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

Expert Witness Report of Jerry Hausman, Ph.D.

December 28, 2018

Contents

I. Introduction and Qualifications

1. I am the MacDonald Professor of Economics at the Massachusetts Institute of Technology ("MIT") in Cambridge, Massachusetts. I graduated from Brown University in 1968. I received a D.Phil. (Ph.D.) in economics from Oxford University in 1973 where I was a Marshall Scholar. I have been at MIT since completing my D.Phil. My academic specialties are econometrics, the application of statistical methods to economic data, and applied microeconomics, the study of behavior by firms and by consumers.

2. In December 1985, I received the John Bates Clark Award of the American Economic Association, awarded every other year for the most "significant contributions to economics" by an economist under the age of 40. In 1980, I was awarded the Frisch Medal of the Econometric Society. In 2013, I was named a Distinguished Fellow by the American Economic Association. In 2018 I was elected a Fellow of the British Academy. I have been a member of numerous government advisory committees for both the U.S. government and the Commonwealth of Massachusetts and numerous non-US governments. I have published over 200 academic research papers in leading economic journals, including the American Economic Review, Econometrica, and the Rand (Bell) Journal of Economics. I have been an associate editor of Econometrica, the leading economics journal, and the Rand (Bell) Journal of Economics, the leading journal of applied microeconomics.

3. I have been a consultant in the print and paper industries since the early 1990s. I consulted for RR Donnelley, the largest printer in the US, in its acquisition of Meredith/Burda. I also testified in Federal Court proceedings and FTC administrative

proceedings where the FTC challenged the acquisition. Donnelley prevailed against all of the challenges. I continued to consult for Donnelley over the next 10 years as well as other large US and Canadian printing companies such as Quad Graphics and Quebecor. Donnelley was a very large purchaser of Supercalendered paper ("SCP") which is the main product at issue in this proceeding. Over this time period I have also consulted on mergers and acquisitions in the paper industry in North America and the EU, e.g. Abitibi's acquisitions. Abitibi is the predecessor company to Resolute. I have also consulted for Domtar, International Paper and for Georgia Pacific. Lastly, I have consulted for companies in the US and the EU which manufacture latex coatings for paper which competes with SCP that is at issue in this proceeding, e.g. Trinseo (Styron) and Dow.

4. Additional details on my qualifications are provided in my curriculum vitae **(Exhibit 1)**. I have no interest or relationship to Claimants other than my work as an expert in this case. My address is Department of Economics, MIT, Cambridge MA 02142.

II. Background and Assignment

5. Resolute Forest Products Inc. ("Resolute"), the disputing investor, is incorporated in the State of Delaware, in the United States of America, and is registered at 1209 Orange Street, Wilmington, DE, 19801, USA. Resolute wholly owns and controls Resolute FP Canada Inc., a Canadian corporation registered at 111 Robert-Bourassa Blvd., Suite 5000, Montreal, Quebec, H3C 2M1, Canada. Resolute FP Canada Inc. was directly affected by acts for which the Canadian government is responsible under NAFTA.[1]

[1] Resolute Statement of Claim ¶¶ 11-12.

6. Port Hawkesbury Paper ("PHP") operates as a subsidiary of Pacific West Commercial Corporation ("PWCC"),[2] and is located at 120 Pulp Mill Road, Point Tupper, Port Hawkesbury, NS, B9A 1A1, Canada.[3] PWCC purchased the PHP mill on September 28, 2012; prior to the sale to PWCC, NewPage Corporation owned the PHP mill.[4] The PHP mill's capacity of 360,000 MT produces Supercalendered paper ("SCP") grades SCA++, SCA+, SCA, and SCAB paper, and represents 25 percent of the North American capacity for SC paper.[5]

7. SCP is mainly used for magazines, flyers, catalogs, retail inserts, direct mail materials, coupons, and brochures. SCP is generally sold in rolls and has a glossy finish.[6] SCP is sold in a range of grades, from SCA++, SCA+, SCA, SCB, and SNC. Due to its use in retail advertisements, it is made to order with very low inventories.[7]

8. As I testified in the statute of limitations phase, there is seasonal demand for SCP with increased advertising and promotions leading up to the holiday season with increased demand in the second half of the year.[8] The SCP industry is in the midst of a secular

[2] Resolute Statement of Claim ¶ 31.

[3] C-248, Port Hawkesbury Mill Datasheet.

[4] Resolute Statement of Claim ¶ 43.

