

# **Appendix 2**

## **Generator Baseline Memos**

## **GBL COMPARISON MEMO: MERCER / CELGAR**

### **I. Introduction**

In 2009, BC Hydro (“BCH”) and Zellstoff Celgar Limited Partnership (“Celgar”)<sup>1</sup> entered into an Electricity Purchase Agreement (“2009 EPA”) that specifies an annual Generator Baseline (“GBL”) of 349 GWh/year for generation from the facilities at Celgar.<sup>2</sup> This memo addresses the GBL methodology applied by BCH to Celgar, and compares it with BCH’s general GBL methodology.

### **II. Celgar GBL Methodology and Relevant Background**

Celgar did not have an existing EPA (or similar agreement) at the time it entered into the 2009 EPA. Prior to the EPA, Celgar operated a 52 MW turbine generator to supply the mill’s load.<sup>3</sup> In 2005, Mercer invested in a series of mill operations improvement projects at the Celgar mill, which it dubbed “Blue Goose.” These projects were aimed primarily at increasing pulp production efficiency, though some electricity generation efficiencies were also gained through these projects.<sup>4</sup> Celgar did not receive any incentives from BCH to build its 52 MW generator in 1993 or to implement the mill operations improvement projects that it undertook prior to participating in the Bioenergy Call for Power (and prior to commencing EPA negotiations), including Blue Goose.

In 2007, following the implementation of Blue Goose, the mill operated its 52 MW generator to supply its entire load.<sup>5</sup> In fact, for 2007 its self-generation was slightly higher than its load. During that period, Celgar made relatively small quantities of both sales (on an *ad hoc* and net-

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<sup>1</sup> Owned by Mercer International Inc. (“Mercer”).

<sup>2</sup> See BC Hydro and Zellstoff Celgar Limited Partnership Electricity Purchase Agreement, January 27, 2009, MER00012857, Appendix 1: “Definitions” at MER00012907, **NERA-34**.

<sup>3</sup> The 52 MW unit came online in 1993: See Witness Statement of Brian Merwin, ¶30.

<sup>4</sup> See Pöyry Expert Report, ¶¶ 73-74. See also Witness Statement of Lester Dyck, ¶ 86.

<sup>5</sup> As shown in Letter from Brian Merwin to RFP Administrator Re: Zellstoff Celgar Limited Partnership (“Celgar”) – Biomass Realization Project and Celgar Green Energy Project, May 7, 2008 on page 7, **NERA-35**, under typical conditions, Celgar’s generation even exceeded its load.

of-load basis) and purchases (to meet load not covered with self-generation, particularly when the generator was down for maintenance).<sup>6</sup>

Celgar's GBL of 349 GWh for the 2009 EPA with BCH was therefore set at the mill's total annual self-generation output in 2007, adjusted downward so that the GBL would not exceed its annual mill load in 2007.<sup>7</sup> The year 2007 was considered a "normal" operating year on a going-forward basis because it was the year in which Celgar's major mill improvement projects were completed.<sup>8</sup>

### III. Comparison to BC Hydro's Stated Methodology

From an overarching perspective, BCH is encouraged to incentivize increased generation from industrial customers with self-generation capabilities and increased generation of power from renewables, while simultaneously protecting customers.<sup>9</sup> Prior to BCUC Order G-38-01 and BCH's contracted GBL agreements, BCH used other economic incentives to accomplish these goals; the Bioenergy Call for Power was a more recently employed program. Celgar, served by FortisBC (another utility in BC), participated in the Call for Power, and was awarded the 2009 EPA through Phase 1 of the Call. The 2009 EPA was tied to the construction of a new 48 MW clean power unit, and the agreement would potentially lead to a generation increase at Celgar of about 68% over 2007 levels.<sup>10</sup>

As with other EPAs signed between BCH and mills with self-generation, Celgar's EPA incentivized increased generation while simultaneously protecting BCH's customers. Like all EPAs between BCH and its customers with pre-existing generation, Celgar's included a GBL

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<sup>6</sup> See Letter from Brian Merwin to RFP Administrator Re: Zellstoff Celgar Limited Partnership ("Celgar") – Biomass Realization Project and Celgar Green Energy Project, May 7, 2008 on page 4, **NERA-35**; Witness Statement of Lester Dyck, ¶ 82.

<sup>7</sup> In 2007, its generation was 351 GWh and load was 349 GWh (See Witness Statement of Lester Dyck at ¶ 87). Setting the GBL any lower than 349 GWh would have created an explicit opportunity for arbitrage detrimental to other customers because it would have allowed for the sale of existing self-generation that historically served Celgar's load.

<sup>8</sup> See Witness Statement of Lester Dyck, ¶ 81.

<sup>9</sup> See Section III.B.2 of my report for details.

<sup>10</sup> The EPA potentially could lead to [REDACTED] GWh of generation at Celgar (the sum of GBL and firm sales obligations). See BC Hydro and Zellstoff Celgar Limited Partnership Electricity Purchase Agreement, January 27, 2009, MER00012857, Appendix 2: "Energy Profile" at MER00012925, **NERA-34**.

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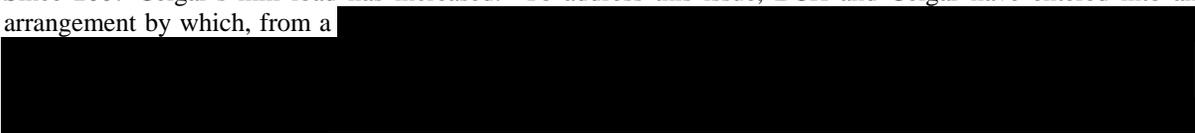
that would effectively incentivize increased generation but prevent any increase in consumption of regulated-rate embedded-cost electricity while sales to third parties were taking place.<sup>11</sup>

Therefore, BCH's process for setting Celgar's GBL complies with the overarching principles of economic incentives that protect customers. It also is consistent with the specifics of BCH's contracted GBL methodology, which I introduced in Section III.B.2 of my report and includes the following four key elements:

