Public Version

IN THE ARBITRATION UNDER CHAPTER ELEVEN OF THE NORTH AMERICAN FREE TRADE AGREEMENT ("NAFTA") AND THE 1976 UNCITRAL ARBITRATION RULES BETWEEN

Resolute Forest Products,

Claimant/Investor,

-and-

Government of Canada,

Respondent/Party.

PCA Case No. 2016-13

Reply Expert Witness Statement of Jerry Hausman, Ph.D.
December 6, 2019

Executive Summary

- My analysis is based on a "but for" world (BFW) – the SC paper market that would have existed but for PHP's reopening and introduction of [redacted]-360 mt of increased SC paper capacity and production, guaranteed to survive through the government guarantee of being in perpetuity the low cost producer in North America.
- The criticisms of my analysis introduced by Canada in reports by Poyry and Mr. Steger prefer some other analytical approach than the "but for" world; however, for an economic analysis there is no alternative.
- There were unexpected developments in 2018 that increased SC paper prices even as demand did not grow nor did overall capacity shrink; these price increases will necessarily be temporary.
- The extrapolation of prices in my first report, from a 2017 baseline, should be adjusted using a three-year average (2016-2018) that incorporates the anomalous 2018, recognizing it has produced real world data but avoiding an overstatement of anomalous data.

I. Summary and Conclusions

1. I am Jerry Hausman, Professor of Economics at MIT in Cambridge, MA, and I filed a report in this proceeding in December 2018. My qualifications, address, independence, and the other disclosures required by paragraphs 11.4 and 12.2 are incorporated by reference from that report. In this rebuttal report I consider three topics:

   (1) the correct approach to analysis of the but for world of Port Hawkesbury (PHP) not re-opening. I do not find Canada's witness reports by Poyry and Mr. Steger correct in this regard.

   (2) I respond to criticisms of my previous report by Poyry and Mr. Steger

   (3) I provide new estimates of Resolute damages since 2018 data became available after my initial report.[1]

2. My primary conclusions are that neither Poyry nor Mr. Steger provides damages estimates based on the but for world of PHP not re-opening. My preferred revised damage estimates from the re-opening of PHP are in the range of $103 million to $149 million.

II. Correct Analysis of the "But For" World Compared to the Actual World Outcomes

3. A fundamental difference in approach exists between my first report on damages in this proceeding (Hausman Report) and the reports of Canada witnesses' Poyry Management Consultants (Poyry Report) and Mr. Peter Steger (Steger Report).[2] My economic approach to damages is to construct a "but for" world, which estimates what

[1] Exhibit 1 contains the 2018 scorecard data for the Dolbeau and Kénogami mills. *See also* C-306, C-307.
[2] J. Hausman Report, CSW-Hausman-2, submitted December 28, 2018; Poyry Management Consulting Report, submitted April 16, 2019; P. Steger Report, submitted April 17, 2019.

the profits of Resolute would be absent the measures that are the subject of this arbitration. Given this estimate of but for profits I subtract actual profits to estimate damages owed to Resolute by Canada.[3] Here the measures that are the subject of this arbitration led to the re-opening of Port Hawkesbury (PHP) beginning in October 2012, which I infer in the but for world would not have happened and PHP would have remained closed.[4]

4. As I discussed in my first damages report, "A capacity increase of approximately 25 percent for the SCP market will typically lead to a significant price decrease depending on the price elasticity of demand, holding other economic factors constant."[5] This economic conclusion follows from the properties of SC paper and the economics of competition among SC paper producers. I believe that these facts are generally agreed to by Poyry and Mr. Steger.[6]

5. A firm can be quite profitable in the but for world and still be significantly damaged from illegal entry by a competitor. Suppose Firm A patents a new drug, receives government approval for the drug, and sells $3 billion over a 2 year period. Firm B violates the patent and sells $1 billion of the drug over the period. Damages would be determined by the lost sales and profits that Firm A would have made in the absence of Firm B and the "price erosion" caused by Firm B competing for sales with firm A. Other intervening economic events might have occurred during the period, *e.g.*, a medical study which determines that the new drug is effective for an additional medical

[3] This approach is the standard economic approach to estimate damages.
[4] CWS-Hausman-2 ¶ 13, ¶ 16-17.
[5] CWS-Hausman-2 ¶ 25.
[6] Some differences about the exact size of the capacity expansion exist as well as other small differences, which I do not find significant. I discuss these differences later in this report.

condition, *e.g.*, a new indication. The new indication would increase sales of Firm A (and Firm B), but the relevant economic question for damages is: What would have happened if Firm B had not illegally entered the market?

6. Poyry and Mr. Steger do not follow this well-accepted economic approach to damages. Instead, they consider the evolution of SCP prices during the damage period in terms of shifts of demand and supply, *e.g.*, a shift in demand from coated paper to SCP. Poyry concludes: "In Section 6, we explain that the impact of PHP's exit and re-entry on SC-paper market prices was temporary and negligible in the long term."[7] The main reasons for "negligible" effect on SCP prices is: "Table 3-2 in Section 3.3 demonstrates that SC-A/A+ imports accounted for only 15% of the incremental demand in 2013 but absorbed 93% of the demand decline in 2014. In other words, the two main shock absorbers of PHP's re-entry were the European SC paper suppliers and the CM suppliers."[8] Poyry further explains: "The impact of Port Hawkesbury PM2 exit and re-entry on SC-paper market prices appears negligible because paper prices are not dependent only on supply volume but also on economic growth, factor costs and exchange rates."[9]

7. I agree with this statement, but it does not answer the fundamental question. Given economic growth, factor costs and exchange rates during the damage period, what would SCP prices have been if PHP had not re-opened? Poyry does not answer this question.

[7] Poyry report ¶ 11; *see also* Poyry report ¶ 106.
[8] Poyry Report ¶ 8.
[9] Poyry report ¶ 69

8. Mr. Steger concludes: "… [redacted]."[10] Again, even if this statement were correct, it fails to answer the fundamental economic question of what would SCP prices have been if PHP had not re-opened? This question forms the economic basis of any estimation of damages.

9. The answer to the fundamental economic question of what happens in a market when 20%-25% of capacity is removed is straightforward: barring special circumstances prices will be higher than they would be otherwise.[11] How much higher depends on the market elasticity of demand, which I discuss in my first report and as a basis I use findings by the US ITC.[12] After PHP's re-opening, prices could have increased for SCP paper (although they did not actually increase), but Resolute would still be injured because, according to economic analysis, prices would have been even higher if PHP had not re-opened.