[5] We calculate PHP's capacity to be approximately 25 percent of North American capacity as of 2017, but I do not use this capacity in the damages calculation. C-239, "Paper Market Update: April 2016." *Quad Graphics*

[6] C-237, *Supercalendered Paper from Canada*. U.S. International Trade Commission. Inv. No. 701-TA-530. Pub. 4583. (December 2015). ("USITC Final Publication."), Commission Opinion at 5.

[7] C-237, USITC Final Publication, Commission Opinion pp. 15-16.

[8] C-237, USITC Final Publication, Staff Report p. II-7 and Commission Opinion p. 13.

decline due to the shift to digital advertising and the declining demand for print newspapers and magazines.[9]

9. Price is the most important factor in purchasing decisions. Changes in SCP prices are transparent to producers and sellers and are distributed through industry publications such as RISI. RISI and other industry publications also publish price forecasts for SCP and other paper and pulp products.

10. The Government of Nova Scotia kept the NewPage Port Hawkesbury mill in a "hot idle" state after the plant shutdown in September 2011. [10] Through a package of financial benefits and other aid, PWCC bought the mill for $33 million on September 28, 2012.[11] PHP reopened on October 4, 2012, but did not fully enter the market until 2013.[12]

11. Resolute decided to close the higher cost Paper Machine ("PM") 10 at its Laurentide mill and reopen the shuttered Dolbeau SC plant, as later announced on August 24, 2012, and restarted on October 10, 2012.[13] In my experience, it would take a couple of months to qualify paper production from the start-up of a production line.[14] Resolute

[9] C-237, USITC Final Publication, Commission Opinion at 13 and Staff Report p. IV-5

[10] Resolute Statement of Claim ¶¶ 25 & 28 and C-117 "NewPage Port Hawkesbury Closes its Doors." CBC News. (September 16, 2011).

[11] Resolute Statement of the Claim ¶¶ 4-5 & 33 and R-067 Cumberland News Now News Article (28Sept2012).

[12] "With the passage of time we will now be in the fourth quarter of this year before the Mill restarts, and the remainder of 2012 will be primarily recommencement and ramp-up of Mill operations to commence filling 2013 orders. We do not anticipate positive net earnings in 2012, and the first true operational year is 2013." C-197 at 4; *see also* C-237, USITC Final Transcript pp. 239:22-241:3.

[13] Resolute Counter-Memorial ¶¶ 43-54 & 105-110; R-011, Resolute Press Release (August 24, 2012); C-041, Resolute 2012 10-K at 5; R-104, ("ERA, October 2012") pp. 4, 16, 28.

[14] This expectation is consistent with PHP's USITC Testimony. C-236, *In re Supercalendered Paper from Canada*, Investigation No. 701-TA-530, Hearing Tr. at 239-40 (Oct. 22, 2015).

management had also made long-term capital improvement commitments to Laurentide's lower cost machine, PM 11.[15] Resolute announced it would shut down PM 10 on November 6, 2012 with the shutdown occurring on November 26, 2012.[16] Two years after PHP's reentry into the market and contrary to Resolute's earlier plans, Laurentide was permanently closed on October 13, 2014.[17]

12. Resolute filed its Intent to Submit a Claim to Arbitration under Chapter Eleven of the North American Free Trade Agreement on September 30, 2015. Under NAFTA Articles 1116, 1117 and 1119, Resolute and its subsidiary Resolute FP Canada Inc, filed the Notice of Arbitration and Statement of Claim against the Government of Canada ("GOC") for alleged breaches of Articles 1102, 1105, and 1110 on December 30, 2015.[18] Resolute's filings allege that the Nova Scotia Government's Measures violated investment protections under NAFTA and damaged Resolute and its Canadian investment.[19]

13. I have been asked by Resolute to calculate damages related to the Laurentide paper mill, Kénogami paper mill, and Dolbeau paper mill, as a result of PHP's reopening and entrance into the SC North American Paper market.

[15] *See* R-010, 2011 Resolute Annual Report, where Resolute appropriated funds for installation in 2012 of a major piece of equipment that was to be moved from a shuttered operation in British Columbia.

[16] R-014, Resolute Press Release (Nov. 6, 2012).

[17] C-224, "Resolute Reports Preliminary Third Quarter 2014 Results." PR Newswire. (October 30, 2014).

[18] Resolute Statement of Claim ¶¶ 1-2 and ¶ 20.

[19] Resolute Statement of Claim ¶ 20.

III. Information Relied Upon

14. In performing the analysis and developing the opinions reflected in this expert witness statement, I, or staff under my direction, reviewed various pleadings in this case; industry pricing data; industry forecasting data; detailed pricing, volume, and cost data related to the Kénogami, Dolbeau, and Laurentide paper mills; and industry publications. All documents I relied upon in forming this opinion are cited in this witness statement or are otherwise attached.