- 1) **Annual use by the customer for self-supply:** Celgar's historical generation was the appropriate baseline above which an EPA should incentivize incremental generation.<sup>12</sup> In 2007, the base year for its GBL, Celgar's annual generation exceeded its load. The mill's GBL was thus adjusted downwards to reflect the level at which it self-supplied, *i.e.* its entire load of 349 GWh.<sup>13</sup>
- 2) **In the absence of a contract:** Essentially 100% of Celgar's generation in 2007—including its generation for sales—was a by-product of its mill operations.<sup>14</sup> Celgar did not have a contract so no adjustment to the GBL level was appropriate. Moreover, it did not need the incentives of a sales contract with BCH to generate at that level. The improvements made at the mill - e.g. Blue Goose - were also made without the prospect of a sales contract with BCH, and thus formed part of normal operations.
- 3) **In a normal current operating year:** Celgar's GBL is based on its 2007 generation data. At the time of the EPA's negotiations, 2007 was the only year that represented normal operations following the efficiency projects completed in 2005 and 2006 (e.g., the Blue Goose project). Using any data from prior to 2007 would ignore the effect of the efficiency

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<sup>11</sup> Since 2007 Celgar's mill load has increased. To address this issue, BCH and Celgar have entered into an arrangement by which, from a

. See Section III.C.6 of my report.

<sup>12</sup> If Celgar's GBL in its EPA with BCH were lowered to a level below its historical supply, Celgar would then be allowed to sell that amount at firm EPA prices, which would be tantamount to a retroactive, and hence inefficient, incentive.

<sup>13</sup> As BCH's process was to set GBLs equal to generation used for self-supply, GBLs cannot exceed a mill's load.

<sup>14</sup> As Mercer stated in a May 12, 2010 presentation, "Celgar became [the] first NBSK mill in BC that could supply all of its heat and electricity needs from Black Liquor without requiring supplemental hog fuel." Black Liquor is a by-product of its operations. See [http://www.mercerint.com/i/pdf/presentations/Bioenergy\\_Barriers\\_Conference.pdf](http://www.mercerint.com/i/pdf/presentations/Bioenergy_Barriers_Conference.pdf), NERA-36.

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projects Celgar was implementing during those prior years. In addition, 2007 was a year in which there were “few operational upsets leading to plant or generator downtime.”<sup>15</sup>

- 4) **As of the time period the EPA is negotiated:** Information available at the time of the EPA negotiations was used (specifically the most recent full year of operation).

#### IV. Comparison to GBL Methodology Applied to Other Mills

For details of my comparisons of the GBL methodology applied to other mills to Celgar’s GBL methodology see Section IV of the mill GBL memos that follow.

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<sup>15</sup> See attachment to email from B. Merwin to M. Kincade, “RE: Energy Flow diagrams,” June 10, 2009, **NERA-37**.

## **GBL COMPARISON MEMO: TEMBEC / SKOOKUMCHUCK**

### **I. Introduction**

In 2009, BC Hydro (“BCH”) and Tembec entered into an Electricity Purchase Agreement (“2009 EPA”) that specifies an annual Generator Baseline (“GBL”) of 122,640 MWh/year for generation from facilities at Tembec’s Skookumchuck Mill (“Skookumchuck”).<sup>1</sup> This memo addresses the GBL methodology applied by BCH to Skookumchuck, and compares it with BCH’s general GBL methodology and with the one used by BCH to set Celgar’s GBL.

### **II. Skookumchuck GBL Methodology and Relevant Background**

In 1997, Purcell Power Corp.<sup>2</sup> and BC Hydro entered into an EPA (the “1997 EPA”) for the sale of electricity generated by a yet-to-be-built steam turbine (“STG2”).<sup>3</sup> Previously, Skookumchuck operated an older 15 MW steam turbine generator (“STG1”).<sup>4</sup> In 1999, Tembec bought Skookumchuck and assumed the contract rights and commitments.<sup>5</sup> Tembec subsequently invested CAN [REDACTED] in upgrading power facilities at Skookumchuck, including the development of STG2, a 43.5 MW unit, which began operation in 2001.<sup>6</sup> Also in 2001, Tembec and BCH signed an Electricity Supply Agreement (“2001 ESA”).<sup>7</sup>

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<sup>1</sup> BC Hydro and Tembec Electricity Purchase Agreement, August 13, 2009. Appendix 1: “Definitions” at bates 017071, **NERA-38**.

<sup>2</sup> An affiliate of Crestbrook Forest Industries Limited, owner of Skookumchuck before Tembec.

<sup>3</sup> Electricity Purchase Agreement between Purcell Power Corp. and British Columbia Hydro and Power Authority, September 5, 1997, **NERA-39**.

<sup>4</sup> After STG2 came online (in 2001), Skookumchuck generally ran that unit exclusively, but STG1 was still available to run in emergency situations: Memo from Chris Lague to Matt Steele, “Tembec Skookumchuck site GBL calculations,” March 10, 2009. (“Lague Memo”) at bates 020996, **NERA-40**.

<sup>5</sup> See Assignment and Assumption Agreement (Purcell Power (Skookumchuck) Project), December 5, 2007, at bates 017011, **NERA-41**.

<sup>6</sup> Lague Memo, at bates 020997, **NERA-40**.

<sup>7</sup> See Electricity Supply Agreement between BC Hydro and Tembec Industries Inc., September 14, 2001, **NERA-42**. [REDACTED]

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In March 2009, due to changing economic conditions,<sup>8</sup> the Mill and its generation units shut down operations, [REDACTED]

[REDACTED].<sup>10</sup> At the time of the negotiations of the 2009 EPA, BCH understood that Tembec might seek early termination in 2011 of the 1997 EPA.<sup>11</sup> Further, even if the Mill were to have continued operating under the 1997 EPA, given the economic conditions at the time, [REDACTED]

[REDACTED], BCH and Tembec signed a replacement EPA, which phased out the 1997 EPA, and which included a GBL.