10. The effect of PHP's re-opening on prices should not be controversial, but Poyry and Mr. Steger conclude that there was no effect after an initial transitory response occurred. However, Poyry, [redacted].[13]

[10] Steger report ¶ 37(a).
[11] This outcome is barring special circumstances such as rapid entry of new firms because of a significant increase in demand, which would not occur here because of the declining nature of the SCP industry and the limited role of imports.
[12] Hausman Report ¶ 25.
[13] [redacted]

a. [redacted]

[redacted]"[14]

b. [redacted]

[redacted][15]

c. [redacted]

[redacted]

[redacted][16]

d. [redacted]

[redacted].[17]

e. [redacted]

[redacted]

i. [redacted]

[redacted]

[redacted][18]

ii. [redacted]

[redacted]

[redacted][19]

[14] R-161, [redacted], p. 8.
[15] [redacted] The UPM plant in Madison ME closed in 2016 [redacted]
[16] Ibid, p. 10.
[17] Ibid, p. 9.
[18] Ibid, p. 33.
[19] Ibid, p. 53.

iii. [redacted]:

1. [redacted][20]

2. [redacted][22]

11. My reading of the [redacted]. Yet in its 2019 report to this Tribunal, Poyry concludes: "The re-entry of PHP's PM2 has thus had no significant effect on long-term SC paper equilibrium price in North America."[23] However, Poyry makes the incorrect comparison. The 2019 Report considers actual market prices. The 2019 Report discusses grade substitution from coated mechanical paper to SC-A and states that "prices recovered in July 2013 to pre-2013 levels indicating that PHP re-entered the market at a right time, causing no price-driven damage to its competitors."[24] This conclusion is incorrect in a damages framework because it does not consider the but for world. The demand shift from coated mechanical to SC-A would lead to increased prices, if capacity does not expand. If prices remained approximately constant, the difference between the higher prices caused by higher demand and actual prices is the correct measure of damages. Poyry does not make this comparison. If I use [redacted]

[20] Ibid, p. 55.
[21] Ibid, p. 55.
[22] Ibid, p. 56.
[23] Poyry Report ¶ 16. Poyry reported a sizeable SC demand surge in 2013.
[24] Ibid.

[redacted], I would find 49%-61% of the estimated damages in my first report and approximately similar damages to the lower bound of my revised damage estimate below.

12. Poyry attempts to "explain away" [redacted].[25] Poyry's report states its [redacted]. It further states: "In retrospect, that price forecast was not accurate because we did not predict the sizeable SC demand surge in 2013."[26] Poyry also states that [redacted][27] Even accepting Poyry's statements as accurate, they give no guidance to what the but for price would have been if PHP had not re-opened. Economic analysis demonstrates, as I discussed in my first report, that a "sizeable SC demand surge in 2013" would have to have increased SC prices, rather than yield flat SC prices, which Poyry claims is the real world outcome.[28]

13. Mr. Steger does essentially no economic analysis of the but for world. PHP's mill is 360K tons, which I used in my calculations. As noted below (¶ 25), SC production operates at nearly full capacity because of economic considerations of production.[29] I expected Canada would produce the actual output of PHP so I could refine my calculations, but I could not find actual production tons, and Mr. Steger did not rely on

[25] Poyry report ¶ 81-85. The section is titled: [redacted]
[26] Poyry report ¶ 81.
[27] Poyry report ¶ 83.
[28] For example, if I use the price elasticity of -1.5, which is the range of the estimates used by the ITC and which I estimate in my first report, a 10% increase in demand would lead to a 6.7% increase in price if capacity had remained constant, assuming PHP did not re-open in 2012.
[29] C-227, March 19, 2015 ITC Preliminary Conference Hearing p. 106, which states that industry production is approximately 91%. [redacted] C-163 at CAN000004_26, 37, 41.

actual output. Instead, Mr. Steger estimates [redacted] than I do, [redacted] rather than my 360K tons, basing his estimate on ITC testimony from 2015 and Kénogami's (not PHP's) profit margin.[30] Mr. Steger's only statement on the but for price is: "As further described in 7.2 below, various contemporaneous industry commentary (including RISI) largely determined the [redacted][31]

Even if the commentators which Mr. Steger cites are correct that "little impact" occurred after PHP's re-opening, the 20%-25% increase in capacity decreased prices compared to what they would have been if PHP had not re-opened.[32] Absent the PHP restart, higher cost capacity than PHP would have been utilized which would have led to higher SC prices. If Poyry is correct and most of the absence of significant price effect was created by a shift in demand from coated mechanical to SC paper, in the but for world the increase in demand would have led to higher prices than occurred if PHP did not re-open.[33]

[30] Steger report, ¶ 115-116. The approximate numbers reported by PHP to the U.S. Department of Commerce, with a company certification representing the data was accurate, provided that PHP sold 317,500 MT in 2013 and 340,020 MT in 2014. *See* Steger Report ¶ 115(b) (citing C-046, PHP Public Questionnaire Responses). Similarly, PHP provided another certified questionnaire response stating that it sold approximately 380,000 tons (344,000 Metric Tons) to the United States in 2014. C-233. Instead of relying on PHP's reported numbers, Mr. Steger extrapolates production by PHP [redacted]

[31] Steger report, ¶ 37.

[32] Mr. Steger cuts the period off in June 2013 because of the Poyry Report (Steger Report, p. 89). However, prices decreased significantly in 2014 and continued decreasing through September 2017, according to RISI. (R-108; R-109; Attachment 2 to Hausman Jurisdictional Expert Report; R-136; R-137.) The price decrease, using RISI prices, was about 16%.

[33] The shift from coated mechanical paper to SC paper occurred in large part because of the changing economics of users of coated mechanical paper. Magazines and catalogs became significantly less profitable and needed to decrease their costs.

III. Reply to Criticism of My Report by Poyry and Mr. Steger

a. Response to Poyry Criticisms

14. Poyry claims I am using the "forecasting approach" for estimating but for prices, but instead I should have used observed values of the independent variables during the impact period.[34] I disagree for two reasons. To forecast using independent values of the independent variables requires an econometric model.[35] I decided not to use an econometric model given its necessary complexity. An econometric model requires an explanation of publication paper demand and supply in both North America and Europe, which is very complex in the current situation because of the declining economic situation of most publications due to the increasing importance of online content. More important, my goal was to estimate what effect PHP's reopening would have with its addition of 20%-25% capacity into the market. I describe this approach in my first report, which I call the economic approach.[36] It is the economic approach because it takes account of the economic factors of supply and demand in the but for world.

15. I disagree with Poyry that I make "exclusive use" of the forecasting approach since I consider the economic approach to determine the effect on prices of a 20%-25% increase in capacity from PHP's re-opening.

