I'll publish this for the AM.

Thanks,

John

From: GBennett@nalcorenergy.com [GBennett@nalcorenergy.com]

Sent: Friday, November 02, 2012 10:54 PM

To: Gideon John Samms

Cc: dawndalley@nalcorenergy.com

Subject: Re: Water Management

Hi John,

Among everything else going on, I have had a chance to read today's water management writings - including your blog posting today and also your previous one.

To your point, the HQ veto is irrelevant. At the end of the day, the HQ veto applies to specific related-party contracts. Interestingly enough, I paused when I just typed that in the same manner that I paused when speaking on CBC. The point is that the CF(L)Co shareholders agreement approval of certain related-party contracts requires both a majority of board members and support from an HQ director. At this point, I'm pretty sure you've seen the shareholders agreement, and I suspect you've worked through the language on this matter.

That being said, the terms of the water management agreement have been established by the PUB, and there's nothing to veto. In accordance with the EPCA, they are in place.

HQ undoubtedly would yell if the terms of the Power Contract were violated, but of course, there's no legal way to get there. The EPCA and the WMA both prohibit such an action.

I'm going to discuss JM's post point by point, as there are a number of misconceptions in his posting.

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The issue with the WMA is whether the energy will be there when we need it. It is clear the WMA purports to allow Nalcor to store energy via the CFLCo rese[r]voir in the summer, and non-peak hours when the power is not required in Newfoundland.

The WMA permits Nalcor to store energy in the CF reservoir at any time when optimum production at MF would be greater than MF's customer requirements. This could happen at any time of the year.

However, in the DG3 report this week it is clear Nalcor is depending upon 900 MW being available on the Labrador-Island Link during the peak winter periods.

This is also not entirely correct and represents an oversimplification. While there are periods of time when the full output of Muskrat Falls would be required, there are many times when full output is not required. Also remember that the MF reservoir has capacity to permit output at high levels for a period of time (during the day), which we can refill at night by running MF at a lower output level.

This is where the WMA may not be effective.

This is speculation. Our analysis indicates the WMA is effective.

The Guarant[e]ed Winter Availability Contract (GWAC) clearly identifies that HQ are entitled to excess capacity generated from the Upper Churchill Plant in the winter months.

I agree with this - the GWAC contract is effective during the winter months. However, section 2.1 of the Renewed Power Contract entitles HQ to take the Continuous Energy in each month, including during the winter. Referring to Volume 1 of our application to the PUB for the water management hearing, the average production at CF is about 34 TWh. If we deduct the 2.36 TWh and 1.97 TWh for recall and Twinco respectively, we're left with approximately 29.7 TWh for HQ, or approximately 2.5 TWh per month. Interestingly enough, this means the plant will deliver on average just over 3470 MW for HQ + 525 for NLH/Twinco (or 3995 MW out of 5428 MW) over the course of the month, meaning that while HQ can have 'additional capacity', they cannot have it all of the time, as they will exceed their energy allowance. This point ensures there will be lots of opportunities to withdraw stored energy from CF, even in the winter. (The math above is 2,500,000 MWh/mo / [30 days/mo] / [24 hr/day] = 3472 MW)

What would limit HQ from requesting all the power from the UC during the peak winter day time period when we need it?

Nothing prevents this, but we're not worried.

During the winter what would be the resulting flow in the river, and what would be the subsequent power in the Muskrat Falls Plant 265 miles down river?

Running at full output, Churchill Falls would discharge about 2000 cubic metres per second into the Churchill River. Assuming no reservoir draw down, this level of discharge from CF would by itself provide about 630 MW of production at Muskrat Falls. We could run MF at a higher output level for a period of time and draw down the MF reservoir, or we could hold that capacity for reserve in the event of a maintenance issue, and dispatch our other hydro units in the Nalcor fleet. We always maintain reserve in the system, so we could keep it at Muskrat Falls as well as anywhere else. We currently make these dispatch decisions many times per day, responding to water levels, inflows, system load, maintenance issues, on the island. With the interconnection, MF/CF will be added to the mix.

There is limited storage capacity in Muskrat Falls in the winter, as ice coverage prohibits drawing down on the resevoir.