In setting Tembec's GBL, BC Hydro looked at what the Skookumchuck mill would generate under current normal operating conditions, without the effect of the 1997 EPA (which would be replaced), and without the incentive of the new EPA. Under these conditions at the time of negotiating the 2009 EPA, the parties determined that Tembec would generate only that amount of electricity that was [REDACTED]

[REDACTED].<sup>14</sup> [REDACTED]

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<sup>8</sup> [REDACTED], see BC Hydro Inter-office memo "Tembec Skookumchuck Pulp Operations – CBL / GBL / EPA Analysis, April 8, 2009, ("BCH Memo") at bates 037397, **NERA-43**.

<sup>9</sup> Electricity Purchase Agreement between Purcell Power Corp. and British Columbia Hydro and Power Authority, September 5, 1997, s. 15 at bates 106986, **NERA-39**.

<sup>10</sup> While shutdown and not producing electricity, the mill [REDACTED] See BCH Memo, **NERA-43**.

<sup>11</sup> See Witness Statement of Lester Dyck, ¶ 101.

<sup>12</sup> See BCH Memo, **NERA-43**.

<sup>13</sup> See BCH Memo, **NERA-43**. [REDACTED]

<sup>14</sup> See Witness Statement of Lester Dyck, ¶¶ 107 and 110. Also, BCH Memo, page 4, **NERA-43**, discusses how BCH was amenable to the methodology [REDACTED]

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[REDACTED]. In essence, the new EPA would provide incentives [REDACTED]. The year [REDACTED] was deemed to be representative of normal current pulp operations at the mill.<sup>15</sup>

Tembec submitted to BCH an estimate of generation [REDACTED]

[REDACTED] Based on these greater efficiencies, BCH estimated a GBL of 14.0 MW. Tembec agreed, and the 14 MW figure, the average hourly output that corresponds to the precise annual GBL of 122,640 MWh/year, was set in the EPA.

### III. Comparison to BC Hydro's Stated Methodology

From an overarching perspective, BCH is encouraged to incentivize increased generation from industrial customers with self-generation capabilities and increased generation of clean power, while simultaneously protecting customers.<sup>20</sup> Use of economic incentives by BCH to accomplish these goals predates BCUC Order G-38-01 and BCH's contracted GBL agreements.<sup>21</sup> Skookumchuck's 1997 EPA led to the construction of STG2, advancing these goals in the Province. Generation at Skookumchuck increased from about 12 MW prior to the 1997 EPA to about [REDACTED] MW, on average, thereafter,<sup>22</sup> where the electricity produced

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[REDACTED]. Last, I note that BCH, in its information report on GBLs, states that it takes into account for GBL determination purposes factors such as: "Relationship between the customer's industrial production process and its self-generation;" and "Thermal balance requirements of the industrial plant;" (BC Hydro Information Report, June 2012, at page 17, **NERA-44**). The methodology for Skookumchuck appears to be consistent with this.

<sup>15</sup> Witness Statement of Lester Dyck, ¶ 107.

<sup>16</sup> Lague Memo, **NERA-40**.

<sup>17</sup> Lague Memo, **NERA-40**.

<sup>18</sup> Witness Statement of Lester Dyck at ¶ 109.

<sup>19</sup> BCH Memo, at bates 037398, **NERA-43**. Also see Witness Statement of Lester Dyck, ¶¶ 109-110.

<sup>20</sup> See Section III.B.2 of my report.

<sup>21</sup> The contracted GBL agreements are examples of economic incentives as well.

<sup>22</sup> BCH Memo, at bates 037396, **NERA-43**.

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qualified as B.C. Clean or Renewable Electricity.<sup>23</sup> The contractual arrangements in the 1997 EPA provided economic incentives for this increase in production.<sup>24</sup>

The new EPA provided economic incentives for Skookumchuck potentially to generate about [REDACTED] MW on average, with a term through 2019.<sup>25</sup> The new EPA therefore helped the Skookumchuck mill both to restart generation, at levels similar to those that it operated at under the 1997 EPA, whose incentives were no longer adequate, and to continue generating well beyond 2011, when the initial EPA could have been terminated.

The 2009 EPA simultaneously protected BCH's other customers. The new EPA did not allow Tembec to avoid its obligations under the 1997 EPA: BCH incorporated the firm sales obligations under the earlier EPA over the 2009 to 2011 period into the firm energy prices of the 2009 EPA—as prices were lower in the 1997 EPA, this effectively lowered prices in the 2009 EPA.<sup>26</sup> Further, customers are protected as the 14 MW (average) GBL is in line with the objectives of BCH (and the BCUC through Order G-38-01) to not increase the level of embedded-cost-of-service energy provided to self-generation customers, thereby preventing arbitrage opportunities harmful to BCH's other customers.<sup>27</sup> BCH's process for setting the

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<sup>23</sup> In accordance with B.C.'s Clean or Renewable Electricity Guidelines, see Justification Report: Tembec EPA Replacement for Incremental Energy Sales from Purcell Power Plant at page 6, **NERA-45**.

<sup>24</sup> [REDACTED]  
[REDACTED] **NERA-43)** [REDACTED]

<sup>25</sup> [REDACTED].  
(Average of figures presented in Appendix 2 of the 2009 EPA). See Clause 2.1 for the Term of the 2009 EPA. BC Hydro and Tembec Electricity Purchase Agreement, August 13, 2009. Appendix 1: "Definitions" (CAN000599/bates 017023-017132), **NERA-38**.

<sup>26</sup> See Witness Statement of Lester Dyck, ¶ 118. Also see Justification Report: Tembec EPA Replacement for Incremental Energy Sales from Purcell Power Plant at page 2, **NERA-45**. The 2009 to 2011 period is the relevant period because Tembec had the right to terminate the 1997 EPA in September 2011, and BCH knew that Tembec could terminate the agreement at that point if nothing was done to renegotiate the terms of sale.