16. Poyry objects to my estimate of damages for 2018-2028. It states: "Such an extension is not justified as there is no guarantee that any of Resolute's SC-paper machines (or

[34] Poyry report ¶ 107.
[35] Poyry refers to a regression specification (econometric model), but I specifically chose not to use a regression specification. Poyry, thus, misunderstands what I did. I note that Poyry did not employ an econometric model to explain what happened, even though they utilized an econometric model in their 2012 report to the Nova Scotia Government. Further, I do not use RISI forecasts to predict the actual level of prices. I use them to predict the yearly change in prices. See Hausman report ¶ 26.
[36] Hausman report ¶ 107.

anyone else's for that matter) will be operating in 2028.[37] I agree with Poyry that there are no guarantees. However, that is why I used a discount rate in my calculations. Discount rates incorporate two components, a reward for waiting and the effect of uncertainty. The reward for waiting arises because of postponed use of funds for consumption or investment until a later point in time.[38] With no uncertainty the reward for waiting is about 1% (or less) per year based on government treasury paper yields, so my discount rate is mainly comprised of the effect of uncertainty. Thus, I took uncertainty into account. Given the absence of a requirement for significant new investment by Resolute in the two mills, uncertainty is less than usual in this case. If Poyry had a principled reason to claim my discount rate was too low, it could have done an analysis. It did not do such an analysis.[39]

17. Poyry claims that prices are determined by industry supply and demand, rather than the changes in a firm's cost of raw materials.[40] I agree. However, I did not have access to other firms' raw material costs. To the extent that Resolute plants are marginal plants for supply or the change in their raw material costs is similar to other firms in the industry, my assumption should be close to the actual situation.[41] The importance of the industry factors, rather than firm factors, is why I base my economic approach to

[37] Poyry report ¶ 111. Given the economics of SC paper, I doubt that any new entry will occur from now until 2028.
[38] Economists use a shorthand idea here—"jam tomorrow gives lower satisfaction than jam today from today's vantage point". The English economist JM Keynes used this phrase in his economic works.
[39] Poyry report ¶ 124 claims I should have given the components of my WACC. WACC is the weighted average cost of capital for a company and is used in investment analysis and decisions when discounting future profits to the current time. The type of breakdown called for by Poyry is quite difficult to do in a multi-operation firm. Poyry does not attempt such a breakdown.
[40] Poyry report ¶ 123.
[41] Poyry in ¶ 116 claims that the position of Resolute's paper machines was relatively poor prior to 2015, which would mean they were marginal machines which determine the price of SC paper.

damages on the 20%-25% increase in *industry capacity* caused by the re-opening of PHP.

18. Poyry makes a mistake when it implies no damages would be due to Resolute if its machines shut before 2028, in part because of declining demand.[42] Demand would decline but prices would not decline as precipitously as when 20%-25% of industry capacity comes online The correct question is whether Resolute's machines would continue in operation if PHP had not re-opened adding [redacted] 360K tons of additional output into the SC market. The likely answer is yes, even with decreasing demand, and Poyry does no analysis that reaches a contrary result.

b. Response to Mr. Steger

i. Mr. Steger's damage estimates do not consider the but for world

19. Mr. Steger does no analysis of the but for world. He does not attempt to answer the question of what SC prices would have been if PHP did not re-open. Instead, he states: "As further described in 7.2 below, various contemporaneous industry commentary (including RISI) largely determined [redacted][43]

His other support for his damage estimate assumption is: "The 2019 Pöyry Expert Report similarly concludes that '*the impact of PHP's exit and re-entry on SC-paper market prices was temporary and negligible in the long term.*'" Since neither of these sources considers the but for world of what would have happened if PHP had not re-opened, they provide no economic basis for Mr. Steger's damage estimates.

[42] Poyry report ¶ 126.
[43] Steger report, ¶ 37.

20. For his damage estimates, Mr. Steger applies a [redacted] effect of PHP only for January-June 2013 and no effect otherwise. Thus, Mr. Steger is assuming that even though the re-opening of PHP added 20%-25% capacity and between [redacted] 360K tons of extra production to the SC market, this added capacity and production had no effect on prices. This assumption makes no economic sense and Mr. Steger gives no explanation in terms of supply and demand in the SC market.

ii. Response to criticism of my approach

21. Mr. Steger claims that I assumed 360K metric tons of additional capacity while he estimates [redacted].[44] Mr. Steger does not know actual PHP volumes since Canada did not produce PHP's actual production records. He bases his estimate in part on ITC testimony from 2015, [redacted] and from Kenogami's (not PHP's) profit margin, and he largely ignores PHP's certified responses indicating higher production. I do not accept his revision when Canada could have produced actual volumes. However, even a [redacted] would have no significant effect on my damage estimates because PHP added approximately 20% extra production to the SC market. Indeed, using Mr. Steger's estimate of [redacted] tons of SC paper demand in 2018 from his Table 3, his estimate of [redacted] tons of PHP production is [redacted] of overall demand.[45]

22. Mr. Steger criticizes my use of an SC market and claims [redacted] [46] This claim demonstrates a fundamental

[44] Steger report, ¶ 28.
[45] Steger report, ¶ 20. If PHP's production was 360K tons, its share of demand would [redacted]
[46] Steger Report ¶ 25.

misunderstanding of economics and how differentiated product competition works. Customers switch between SCA grades depending on relative prices. Indeed, Mr. Steger's own graph of SCA and SCB prices demonstrates [redacted].[47] [redacted] (but does not prove) that two products are in the same market. And the economics of differentiated products (and the US DOJ and FTC 2010 "Merger Guidelines") discuss how only a small proportion of marginal customers need to switch when relative prices change to have products in the same market, even though most customers do not switch between products.[48] Thus, PHP and Resolute compete even though Resolute does not produce SCA+ paper.

23. Mr. Steger disagrees with my assumption that "PHP's re-entry in 2013 has a lasting and increasing decremental effect on SC prices, without support for such…"[49] I explained the basis of this assumption in ¶ 25 of my first report. The re-opening of PHP added 20%-25% of additional capacity to the SC market and this increment becomes larger over time as capacity decreases. In terms of production, PHP's additional production becomes relatively larger over time as SC demand decreases. This effect is the fundamental economic effect that causes SC prices to be lower in the actual world than the but for world of PHP not re-opening.[50] Mr. Steger's review of actual prices in 2013 and after sheds no light on what would have happened in the but

[47] Steger report, ¶ 22.
[48] For a discussion of competition with differentiated products see e.g. J. Hausman et. al., "Competitive Analysis with Differentiated Products," *Annales, D'Economie et de Statistique, 34, 159-180. 1994*
[49] Steger report, ¶ 34.
[50] The re-opening of PHP has lasting effects on SC prices because market demand is decreasing as a result of substitution to the internet and digital advertising. If, contrary to fact, demand for SC paper were increasing significantly, the re-opening of PHP might not have lasting effects because it could replace the construction of a new SC paper plant.

for world if PHP had not re-opened.[51] Thus, Mr. Steger provides no useful analysis for damage estimation.