There is limited storage in the Muskrat Falls reservoir at all times, as we do not wish to draw down the reservoir and reduce plant efficiency. It is incorrect to assume that we cannot access storage from Muskrat Falls in the winter. Our design drawdown is only 0.5 metres anyway, but that gives us daily flexibility.

The WMA is a major open question, both as to the legal issues it raises and in relation to technically how it would work. It seems to me that Nalcor could answer questions posed by various pundits by simply releasing the hydrology reports (which have been confidential) and producing a plot of the generation (on a monthly basis) that Nalcor is assuming will come from CFLCo. Then produce a letter from CFLCo where this release of power is endorsed by CFLCo.

Given that we will be operating in a competitive electricity market, this information is both commercially sensitive and confidential. Release of such material would not be prudent. The matter has been reviewed by multiple experts, including MHI. You may remember that MHI discussed this matter in their DG2 review - refer to Section 2 of Volume of their report for the PUB.

This seems to be a minimum requirement to address the issue prior to the debate within the House of Assembly. As for media coverage, I could be wrong, but I cannot remember any media challenge to the October 22 news release from Nalcor when Gilbert Bennett stated: "No agreement or consent by Hydro-Quebec is required to provide water management certainty for the lower Churchill developments." An agreement on water usage on the Churchill River which has not been officially endorsed by Hydro-Quebec as a shareholder in CFLCo., or as the customer, is clearly an uncertain position.

The water management agreement and its operation have been subjected to internal legal, commercial, and engineering analysis at Nalcor, supported by external advisors, and subjected to independent review. No endorsement by Hydro Quebec is required.

Gilbert

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From: Gideon John Samms <john.samms@[redacted]

To: "InboxWednesday, October 24, 2012 10:48 PMGBennett@nalcorenergy.com" <GBennett@nalcorenergy.com>

Date: 11/02/2012 09:46 PM

Subject: Water Management

Hi Gilbert,

I'm sure you're tired of talking about this given how much noise the 2041 group is making about this issue, but I have a question about the water rights agreement.

I don't know if you read my blog today, or the other one I wrote on the issue... but I feel that the 2041 group are being irresponsible about this and that their issue is a moot one. HQ's "veto" is very questionable constitutionally, but beyond that... I don't see the circumstance where they'd try to use it. They'd have to be "adversely affected" in order to do so. I haven't seen one person make a sound argument as to how that situation would arise.

But, JM posted a comment to Geoff Meeker's Telegram blog today, and I was wondering if you could speak to his concerns. I think its foolhardy for him to suggest that you guys didn't consider this but still, here goes:

The issue with the WMA is whether the energy will be there when we need it. It is clear the WMA purports to allow Nalcor to store energy via the CFLCo resevoir in the summer, and non-peak hours when the power is not required in Newfoundland. However, in the DG3 report this week it is clear Nalcor is depending upon 900 MW being available on the Labrador-Island Link during the peak winter periods. This is where the WMA may not be effective. The Guaranted Winter Availability Contract (GWAC) clearly identifies that HQ are entitled to excess capacity generated from the Upper Churchill Plant in the winter months. What would limit HQ from requesting all the power from the UC during the peak winter day time period when we need it? During the winter what would be the resulting flow in the river, and what would be the subsequent power in the Muskrat Falls Plant 265 miles down river? There is limited storage capacity in Muskrat Falls in the winter, as ice coverage prohibits drawing down on the resevoir. The WMA is a major open question, both as to the legal issues it raises and in relation to technically how it would work. It seems to me that Nalcor could answer questions posed by various pundits by simply releasing the hydrology reports (which have been confidential) and producing a plot of the generation (on a monthly basis) that Nalcor is assuming will come from CFLCo. Then produce a letter from CFLCo where this release of power is endorsed by CFLCo. This seems to be a minimum requirement to address the issue prior to the debate within the House of Assembly. As for media coverage, I could be wrong, but I cannot remember any media challenge to the October 22 news release from Nalcor when Gilbert Bennett stated: "No agreement or consent by Hydro-Quebec is required to provide water management certainty for the lower Churchill developments." An agreement on water usage on the Churchill River which has not been officially endorsed by Hydro-Quebec as a shareholder in CFLCo., or as the customer, is clearly an uncertain position.

Thanks,

John