<sup>27</sup> The following comparison makes this clear. Skookumchuck's mill load is about [REDACTED] MW. In the absence of a contract, it would generate and self-supply hourly on average about [REDACTED] MW [REDACTED], so it would purchase about [REDACTED] MW [REDACTED]. Under the 2009 EPA, with a GBL of 14 MW, contractually Skookumchuck can only make sales over the 14 MW threshold, so it will self-supply 14 MW and purchase just 11 MW of embedded cost energy—in other words, no increase in supply of embedded-cost energy. If the mill load were to increase due to an increase in production, the increment could be served with embedded-cost energy from BCH.

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Skookumchuck GBL complies not only with the overarching principles of economic incentives that protect customers, but also with the specifics of its stated contracted GBL methodology, which I introduced in Section III.B.2 of my report, including the following four key elements:

- 1) **Annual use by the customer for self-supply:** The Skookumchuck GBL in the 2009 EPA is set as an *annual* [REDACTED] figure of self-supply: 122,640 MWh/year.
- 2) **In the absence of a contract:** Skookumchuck did not have a recent history of self-supply in the absence of a contract, as it had been selling to BCH under an EPA since 2001.<sup>28</sup> The 1997 EPA provided incentives that led to the construction of the new turbine and the increase of electricity production beyond historical levels.<sup>29</sup> As discussed above, the incentives of the 1997 EPA became inadequate in 2009. In order to revise these incentives in the context of an EPA with a GBL, BCH needed to assess what Skookumchuck's generation would have been in the *absence* of the 1997 agreement, and without the prospect of the new EPA. This level of self-supply was agreed to be 14.0 MW on average, and was the basis of Skookumchuck's GBL.
- 3) **In a normal current operating year:** The [REDACTED] GBL reflects the generation from STG2 in a normal operating year— [REDACTED]
- 4) **As of the time period the EPA is negotiated:** STG2 was in place at the time of the 2009 EPA negotiations, so generation efficiency from this unit was used as the basis for setting the GBL.

#### IV. Comparison to the GBL Methodology applied to Celgar

As was the case with Mercer's Celgar mill, Skookumchuck was assigned a GBL set at the level of its own load that it would have supplied with self-generation in the absence of a contract with BCH. Both Celgar and Skookumchuck historically operated smaller generating turbines before constructing new larger turbines, and, in both cases, these larger turbines were already in

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<sup>28</sup> While the EPA was signed in 1997, the EPA was tied to the new turbine SGT2, which achieved COD in 2001.

<sup>29</sup> These incentives— [REDACTED] —were discussed above in footnote 24.

<sup>30</sup> I understand that mill production was relatively constant prior to the 2009 EPA, so this suggests that the [REDACTED] production data was "normal". In addition, according to the Lague Memo, **NERA-40**, [REDACTED]

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operation when each mill signed its recent EPA with BCH (Celgar's 2009 EPA and Skookumchuck's 2009 EPA). In both cases, the generating efficiencies of these larger turbines that were in operation at the time the recent EPAs were signed formed the basis for the GBLs (Celgar's 52 MW generator and Skookumchuck's TG2).

While Celgar's GBL was based on actual generation in its GBL base year,<sup>31</sup> Skookumchuck's GBL was not.<sup>32</sup> This difference, however, does not constitute an inconsistent methodology, but rather reflects the differences in contractual obligations of the mills. The critical difference is that, during the years leading up to the 2009 EPA, Skookumchuck's operational decisions were influenced by its contract that committed it to sell generation from its plant. Because the obligations under the 1997 EPA would be disappearing, actual generation at Skookumchuck would have been an inappropriate baseline for its GBL as it would not have accurately represented what was truly incremental generation to be incentivized in the 2009 EPA. It was therefore necessary to base Skookumchuck's GBL on a model of the amount of [REDACTED], as the parties agreed it would, considering the economic conditions at the time absent an EPA. In contrast, Celgar never had a contract with BCH, it self-supplied essentially all of its load, and its operations in 2007 represented current normal self-generation in the absence of a contract.

In conclusion, both Celgar's and Tembec's GBLs were set following a consistent BCH methodology. The differences in the details of how each mill's GBL was calculated are explained by the unique circumstances of the mill (such as a prior EPA with BCH), and reflect a consistent application of BCH's GBL methodology.

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<sup>31</sup> Celgar's GBL was actually set to its load, which was slightly lower than its generation in the year its GBL was set (2007); this was the amount of generation used to self-supply in that year. The point to convey is that both Celgar's load and generation in 2007—and hence Celgar's GBL—were much higher than the annual historical generation of its previous turbine.

<sup>32</sup> Skookumchuck's GBL did reflect the efficiency of its new turbine, [REDACTED].

## **GBL COMPARISON MEMO: HOWE SOUND / PORT MELLON**

### **I. Introduction**

In 2010, BC Hydro (“BCH”) and Howe Sound Pulp and Paper (“Howe Sound”) entered into an Electricity Purchase Agreement (“2010 EPA”) that specifies an annual Generator Baseline (“GBL”) of ██████████ MWh/year for generation from facilities at Howe Sound’s Port Mellon Mill (“Port Mellon”). This memo addresses the GBL methodology applied by BCH to Port Mellon, and compares it with BCH’s general GBL methodology and the one used by BCH to set Celgar’s GBL.

### **II. Port Mellon GBL Methodology and Relevant Background**

Howe Sound and BC Hydro entered into a Generation Agreement in 1989 that provided an interest-free loan for the construction of generation facilities<sup>2</sup> that had a combined capacity of ██████████ MW.<sup>3</sup> In exchange, Howe Sound committed to generating ██████████ GWh each year to displace its load. ██████████

In 2000, natural gas prices spiked and Howe Sound ██████████  
██████████. In 2001, Howe Sound, BC Hydro

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<sup>1</sup> BC Hydro and Howe Sound Pulp and Paper Limited Partnership Electricity Purchase Agreement Integrated Power Offer, September 7, 2010, (“Howe Sound EPA”) Appendix 1, “Definitions” at bates 016422, **NERA-46**.

<sup>2</sup> The generation facilities included two turbines and a power boiler: Generation Agreement Between BC Hydro and Howe Sound Pulp and Paper Limited, October 1, 1989, at bates 016635, **NERA-47**.