24. Mr. Steger criticizes my assumptions about variable costs.[52] I based my assumption on actual historic cost changes. Estimated variable costs based on "RISI Costs" equal the percent changes to annual per-unit variable costs for uncoated mechanical paper estimated by RISI.[53] Estimated variable costs in the [redacted] scenario are based on Resolute's typical change in variable costs. Thus, I used actual data and did not need witness Statements to support my estimate. I note that the [redacted] scenario is more conservative than the scenario based on RISI Costs.

25. Mr. Steger criticizes my assumption of [redacted] for 2018-2028.[54] He states he cannot tell whether it arises from a decline in margins or a decline in volumes. Since I explained in my report that SC production operates at nearly full capacity because of economic considerations of production and as the data demonstrate, the profit decrease arises from decreased margin. Further, Resolute plans to continue operation of the Dolbeau and Kénogami mills until at least 2028. Mr. Steger's concern here is unfounded.

26. Mr. Steger is also concerned about my assumption of a lasting effect of PHP's reopening. The addition of 20%-25% of additional capacity and [redacted]360K tons of additional production will continue to affect the SC market, with the effect likely increasing over time as SC demand decreases. Economics provides support for my

[51] Steger report, ¶ 37.
[52] Steger report, ¶ 54 ff.
[53] Hausman Report, ¶ 31, Table 3.
[54] Steger report, ¶ 72ff.

assumption; Mr. Steger fails to consider the underlying economics of competition in the SC paper market.

27. Mr. Steger claims I should have used a higher discount rate.[55] I disagree. Resolute expects to continue to operate the two mills and it does not expect to need any significant investment in the plants. Also, new entry into the SC paper market is very unlikely to occur given the declining demand of the industry. Since it is new investment that is much riskier and the effect of new entry also poses significant risk, I believe my use of Resolute's WACC was conservative inasmuch as the overall operation of the company likely has greater risk than the operation of the Dolbeau and Kénogami mills.[56]

IV. Adjusted Damage Estimates

28. My first report estimated damages until 2017, which was the last year for which I had data. I then estimated future damages for 2018-2028 based on the 2017 data. 2018 data have become available since I filed my first report. An unexpected event occurred in 2018 which causes me to adjust my damage approach. SC paper prices [redacted] between October 2017 and October 2018, using RISI price (per mt). There was significant closure of North American capacity in other grades of paper, which led to higher prices and demand substitution towards SC paper, and significant closure of European SC capacity and other grades of paper capacity, which led to higher coated prices and substitution towards SC paper and higher SC prices.

[55] Steger report, ¶ 78.
[56] For increased riskiness of new investment see e.g. A. Dixit and R. Pindyck, Investment Under Uncertainty, Princeton Univ. Press, 1994.

The result was higher SC prices even though North American SC demand did not increase.

[redacted]

29. My damage estimates did not expect prices to increase significantly since SC demand has been decreasing, although the decrease in 2018 was less than usual. [redacted] Poyry stated in [redacted] [57] This unexpected price increase was the primary reason for Dolbeau's and Kénogami's improved financial performance in 2018. The unexpected price increase, although likely short-lived against the long-term trend for the industry, has caused me to adjust my damage estimates.

[57] [redacted] p. 51.

30. A realistic revision to my damage estimates uses an average of results for 2016-2018 to estimate future damages, rather than using only 2017 as I did in my first report. I present two options to the Tribunal:

a. Option 1: Incorporate actual 2018 in the observed damages model. In order to do this, per unit variable costs and prices are estimated in the RISI and inflation variants as was the case in 2017. Prices in 2017 were calculated using the percent change that prevailed in 2016. This same assumption was used for 2018. Per unit variable costs for 2018 were also calculated with the assumptions used to estimate variable costs in 2017. The resulting estimated profits for 2018 and actual profits then become the base amounts for the estimation of future damages covering 2019 to 2028.

b. Option 1 has a fundamental economic problem. Damages in 2018 are actually negative for both mills; and since future expected and actual profits during 2019-2028 reflect [redacted] reductions starting with a base of 2018, future damages in each year are also negative. This result does not make economic sense since the addition of 20%-25% of capacity or production due to PHP's re-opening will lead to lower prices compared to the but for world of PHP not re-opening. I report the result of Option 1:

Table 1: Estimated Future Damages with 2018 Base, in $1,000s

(1,000 $)	RISI Costs	Inflation
Report values	201,903	163,695
Actual 2018 data used in observed damages model	72,544	10,585

Sources: Hausman Dec 2018 Report at Tables 17 and 18, and Exhibit 2.

c. Option 2: Use 2016-2018 as the base period for the future damages model. This approach, like Option 1, incorporates the actual 2018 profits in the observed damages model and calculates expected profitability using the same methodology used for 2017. However, the baseline for the future damages model is the average of 2016-2018 expected and actual profits rather than just expected and actual profits for 2018. This approach decreases damages from the model in my first report due to the inclusion of 2018. It also reduces damages from the future period model due to the inclusion of fewer years and a less favorable base period. The results of Option 2 are:

Table 2: Estimated Future Damages with 2016-2018 Base, in $1,000s

(1,000 $)	RISI Costs	Inflation
Report values	201,903	163,695
2016-18 base period for future damages	148,738	103,967

Sources: Hausman Dec 2018 Report at Tables 17 and 18, and Exhibit 2.

d. My preferred approach is Option 2, which uses actual 2018 results, but the estimates of future damages for 2019-2028 uses a base period average of 2016-2018 instead of using the 2018 "outlier" results alone when SC paper prices increased. Option 2 leads to a positive damage estimate in the future period of 2019-2028, which makes economic sense because, if PHP did not re-open, its additional capacity and additional production would not affect future prices. Thus, my preferred estimates of damages from the re-opening of PHP are in the range of $103 million to $149 million.

31. As in my first report, I determine whether my damage estimate is consistent with the "economic approach" that estimates the effect of PHP's capacity or production on market prices. The economic basis of my damage model remains the same, and my "economic approach" explained in ¶ 25 of my first report remains the same. If I am

conservative and use Mr. Steger's estimate [redacted] tons of additional production from the re-opening of PHP, PHP represents [redacted] of demand in 2018, with an increased share going forward. I use a price elasticity of -1.5, which is in the middle of the range discussed in the ITC report and what I found in my first report. Thus, even though actual prices increased in 2018, without the re-opening of PHP, prices would have been even higher. So, Resolute was damaged even in 2018 when prices unexpectedly increased.

32. To estimate damages using this approach, I take the actual price in each year and apply the PHP output of [redacted] tons, which Mr. Steger estimated. For the future years of 2019-2028 I use the same approach as in my first report, which I also used in this report. The results are:

Table 3: Estimated Future Damages, 2018 Base, -1.5 Price Elasticity, in $1,000s

	2013-2018	2019-2028	Total
RISI Costs	97,114	55,945	153,059
Inflation	81,254	8,529	89,783

Source: Exhibit 3.