<sup>3</sup> Generation Agreement Between BC Hydro and Howe Sound Pulp and Paper Limited, October 1, 1989, p. 36. at bates 016636, **NERA-47**. Prior to that agreement, Port Mellon operated a 3 MW turbine.

<sup>4</sup> ██████████, See Termination Agreement between HSPP and BCH, September 7, 2010, Section 3.4(b)ii, bates 016536, **NERA-48**.

<sup>5</sup> See Witness Statement of Pierre Lamarche, ¶¶ 18-23. Also see Howe Sound Pulp and Paper Generation Agreement Termination Briefing Note DRAFT, February 16, 2010, at bates 143051, **NERA-49**.

<sup>6</sup> See Witness Statement of Pierre Lamarche, ¶ 23-24.

<sup>7</sup> See Witness Statement of Pierre Lamarche, ¶ 26 and Witness Statement of Lester Dyck, ¶ 39.

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and Powerex entered into an arrangement which gave Howe Sound the right to sell generation in excess of [REDACTED] MW<sup>8</sup> to Powerex,<sup>9</sup> [REDACTED]

In 2010, Howe Sound invested in a new power boiler, and signed the 2010 EPA, which included a GBL. In setting Howe Sound's GBL, BCH used Port Mellon's [REDACTED]

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<sup>8</sup> This threshold was based on the generation conditions at Howe Sound prior to the mill entering into the sales arrangement with BCH and Powerex. I understand that the [REDACTED] MW threshold is in line with a notional separation of the generation essentially resulting from Port Mellon's steam requirements and kraft mill performance on the one hand, and on the other hand incremental generation that would need to be produced from discretionary fuel acquisitions by Howe Sound. While Howe Sound's generation at that time ranged from about [REDACTED] MW, the agreed-to [REDACTED] MW threshold reflected generation due to production "at or very near design kraft mill operating rates". (See Witness Statement of Pierre Lamarche, ¶ 36-37). Basically, Howe Sound could utilize its idle capacity and generate above [REDACTED] (see Witness Statement of Lester Dyck ¶ 40). This threshold helped to ensure that Howe Sound could not arbitrage generation that it previously would have produced under normal conditions.

<sup>9</sup> [REDACTED] (Witness Statement of Pierre Lamarche, ¶ 38). See also s. 7 of April 12, 2001 Consent and Electricity Purchase and Sale Agreement (NERA-50 at p 4) [REDACTED]

<sup>10</sup> Specifically, Howe Sound and PowerEx entered into an Enabling Agreement that allowed for ad hoc sales to Powerex at a specified price (See Enabling Agreement Between HSPP and Powerex Corp dated April 12, 2001, NERA-51 p. 13). Howe Sound, Powerex, and BCH entered into a separate agreement that specified that sales could be made when generation exceeded [REDACTED] (See Consent and Electricity Purchase and Sale Agreement between HSPP, Powerex and BC Hydro, NERA-50 p. 2).

<sup>11</sup> Witness Statement of Pierre Lamarche, table following ¶ 40, [REDACTED] See Howe Sound Pulp and Paper, Generation Data (2005-2012), NERA-52 [REDACTED]

<sup>12</sup> [REDACTED] Witness Statement of Fred Fominoff, ¶¶15-22.

<sup>13</sup> The parties agreed that this period best reflected normal operations. Witness Statement of Lester Dyck, ¶ 129; Witness Statement of Fred Fominoff, ¶ 32. The parties also agreed to [REDACTED] for the GBL and Firm Energy quantities in the EPA. The mill's historical generation demonstrated [REDACTED] that was deemed to be normal for the mill. (Witness Statement of Fred Fominoff ¶¶ 33 and 37; Witness Statement of Lester Dyck, footnote 138)

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[REDACTED]

The GBL was thus set at [REDACTED] MWh/year based on the mill's average annual generation [REDACTED].<sup>17</sup> Moreover, BCH had already provided the incentives of the 1989 Generation Agreement, the interest free loans that enabled construction of the new generation units tied to the 1989 agreement.<sup>18</sup> The Generation Agreement was terminated to make way for the 2010 EPA.<sup>19</sup>

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<sup>14</sup> By the Powerex agreement's terms, [REDACTED] (See Witness Statement of Fred Fominoff, ¶ 34 and Witness Statement of Pierre Lamarche, ¶¶ 39-40) Therefore, Howe Sound was using only the generation that was essentially a by-product of operations of its mill to supply its own load. Also see Witness Statement of Lester Dyck, ¶ 130 and footnote 8 above.

<sup>15</sup> The Powerex agreement took the place of the 2010 EPA.

<sup>16</sup> If its GBL were based on historical generation in the chosen [REDACTED], it would be the lower figure of about [REDACTED] GWh (calculated from data in **NERA-53**). [REDACTED] (See Email from F. Fominoff to M. Walsh, "RE: GBL," June 23, 2010, **NERA-54**. See also Witness Statement of Fred Fominoff, ¶ 36.) [REDACTED]

. (See **NERA-53**)

<sup>17</sup> See **NERA-53**. [REDACTED].

<sup>18</sup> While the 1989 Agreement was cancelled at the time of the 2010 EPA, BCH and Howe Sound reached an agreement requiring Howe Sound to pay back its outstanding obligations to BCH, [REDACTED]. See Termination Agreement, **NERA-48**.

<sup>19</sup> Termination Agreement, **NERA-48**.

### III. Comparison to BC Hydro's Methodology

From an overarching perspective, BCH is encouraged to incentivize increased generation from industrial customers with self-generation capabilities and increased generation of clean power, while simultaneously protecting customers.<sup>20</sup> Use of economic incentives by BCH to accomplish these goals predates BCUC Order G-38-01 and BCH's contracted GBL agreements.<sup>21</sup> Howe Sound's 1989 Generation Agreement led to the construction of [REDACTED] MW of green electricity capacity in the Province. Notwithstanding the Generation and the Enabling Agreements,<sup>22</sup> [REDACTED] resulted in Port Mellon's generation capability being significantly underutilized in the years leading up to the EPA, operating at a capacity factor of only about [REDACTED].<sup>23</sup> [REDACTED] Without the incentive of an EPA, that trend would most likely have continued. The 2010 EPA reversed that trend. Further, the EPA created incentives

<sup>20</sup> See Section III.B.2 of my report for details.

<sup>21</sup> Though the contracted GBL agreements are examples of economic incentives as well.

<sup>22</sup> Howe Sound generated [REDACTED] the Generation Agreement's target of [REDACTED] every year prior to the 2010 EPA: generally between [REDACTED] GWh and [REDACTED] GWh per year from [REDACTED] (the generators came on line in 1992), and generally [REDACTED] GWh from [REDACTED]. See NERA-55. [REDACTED].

<sup>23</sup> [REDACTED] Howe Sound Pulp and Paper LP Generator Baseline Calculations, October 28, 2009, NERA-53.

<sup>24</sup> See generation data on NERA-55, page 4. [REDACTED] (See pages 2 and 3 of CAN011118). CAN518462, page 1, [REDACTED]. Also see Witness Statement of Lester Dyck, ¶ 124, and Witness Statement of Fred Fominoff, ¶¶ 15-20.

<sup>25</sup> Like other paper and pulp mills including Celgar, Howe Sound had access to Pulp and Paper Green Transformation Program ("PPGTP") funds provided by Canada's federal government. [REDACTED] (See Witness Statement of Fred Fominoff, ¶ 24 and NERA-55 at page 5.)

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through firm energy sales opportunities that could potentially lead to generation of 749 GWh/year, far more than in the period leading up to the EPA.<sup>26</sup>

The 2010 EPA incentivized increased production while it simultaneously protected BCH's other customers. Specifically, the [REDACTED] MW average GBL in that agreement<sup>27</sup> complies with the objectives of BCH (and the BCUC through Order G-38-01) to not increase the level of embedded-cost-of-service energy provided to self-generation customers, thereby preventing arbitrage opportunities harmful to BCH's other customers.<sup>28</sup> BCH's process for setting the Howe Sound GBL complies with the overarching principles of economic incentives that protect customers. It also is consistent with the specifics of its stated contracted GBL methodology, which was introduced in Section III.B.2 of my report and which includes the following four key elements:

- 1) **Annual use by the customer for self-supply:** The Howe Sound GBL of [REDACTED] MWh/year in the 2010 EPA is set based on average historical annual generation used for self-supply at the mill.<sup>29</sup> [REDACTED]
- 2) **In the absence of a contract:** As discussed above, Howe Sound's historical generation [REDACTED] appropriately represents the mill's self-supply in the absence of a contract.
- 3) **In a normal current operating year:** The GBL is based on the [REDACTED].

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<sup>26</sup> The 2010 EPA specifies firm sales of [REDACTED] GWh/year which are in addition to the GBL-related generation of [REDACTED] GWh/year. Assuming that level of generation, the post-EPA capacity factor would be [REDACTED].

<sup>27</sup> [REDACTED] MW is the annual GBL averaged over the year on an 8760 hour basis.

<sup>28</sup> The following comparison makes this clear. Port Mellon's mill load is about [REDACTED] MW. Historically it generated about [REDACTED] MW [REDACTED], so it would purchase about [REDACTED] MW. Under the 2010 EPA, with a GBL of [REDACTED] MW, contractually Port Mellon can only make sales over the [REDACTED] MW threshold, so it will self-supply [REDACTED] MW and still purchase [REDACTED] MW of embedded cost energy—in other words, no increase in supply of embedded-cost energy. The [REDACTED] MW mill load figure is from the Witness Statement of Fred Fominoff ¶ 14. If the mill load were to increase due to an increase in production, the increment could be served with embedded-cost energy from BCH.

<sup>29</sup> [REDACTED]. See footnote 16.

<sup>30</sup> Witness Statement of Lester Dyck ¶ 129.

[REDACTED]

- 4) **As of the time period the EPA is negotiated:** Information available at the time of the EPA negotiations was used to establish the GBL.

#### IV. Comparison to the GBL Methodology applied to Celgar

Like Celgar, Port Mellon was assigned a GBL set at the level of its own load that it would have supplied with self-generation in the absence of a contract with BCH. At the time its EPA was negotiated, Celgar's generation exceeded the level of its load on an annual basis, so its GBL was adjusted downward to reflect the amount of generation it used to self-supply, *i.e.* its entire load. Similarly, Howe Sound's GBL was based on the amount of historical generation it used to supply its load. In Howe Sound's case, however, this level was below its load. As Howe Sound's mill load is almost three times greater than Celgar's, this difference is not surprising.<sup>32</sup>

There are other small differences in the details of the two mills' GBL determinations. While Celgar experienced a normal year of operation in 2007 (and so that year was the basis for its GBL), Port Mellon had to rely on [REDACTED] of self-generation due to the [REDACTED]. In the case of Port Mellon, the use of [REDACTED]. In Celgar's case, [REDACTED] would have led to an unjustifiably lower GBL by ignoring improvements in the mill's productivity which would continue into the foreseeable future.<sup>33</sup>

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<sup>31</sup> Ibid. I also note that Howe Sound self-supplied [REDACTED]. Higher GBLs, all other things equal, are beneficial to BCH's other customers. Specifically, [REDACTED] GWh was the mill's generation [REDACTED] (see NERA-53). See also Witness Statement of Fred Fominoff, ¶ 33.

<sup>32</sup> In addition to its kraft pulp mill facilities, Howe Sound also has a paper machine and three thermo-mechanical pulping lines, which are great consumers of electricity. See Pöyry Expert Report, ¶ 100 and Table 4.; Witness Statement of Fred Fominoff, ¶¶ 9 and 14. Moreover, Celgar's GBL is essentially linked to the generation of its recovery boiler which is fuelled by the black liquor by-product of its pulp production. This is essentially free fuel and is the factor that makes Celgar's "Arbitrage Strategy" economically attractive. In contrast, only part of Howe Sound's mill operations produce black liquor – its paper operations do not – so it cannot come even close to fully self-supplying its load based on its recovery boiler. [REDACTED]

<sup>33</sup> For Celgar, [REDACTED] would include years prior to the completion of Blue Goose—only after that project was completed were operations at Celgar normal. See "GBL Comparison Memo: Mercer / Celgar" above and Pöyry Expert Report ¶¶ 73-75, 93, 95-96, and 98.