Table 4: Estimated Future Damages, 2016-2018 Base, -1.5 Price Elasticity, in $1,000s

	2013-2018	2019-2028	Total
RISI Costs	97,114	41,575	138,689
Inflation	81,254	11,347	92,601

Source: Exhibit 3.

33. The damage estimates are the same for 2013-2018 in both panels since I use the actual market prices to base my estimates. In the top panel I use a 2018 base for future damages, as I did in my first report. In the bottom panel I use an average of 2016-2018, as I did in my adjusted damage estimates above. Note that the majority

of damages are based on actual market outcomes with future damages a significantly smaller amount. Using this economic approach, I estimate damages to be in the range of $89.8 million to $153.1 million.

Table 5: Estimated Future Damages, Preferred Option 2, 2016-2018 Base, in $1,000s

	2013-2018	2019-2028	Total
RISI Costs	104,945	43,793	148,738
Inflation	90,402	13,565	103,967

Source: Exhibit 2.

34. Table 6 below shows estimated damages of the economic approach assuming a PHP capacity of [redacted] MT, compared to results assuming a PHP capacity of 360K MT.

Table 6: Estimated Future Damages, 2016-2018 Base, in $1,000s

	Estimated Future Damages, Economic Approach, [redacted] MT			Estimated Future Damages, Economic Approach, 360K MT		
	2013-2018	2019-2028	Total	2013-2018	2019-2028	Total
RISI Costs	97,114	41,575	138,689	137,950	78,218	216,168
Inflation	81,254	11,347	92,601	121,856	47,990	169,846

Sources: Exhibit 3 and Exhibit 4.

I hereby affirm the truth of this statement.

Respectfully submitted:

Jerry Allen Hausman

Santa Monica, CA
United States

Exhibit 1

Dolbeau in USD

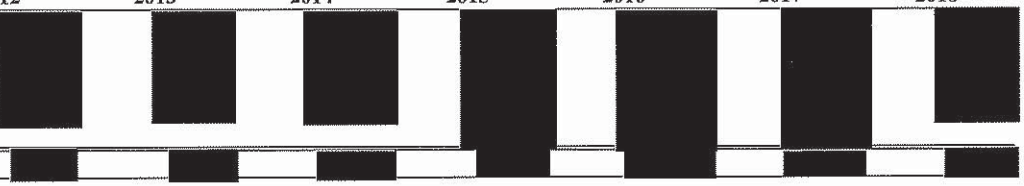
Profit & Loss		2012	2013	2014	2015	2016	2017	2018	
Mill Net Price	$/MT								[a]
Sales tonnage	MT								[b]
Mill Net Revenue	$000's								[c]=[a]*[b]/1000
Variable Costs (Direct Costs)	$000's								[d]
Fixed Power Costs	$000's								[e]
Actual Economic Profits	$000's								[f]=[c]-[d]

Variable costs for 2016-2017 were adjusted by removing fixed power costs [e] from Scorecard data. 2016-2017 fixed power costs calculated as: 2015 fixed power costs in CAD converted to USD using applicable exchange rate attached in this exhibit. The 2018 variable costs already had fixed power costs removed, as reported in Dolbeau's 2018 Scorecard (RFP0012496).

Sources: Exhibit 3 to Hausman's December 2018 Report. Underlying sources are Dolbeau's 2016 and 2017 Scorecards (RFP0009302-RFP0009305), Dolbeau's 2018 Scorecard (RFP0012496), and the exchange rate table attached in this exhibit.

Kénogami in USD

Profit & Loss		2012	2013	2014	2015	2016	2017	2018	
Mill Net Price	$/MT								[a]
Sales tonnage	MT								[b]
Mill Net Revenue	$000's								[c]=[a]*[b]/1000
Variable Costs (Direct Costs)	$000's								[d]
Fixed Power Costs	$000's								[e]
Actual Economic Profits	$000's								[f]=[c]-[d]



Variable costs for 2016-2017 were adjusted by removing fixed power costs [e] from Scorecard data. 2016-2017 fixed power costs calculated as: 2015 fixed power costs in CAD converted to USD using applicable exchange rate attached in this exhibit. The 2018 variable costs already had fixed power costs removed, as reported in Kenogami's 2018 Scorecard (RFP0012497).

Sources: Exhibit 3 to Hausman's December 2018 Report. Underlying sources are Kenogami's 2016 and 2017 Scorecards (RFP0009311-RFP0009314), Kenogami's 2018 Scorecard (RFP0012497), and the exchange rate table attached in this exhibit.

Annual Average: US Dollar per 1 Canadian Dollar

2012	1.0004
2013	0.9712
2014	0.9057
2015	0.7835
2016	0.7551
2017	0.7710
2018	0.7721

US Dollar per 1 Canadian Dollar Monthly average

Year	Month	1C$=USD
2012	Jan-12	0.9853
2012	Feb-12	1.0024
2012	Mar-12	1.0071
2012	Apr-12	1.0068
2012	May-12	0.9903
2012	Jun-12	0.9730
2012	Jul-12	0.9861
2012	Aug-12	1.0063
2012	Sep-12	1.0214
2012	Oct-12	1.0134
2012	Nov-12	1.0027
2012	Dec-12	1.0096
2013	Jan-13	1.0080
2013	Feb-13	0.9925
2013	Mar-13	0.9763
2013	Apr-13	0.9817
2013	May-13	0.9807
2013	Jun-13	0.9687
2013	Jul-13	0.9606
2013	Aug-13	0.9619
2013	Sep-13	0.9648
2013	Oct-13	0.9653
2013	Nov-13	0.9542
2013	Dec-13	0.9398
2014	Jan-14	0.9166
2014	Feb-14	0.9042
2014	Mar-14	0.9002
2014	Apr-14	0.9092
2014	May-14	0.9178
2014	Jun-14	0.9237
2014	Jul-14	0.9321
2014	Aug-14	0.9153
2014	Sep-14	0.9088
2014	Oct-14	0.8912
2014	Nov-14	0.8834
2014	Dec-14	0.8662
2015	Jan-15	0.8288
2015	Feb-15	0.7988
2015	Mar-15	0.7927
2015	Apr-15	0.8087
2015	May-15	0.8215
2015	Jun-15	0.8095
2015	Jul-15	0.7797
2015	Aug-15	0.7607
2015	Sep-15	0.7537
2015	Oct-15	0.7649
2015	Nov-15	0.7533
2015	Dec-15	0.7299
2016	Jan-16	0.7051
2016	Feb-16	0.7247