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Further, Howe Sound's GBL was set based on its historical generation [REDACTED].  
[REDACTED]. Celgar's GBL was established at the mill load consistent with BCH's methodology as discussed above. All of Celgar's sales were from generation incremental to its load, so setting the GBL at load effectively adjusts the GBL for Celgar's net annual exports. These treatments are appropriate because of the differences between how Celgar and Howe Sound operated their mills and turbines, and the contractual circumstances of their sales.<sup>34</sup>

Last, Port Mellon's EPA [REDACTED], but Celgar's does not.<sup>35</sup> [REDACTED].  
[REDACTED].<sup>36</sup> In Celgar's case, its GBL was based on its actual generation in 2007, [REDACTED].  
[REDACTED].

In conclusion, both Celgar's and Howe Sound's GBLs were set following a consistent BCH methodology. The differences in the details of how each mill's GBL was calculated are explained by the unique circumstances of the mill (such as prior sales contracts with BCH/Powerex and problems with generation equipment), and reflect a consistent application of BCH's GBL methodology.

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<sup>34</sup> Celgar's historical generation (including its generation for sales) was essentially a by-product of its mill's operation, whereas Howe Sound's historical generation for sales [REDACTED]  
[REDACTED]

<sup>35</sup> [REDACTED], see footnote 16 above.

<sup>36</sup> See Witness Statement of Lester Dyck, ¶ 131 and Witness Statement of Fred Fominoff, ¶¶ 35-36.

<sup>37</sup> [REDACTED]  
[REDACTED]

## **GBL COMPARISON MEMO: CANFOR / PRINCE GEORGE**

### **I. Introduction**

In 2009, BC Hydro (“BCH”) and Canfor Pulp Limited Partnership (“Canfor”) entered into an Electricity Purchase Agreement (“2009 EPA”) that specifies an annual Generation Base Line (“GBL”) of [REDACTED] GWh/year for generation from facilities at Canfor’s Prince George kraft pulp mill (“Prince George”).<sup>1</sup> This memo addresses the GBL methodology applied by BCH to Prince George, and compares it with BCH’s general GBL methodology and the methodology used to set Celgar’s GBL.

### **II. Prince George GBL Methodology and Relevant Background**

In 2004, Canadian Forest Products Ltd and BC Hydro entered into a Load Displacement Agreement (“2004 LDA”)<sup>2</sup> that provided \$49 million in direct funding for the construction of a new turbo generator with a capacity of 60 MW.<sup>3</sup> In exchange, Canfor committed to generating 390 GWh/year to displace its load. The agreement included penalties for generating less than the specified target of 390 GWh per year. While operating under the LDA, Prince George [REDACTED]<sup>4</sup> [REDACTED]). Canfor thus approached BCH to amend the

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<sup>1</sup> See BC Hydro and Canfor Pulp Limited Partnership, “Electricity Purchase Agreement Bioenergy Call for Power- Phase I, February 4, 2009, **NERA-56**. The Price George Mill is adjacent to the Intercontinental mill, which is also owned by Canfor and has self-generating capacity. The new generator is located at the Prince George site and is the unit with which the EPA is associated and that is the subject of this memo. Canfor also owns the Northwood mill, which is on a different site.

<sup>2</sup> In 2006, Canadian Forest Products Ltd. reorganized, and separated its pulp businesses into an indirectly owned limited partnership: Canfor Pulp Limited Partnership—see <http://www.canfor.com/our-company/our-rich-history> for details. Canfor Pulp Limited Partnership assumed the LDA.

<sup>3</sup> PowerSmart Incentive Program Agreement Between BC Hydro and Canfor Pulp and Paper Limited, March 15, 2004, p. 2, **NERA-57**. Canfor did not previously have self-generation equipment at its Prince George mill.

<sup>4</sup> Specifically, Prince George generated [REDACTED] [REDACTED] See Draft Letter Agreement Between BC Hydro and Canfor, October 16, 2008, **NERA-58**.

<sup>5</sup> See **NERA-58**.

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LDA obligation to reflect what it saw as the long-term output capability of the unit as constructed: [REDACTED] GWh/year.<sup>6</sup>

In 2008, Canfor also bid into BCH's Bioenergy Call for Power Phase I and won an EPA, offering incremental generation from its existing turbo generator. Canfor and BCH negotiated both the EPA (with a GBL of [REDACTED] GWh) and an amendment to the 2004 LDA [REDACTED]. To ensure that BCH and its ratepayers were not paying twice for the same energy, Canfor was required, as part of the LDA amendment, [REDACTED].

In setting Prince George's GBL, BCH used the amount of historical generation Prince George used for self-supply [REDACTED].<sup>8</sup> This figure reflected the effect of the obligations of the 2004 LDA on the mill's operations, which would continue (as amended) alongside the 2009 EPA.<sup>9</sup> Under current normal operating conditions at that time, Canfor generated [REDACTED] GWh to self-supply (and to meet the requirements of the LDA). Canfor expected, on a going-forward basis and absent a sales agreement with BCH, to continue to produce at the [REDACTED] GWh level [REDACTED]. The GBL was thus set at [REDACTED] GWh/year for the 2009 EPA.

### III. Comparison to BC Hydro's Stated Methodology

From an overarching perspective, BCH is encouraged to incentivize increased generation from industrial customers with self-generation capabilities and increased generation of renewable power, while simultaneously protecting customers.<sup>11</sup> Use of economic incentives by BCH to accomplish these goals predates BCUC Order G-38-01 and BCH's contracted GBL agreements.<sup>12</sup> Canfor's 2004 LDA led to the construction of 60 MW of green electricity capacity in the Province,<sup>13</sup> and included terms to protect customers from arbitrage. However, for several

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<sup>6</sup> See **NERA-58**.