US Dollar per 1 Canadian Dollar Monthly average

Year	Month	1C$=USD
2016	Mar-16	0.7557
2016	Apr-16	0.7787
2016	May-16	0.7732
2016	Jun-16	0.7754
2016	Jul-16	0.7675
2016	Aug-16	0.7693
2016	Sep-16	0.7639
2016	Oct-16	0.7551
2016	Nov-16	0.7432
2016	Dec-16	0.7491
2017	Jan-17	0.7561
2017	Feb-17	0.7637
2017	Mar-17	0.7472
2017	Apr-17	0.7448
2017	May-17	0.7352
2017	Jun-17	0.7503
2017	Jul-17	0.7866
2017	Aug-17	0.7933
2017	Sep-17	0.8134
2017	Oct-17	0.7947
2017	Nov-17	0.7839
2017	Dec-17	0.7833
2018	Jan-18	0.803949
2018	Feb-18	0.796391
2018	Mar-18	0.773734
2018	Apr-18	0.784845
2018	May-18	0.777198
2018	Jun-18	0.762602
2018	Jul-18	0.761524
2018	Aug-18	0.766696
2018	Sep-18	0.767366
2018	Oct-18	0.768636
2018	Nov-18	0.758159
2018	Dec-18	0.743826

Sources: https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&ye
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&ye
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&ye
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&ye
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&ye
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&ye
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&y

Exhibit 2

Future Damages Based on 2018, in $1,000s

Lost Profits Summary - RISI Costs - Interest Adjusted

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Lost Profits Summary - 2% Costs - Interest Adjusted

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Future Damages Based on 2016-2018, in $1,000s

Lost Profits Summary - RISI Costs - Interest Adjusted

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Lost Profits Summary - 2% Costs - Interest Adjusted

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Notes and Sources:

Laurentide figures from Hausman Dec 2018 Report Exhibit 2

Dolbeau's and Kenogami's underlying data and calculations are in this exhibit

Dolbeau - Expected Economic Profit Calculation
RISI Costs

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:
2013-2017 [a], [b] and [c] from Hausman Dec 2018 Report Exhibit 2
2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])
2018 [c] from Dolbeau's 2018 Scorecard (RFP0012496), and Exhibit 1
2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3
2018 [g] from Dolbeau's 2018 Scorecard (RFP0012496), see Exhibit 1 for Dolbeau Scorecard data in USD

Dolbeau - Cumulative Interest Calculation, in $1,000s
RISI Costs

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 RISI Costs

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted]ecline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 RISI Costs

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted]ecline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected Economic Profit Calculation
2% Costs

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:
2013-2017 [a], [b] and [c] from Hausman Dec 2018 Report Exhibit 2
2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])
2018 [c] from Dolbeau's 2018 Scorecard (RFP0012496), and Exhibit 1
2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3
2018 [g] from Dolbeau's 2018 Scorecard (RFP0012496), see Exhibit 1 for Dolbeau Scorecard data in USD

Dolbeau - Cumulative Interest Calculation, in $1,000s
2% Costs

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013		1.05%	
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:

2013 [p] = 2013 [h]

2014-2018 [p] = Prior year [r] + Current year [h]

[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 2% Costs

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 table

2019-2028 [j] and [k] = 1% decline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 2% Costs

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] ^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation
RISI Costs

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:
2013-2017 [a], [b] and [c] from Hausman Dec 2018 Report Exhibit 2
2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])
2018 [c] from Kenogami's 2018 Scorecard (RFP0012497), and Exhibit 1
2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3
2018 [g] from Kenogami's 2018 Scorecard (RFP0012497), and for Kenogami's Scorecard data in USD see Exhibit 1

Kénogami - Cumulative Interest Calculation, in $1,000s
RISI Costs

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 RISI Costs

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] ^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 RISI Costs

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted]ecline from prior year

[l] = [redacted]^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation
2% Costs

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:
2013-2017 [a], [b] and [c] from Hausman Dec 2018 Report Exhibit 2
2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])
2018 [c] from Kenogami's 2018 Scorecard (RFP0012497), and Exhibit 1
2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3
2018 [g] from Kenogami's 2018 Scorecard (RFP0012497), and for Kenogami's Scorecard data in USD see Exhibit 1

Kénogami - Cumulative Interest Calculation, in $1,000s
2% Costs

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 2% Costs

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] ^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 2% Costs

2019-2028 Lost Profits, in $1,000s					Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Exhibit 3

Future Damages Based on 2018, PHP [redacted] Capacity, in $1,000s

Lost Profits Summary - RISI Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide	[redacted]	0	[redacted]
Dolbeau			
Kenogami			
Total			

Lost Profits Summary - 2% Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide	[redacted]	0	[redacted]
Dolbeau			
Kenogami			
Total			

Future Damages Based on 2016-2018, PHP [redacted] Capacity, in $1,000s

Lost Profits Summary - RISI Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide	[redacted]	0	[redacted]
Dolbeau			
Kenogami			
Total			

Lost Profits Summary - 2% Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide	[redacted]	0	[redacted]
Dolbeau			
Kenogami			
Total			

Laurentide - Expected and Lost Profit Calculation
RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	Jan-Oct 2014	
Mill Net Price	$/mt	[redacted]		[a]
Variable Costs	$/mt			[b]
Sales Tonnage	mt			[c]
Mill Net Revenue	$000's			[d]=[a]*[c]/1000
Variable Costs	$000's			[e]=[b]*[c]/1000
Expected Economic Profit	$000's			[f]=[d]-[e]
Actual Economic Profit	$000's			[g]
Lost Profits	$000's			[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

[b] and [c] from Hausman Dec 2018 Report Exhibit 2

[g] from Hausman Dec 2018 Report Exhibit 3

Laurentide - Cumulative Interest Calculation, in $1,000s
RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[i]	[j]	[k]=[i]*(1+[j])
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:

2013 [i] = 2013 [h]

2014 [i] = 2013 [k] + Jan-Oct 2014 [h]

[j] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

2015-2018 [i] = Prior year [k]

Laurentide - Expected and Lost Profit Calculation
2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	Jan-Oct 2014	
Mill Net Price	$/mt	[redacted]		[a]
Variable Costs	$/mt			[b]
Sales Tonnage	mt			[c]
Mill Net Revenue	$000's			[d]=[a]*[c]/1000
Variable Costs	$000's			[e]=[b]*[c]/1000
Expected Economic Profit	$000's			[f]=[d]-[e]
Actual Economic Profit	$000's			[g]
Lost Profits	$000's			[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

[b] and [c] from Hausman Dec 2018 Report Exhibit 2

[g] from Hausman Dec 2018 Report Exhibit 3

Laurentide - Cumulative Interest Calculation, in $1,000s
2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[i]	[j]	[k]=[i]*(1+[j])
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:

2013 [i] = 2013 [h]

2014 [i] = 2013 [k] + Jan-Oct 2014 [h]

[j] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

2015-2018 [i] = Prior year [k]

Dolbeau - Expected and Lost Economic Profit Calculation
RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Dolbeau's 2018 Scorecard (RFP0012496), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Dolbeau's 2018 Scorecard (RFP0012496), see Exhibit 1 for Dolbeau Scorecard data in USD

Dolbeau - Cumulative Interest Calculation, in $1,000s
RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation
2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Dolbeau's 2018 Scorecard (RFP0012496), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Dolbeau's 2018 Scorecard (RFP0012496), see Exhibit 1 for Dolbeau Scorecard data in USD

Dolbeau - Cumulative Interest Calculation, in $1,000s
2% Costs, PHP 300K MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] [i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				359,546	330,404

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] [redacted] ^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation
RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Kenogami's 2018 Scorecard (RFP0012497), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Kenogami's 2018 Scorecard (RFP0012497), and for Kenogami's Scorecard data in USD see Exhibit 1

Kénogami - Cumulative Interest Calculation, in $1,000s
RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 RISI Costs, PHP 300K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] ^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 RISI Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation
2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Kenogami's 2018 Scorecard (RFP0012497), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Kenogami's 2018 Scorecard (RFP0012497), and for Kenogami's Scorecard data in USD see Exhibit 1

Kénogami - Cumulative Interest Calculation, in $1,000s
2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] [i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 2% Costs, PHP [redacted] MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[j] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Prices Assuming PHP Capacity of [redacted] MT, and an Average Price Elasticity of -1.5

	Expected Net Mill Price in $/MT			Actual Net Mill Price in $/MT		
Year	Laurentide	Dolbeau	Kenogami	Laurentide	Dolbeau	Kenogami
	[a]	[b]	[c]	[d]	[e]	[f]
2013	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2014						
2015						
2016						
2017						
2018						

For [a] note that Laurentide closed in October 2014.

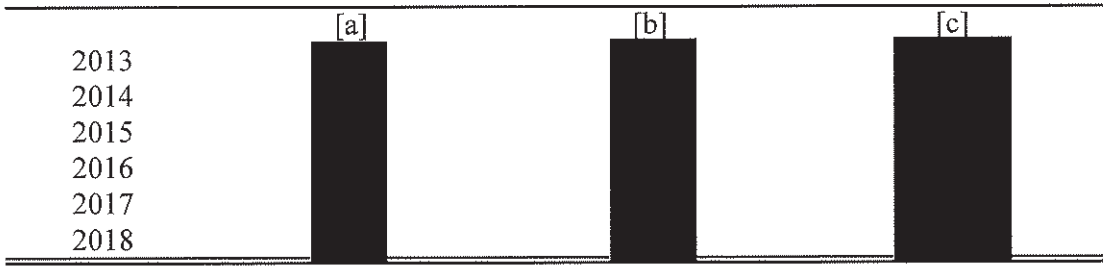
2013-2017 [d], [e], and [f] from Hausman Dec 2018 Report Exhibit 3

2018 [e] and [f] from Dolbeau Scorecard (RFP0012496) and Kenogami Scorecard (RFP0012497), see Exhibit 1 for actual net mill prices in USD

For each mill Laurentide [a], Dolbeau [b], and Kenogami [c] the expected net mill prices are found by dividing the respective actual net mill prices from columns [d], [e], [f] by (1 + price effect % assuming -1.5 elasticity). For the price effect %, see the table Price Effects, 2013-2018 attached in this exhibit. For example, Dolbeau's Expected Net Mill Price in 2018 [b] = [e] / (1 + 2018 price effect % assuming -1.5 elasticity).

PHP's Share of the North American Market Implied by Steger Report, 2013-2018

	PHP	N.A. Market	PHP market share
	Thousand mts		*Percent*
	[a]	[b]	[c]
2013			
2014			
2015			
2016			
2017			
2018			



[a] Steger Report at ¶ 116 ("the available data for PHP's actual volumes indicate volumes closer to the [redacted] MT range").

[b] Steger Report at Table 3.

[c] = [a] / [b].

Price Effects, Assuming PHP 300K MT Capacity, 2013-2018

	PHP's Market Share in N.A.	Price Effects, Assuming Elasticity = -1.5
	Percent	
	[a]	[b]
2013		
2014		
2015		
2016		
2017		
2018		

[a] from this exhibit's table PHP's Share of the North American Market Implied by Steger Report, 2013-2018, at column [c].

[b] = [a] / -1.5.

Exhibit 4

Future Damages Based on 2018, PHP 360,000 MT Capacity, in $1,000s

Lost Profits Summary - RISI Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Lost Profits Summary - 2% Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Future Damages Based on 2016-2018, PHP 360,000 MT Capacity, in $1,000s

Lost Profits Summary - RISI Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Lost Profits Summary - 2% Costs - Interest Adjusted - Elasticity of -1.5

	2013-2018	2019-2028	Total
Laurentide		0	
Dolbeau			
Kenogami			
Total			

Laurentide - Expected and Lost Profit Calculation
RISI Costs, PHP 360k MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	Jan-Oct 2014	
Mill Net Price	$/mt	[redacted]	[redacted]	[a]
Variable Costs	$/mt			[b]
Sales Tonnage	mt			[c]
Mill Net Revenue	$000's			[d]=[a]*[c]/1000
Variable Costs	$000's			[e]=[b]*[c]/1000
Expected Economic Profit	$000's			[f]=[d]-[e]
Actual Economic Profit	$000's			[g]
Lost Profits	$000's			[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

[b] and [c] from Hausman Dec 2018 Report Exhibit 2

[g] from Hausman Dec 2018 Report Exhibit 3

Laurentide - Cumulative Interest Calculation, in $1,000s
RISI Costs, PHP 360k MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[i]	[j]	[k]=[i]*(1+[j])
2013		1.05%	
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:

2013 [i] = 2013 [h]

2014 [i] = 2013 [k] + Jan-Oct 2014 [h]

[j] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

2015-2018 [i] = Prior year [k]

Laurentide - Expected and Lost Profit Calculation
2% Costs, PHP 360k MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	Jan-Oct 2014	
Mill Net Price	$/mt	[redacted]	[redacted]	[a]
Variable Costs	$/mt	[redacted]	[redacted]	[b]
Sales Tonnage	mt	[redacted]	[redacted]	[c]
Mill Net Revenue	$000's	[redacted]	[redacted]	[d]=[a]*[c]/1000
Variable Costs	$000's	[redacted]	[redacted]	[e]=[b]*[c]/1000
Expected Economic Profit	$000's	[redacted]	[redacted]	[f]=[d]-[e]
Actual Economic Profit	$000's	[redacted]	[redacted]	[g]
Lost Profits	$000's	[redacted]	[redacted]	[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