<sup>7</sup> [REDACTED].

<sup>8</sup> [REDACTED]

<sup>9</sup> Witness Statement of Lester Dyck, ¶ 45.

<sup>10</sup> See **NERA-58**.

<sup>11</sup> See Section III.B.2 of my report for details.

<sup>12</sup> Though, the contracted GBL agreements are examples of economic incentives as well.

<sup>13</sup> Prior to the LDA, I understand that Price George operated with a recovery boiler but without a generator, so all of the generation as a result of the LDA would be incremental.

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reasons the LDA did not successfully incentivize the target generation level of 390 GWh.<sup>14</sup> Canfor undertook various improvements at the mill to be able to generate at the 390 GWh level in theory, but it needed the incentives of an EPA to fund [REDACTED]. The 2009 EPA provided incentives for Prince George to increase generation to about [REDACTED] GWh/year (an increase of [REDACTED] GWh over pre-EPA levels, resulting in an even higher amount than the 2004 LDA agreement intended to incentivize).<sup>16</sup>

The 2009 EPA incentivized increased production while it simultaneously protected BCH's other customers. Specifically, the [REDACTED] GWh GBL in that agreement complies with the objectives of BCH (and the BCUC through Order G-38-01) to not allow increased levels of embedded-cost-of-service energy purchases by self-generation customers, thereby preventing arbitrage opportunities harmful to BCH's other customers.<sup>17</sup> Further, setting the GBL equal to the LDA generation target also protects customers—a GBL less than that target would prevent BCH and its customers from realizing the benefit derived from the LDA.<sup>18</sup> So, BCH's process for setting the Prince George GBL complies with the overarching principles of economic incentives that protect customers. It also is consistent with the specifics of its stated contracted GBL methodology, which was introduced in Section III.B.2 of my report, and which includes the following four key elements:

- 1) **Annual use by the customer for self-supply:** The Prince George GBL of [REDACTED] GWh/year in the 2009 EPA is set based on generation for self-supply in an annual period at

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<sup>14</sup> [REDACTED] See Draft Letter from Canfor to BC Hydro Re: Reset of 2004 PG Cogen Baseline, August 12, 2008, **NERA-59**.

<sup>15</sup> See Pöyry Expert Report, ¶¶ 142-148 and 154-157.

<sup>16</sup> The new agreement specified firm sales of [REDACTED] MW, which is [REDACTED] GWh on an annual basis.

<sup>17</sup> The following comparison makes this clear. Prince George's mill load is about [REDACTED] GWh on an annual basis (see Canfor Diagram, **NERA-60**). At its historical [REDACTED] GWh generation level, Prince George would purchase about [REDACTED] GWh. Under the 2009 EPA, with a GBL of [REDACTED] GWh, contractually Prince George can only make sales over that GBL threshold. So, assuming the same mill load, it will self-supply the [REDACTED] GWh and still purchase [REDACTED] GWh of embedded-cost energy—in other words, no increase in supply of embedded-cost energy. If the mill load were to increase due to an increase in production, the increment could be served with embedded-cost energy from BCH.

<sup>18</sup> While Canfor paid back part of the LDA incentive, it was still obligated to provide [REDACTED] GWh via the LDA. If Prince George had a GBL lower than that amount and thereby was allowed to make sales with that generation instead of displacing its load, BCH would not capture the benefits of the LDA incentives it had provided.

the Prince George mill at the time of negotiations, specifically [REDACTED]

- [REDACTED].<sup>19</sup>
- 2) **In the absence of a contract:** As discussed above, [REDACTED] is appropriate to assess Canfor's self-supply in the absence of a prospective contract with BCH. Without the 2009 EPA, Canfor would likely have continued to generate at the [REDACTED] GWh/year level.<sup>20</sup> No adjustment was needed for the fact that Canfor operated under an LDA during [REDACTED], as its LDA obligations, as amended, would continue alongside the 2009 EPA.
  - 3) **In a normal current operating year:** The [REDACTED] was chosen as it was understood by BCH and Canfor to be representative of what normal operations would be on a going-forward basis. Specifically, the [REDACTED] GWh generation in that year was determined to be the long-term output of the plant without a new agreement, and consistent with Canfor's obligations under the 2004 LDA as amended.
  - 4) **As of the time period the EPA is negotiated:** Information available at the time of the EPA negotiations was used (specifically the most recent year of generation under the existing LDA).

#### IV. Comparison to GBL Methodology applied to Celgar

Identically to Celgar, Prince George was assigned a GBL set at the level of its own load that it would have supplied with self-generation in the absence of an EPA with BCH.

There are differences between the mills as well. At the time its EPA was negotiated, Celgar generated electricity in excess of its annual mill load, and its GBL was adjusted downward to reflect the level of generation it used to self-supply, *i.e.* its entire load. Prince George, in contrast, had a load higher than its generation, so its total generation level was used to set its GBL. For Prince George it was not economic to generate to meet its entire load, whereas it was for Celgar.

Further, Celgar did not need incentives from BCH to undertake the improvements it made at its plant, whereas, Prince George had the incentives in its LDA agreement with BCH to build its turbine (and that incentivizing was considered in setting its GBL as discussed above in this memo).

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<sup>19</sup> In practice, the EPA applies the GBL on an hourly basis, which I understand is to be consistent with the firm sale obligations under the EPA, which also are expressed on an hourly basis.

<sup>20</sup> See Pöyry Expert Report, ¶¶ 149-150, 152, and 157.

<sup>21</sup> This makes sense from a commercial perspective, and as Mr. Dyck explains, it is part of BCH's GBL methodology—see ¶ 45 of his Witness Statement.

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In conclusion, both Celgar's and Canfor's GBLs were set following a consistent BCH methodology. The differences in the details of how each mill's GBL was calculated are explained by the unique circumstances of the mill (such as Celgar self-supplying more than its load and Canfor self-supplying less than its load), and reflect a consistent application of BCH's GBL methodology.