[b] and [c] from Hausman Dec 2018 Report Exhibit 2

[g] from Hausman Dec 2018 Report Exhibit 3

Laurentide - Cumulative Interest Calculation, in $1,000s
2% Costs, PHP 360k MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[i]	[j]	[k]=[i]*(1+[j])
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:

2013 [i] = 2013 [h]

2014 [i] = 2013 [k] + Jan-Oct 2014 [h]

[j] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

2015-2018 [i] = Prior year [k]

Dolbeau - Expected and Lost Economic Profit Calculation
RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt							[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Dolbeau's 2018 Scorecard (RFP0012496), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Dolbeau's 2018 Scorecard (RFP0012496), see Exhibit 1 for Dolbeau Scorecard data in USD

Dolbeau - Cumulative Interest Calculation, in $1,000s
RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation
2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Dolbeau's 2018 Scorecard (RFP0012496), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Dolbeau's 2018 Scorecard (RFP0012496), see Exhibit 1 for Dolbeau Scorecard data in USD

Dolbeau - Cumulative Interest Calculation, in $1,000s
2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Dolbeau - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation
RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt							[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Kenogami's 2018 Scorecard (RFP0012497), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Kenogami's 2018 Scorecard (RFP0012497), and for Kenogami's Scorecard data in USD see Exhibit 1

Kénogami - Cumulative Interest Calculation, in $1,000s
RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				265,180	235,154

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] ^[i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 RISI Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] [i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation
2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

2013-2018 Lost Profits

All values in USD		2013	2014	2015	2016	2017	2018	
Mill Net Price	$/mt	[redacted]						[a]
Variable Costs	$/mt							[b]
Sales Tonnage	mt							[c]
Mill Net Revenue	$000's							[d]=[a]*[c]/1,000
Variable Costs	$000's							[e]=[b]*[c]/1,000
Expected Economic Profit	$000's							[f]=[d]-[e]
Actual Economic Profit	$000's							[g]
Lost Profits	$000's							[h]=[f]-[g]

Notes and Sources:

[a] recorded in this exhibit's table, Prices Assuming an Average Elasticity of -1.5

2013-2017 [b] and [c] from Hausman Dec 2018 Report Exhibit 2

2018 [b] = 2017 [b] * (2017 [b] / 2016 [b])

2018 [c] from Kenogami's 2018 Scorecard (RFP0012497), and Exhibit 1

2013-2017 [g] from Hausman Dec 2018 Report Exhibit 3

2018 [g] from Kenogami's 2018 Scorecard (RFP0012497), and for Kenogami's Scorecard data in USD see Exhibit 1

Kénogami - Cumulative Interest Calculation, in $1,000s
2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014		0.99%	
2015		0.53%	
2016		0.56%	
2017		0.99%	
2018		1.82%	

Notes and Sources:
2013 [p] = 2013 [h]
2014-2018 [p] = Prior year [r] + Current year [h]
[q] is the Government of Canada Treasury Bill Rate. Bank of Canada, Data and Statistics Office

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2018 2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2018 [j] and [k] from 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted] [i], [redacted]

Kénogami - Expected and Lost Economic Profit Calculation, Incorporating Actual 2018 Results, Based on 2016-18 2% Costs, PHP 360K MT Capacity, Price Elasticity of -1.5

	2019-2028 Lost Profits, in $1,000s				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2016-2018	[redacted]	[redacted]			
1	2019	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2020			0.82645		
3	2021			0.75131		
4	2022			0.68301		
5	2023			0.62092		
6	2024			0.56447		
7	2025			0.51316		
8	2026			0.46651		
9	2027			0.42410		
10	2028			0.38554		
	Total				[redacted]	[redacted]

2019-2028 Lost Profits [redacted] [o]=Total [m] - Total [n]

Notes and Sources:

[i] = Years after 2018

2016-2018 [j] is the average of expected profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2016-2018 [k] is the average of actual profits between 2016 to 2018 from the 2013-2018 Lost Profits table

2019-2028 [j] and [k] = [redacted] decline from prior year

[l] = [redacted]^[i], [redacted]

Prices Assuming PHP Capacity of 360K MT, and an Average Price Elasticity of -1.5

	Expected Net Mill Price in $/MT			Actual Net Mill Price in $/MT		
Year	Laurentide	Dolbeau	Kenogami	Laurentide	Dolbeau	Kenogami
	[a]	[b]	[c]	[d]	[e]	[f]
2013						
2014						
2015						
2016						
2017						
2018						

For [a] note that Laurentide closed in October 2014.

2013-2017 [d], [e], and [f] from Hausman Dec 2018 Report Exhibit 3

2018 [e] and [f] from Dolbeau Scorecard (RFP0012496) and Kenogami Scorecard (RFP0012497), see Exhibit 1 for actual net mill prices in USD

For each mill Laurentide [a], Dolbeau [b], and Kenogami [c] the expected net mill prices are found by dividing the respective actual net mill prices from columns [d], [e], [f] by (1 + price effect % assuming -1.5 elasticity). For the price effect %, see the table Price Effects, 2013-2018 attached in this exhibit. For example, Dolbeau's Expected Net Mill Price in 2018 [b] = [e] / (1 + 2018 price effect % assuming -1.5 elasticity).

PHP's Share of the North American Market, 2013-2018

	PHP	N.A. Market	PHP market share
	Thousand mts		*Percent*
	[a]	[b]	[c]
2013	360		
2014	360		
2015	360		
2016	360		
2017	360		
2018	360		

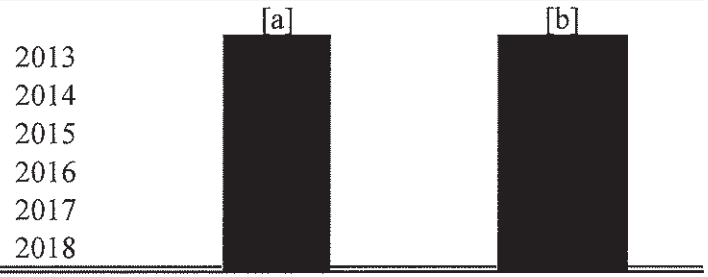
[a] Hausman Dec 2018 at ¶ 6 and ¶ 15

[b] Steger Report at Table 3.

[c] = [a] / [b].

Price Effects, Assuming PHP 360K MT Capacity, 2013-2018

	PHP's Market Share in N.A.	Price Effects, Assuming Elasticity = -1.5
	Percent	
	[a]	[b]
2013		
2014		
2015		
2016		
2017		
2018		



[a] from this exhibit's table PHP's Share of the North American Market, 2013-2018, at column [c].

[b] = [a] / -1.5.