IV. Summary of Opinions

15. The reopening of PHP added 360,000 MT of capacity to the SC paper market, causing significant financial damage to Resolute's three SC Paper mills via price declines. These price effects resulted in financial damages of $163.7 million for Resolute's three SCP mills at Laurentide, Dolbeau, and Kénogami. I have calculated the damages in two ways, as shown below, and use the more conservative amount of $163.7 million for the value of the damages.

V. Liability Assumptions

16. I have been asked to calculate the monetary damages to Resolute assuming that the NSG's provisions led to PHP's reopening. I assume that without the package of financial and other Measures that the NSG offered PWCC, the PHP mill would not have reopened.

VI. Damages Methodology

17. My analysis calculates the incremental cash flow that would have been received by Resolute at its three SCP mills had PHP not entered the market. For each mill for each year, I calculated the profits it would have expected to receive without PHP in the

market and subtracted the profits it actually received with PHP in the market. I refer to the difference between the expected and actual profits as "lost profits." For the years in which the actual profits are unavailable, *i.e.*, 2018 and beyond, I assume a one percent decline in profits for each subsequent year, using the 2017 expected and actual profits as the baseline; these lost profits for the future years were discounted and then summed.

VII. Damages Calculations

18. The damages calculation consists of four steps. First, for 2013 to 2017, I calculated the expected profits each mill would have received. Second, I compiled the actual profits each mill generated for 2013 to 2017. Third, I used the 2017 expected and actual profits and calculated future expected and actual profits by applying a one percent decline in profits in each subsequent year. Finally, I calculated damages by measuring the incremental yearly lost profits and adjusted for the time value of money to reduce all amounts to present value.

19. I calculate damages beginning in 2013 for each mill, as PHP did not fully enter the market until 2013. As PHP's own planning documents and its testimony at the United States International Trade Commission ("USITC" or "ITC") hearing established, despite opening in September 2012, PHP spent the end of 2012 qualifying its paper with its customers to be ready for sales in 2013.[20]

[20] "With the passage of time we will now be in the fourth quarter of this year before the Mill restarts, and the remainder of 2012 will be primarily recommencement and ramp-up of Mill operations to commence filling 2013 orders. We do not anticipate positive net earnings in 2012, and the first true operational year is 2013." C-197 at 4. And "Third, and very important, is that in order to be able to participate in orders for the new year, it is absolutely imperative that the Mill be producing paper within the next few weeks so as to have demonstrated appropriate quality production for customers who will very soon be placing orders to be filled in 2013. This is critical to a successful restart of the Mill." C-197 at 11. *See also* C-237, USITC Final Transcript pp. 239:22-241:3.

A. Profit Calculation, 2013-2017

20. Profits are comprised of two elements: revenues and costs. I calculated profits as the contribution margin, or the incremental profits that a firm receives from a sale minus the incremental costs of producing the good. I used the same type of profit calculation in the jurisdictional phase of this proceeding.[21] I calculated revenues as the Net Mill price per unit multiplied by the quantity sold for the given price. As each mill's cost structure is somewhat different, I separately calculated the incremental profits for each mill.

21. To calculate the damages, I calculated the expected profits less the actual profits for the period in which actual profit data are available, *i.e.*, 2013 to 2017. I discuss how I calculated the actual and expected prices and costs from 2013 to 2017 below. I discuss the expected and actual profits beyond 2017 in the following section, Profit Calculation, 2018-2028.

22. As an initial matter, my analysis does not include PHP's negative effects on Resolute's quantities via lowered shipments and market related downtime at its three mills. It is my understanding that Resolute suffered decreased shipments due to PHP and took unplanned market related downtime; however, the damages calculation only includes the price effects and is therefore a conservative analysis.

[21] I conducted an analysis on the financial effect of PHP's reopening in the SOL phase using the contribution margin, with data provided by Resolute. It is my understanding that the data provided in the SOL phase were created for litigation and were not as detailed as the data provided in this phase of the investigation, which were the Scorecard data kept in the regular course of business. The Cash Cost of Sales data in the Scorecard data separate variable and fixed costs, which were not available to me in the SOL phase. Therefore, the contribution margin analysis I presented in the SOL phase included fixed costs. I recreated the same analysis using the more detailed data from the Scorecards with the appropriate variable cost breakout and it does not affect the analysis I presented in the SOL phase. The original contribution margin analysis also had no effect on the quantity analysis or price effects analysis I conducted in the SOL phase.

1. Expected Prices

23. I first calculated the prices Resolute expected before PHP entered the market. I used the RISI price forecast for Supercalendered 35 pound SC-A from October 2011, which represents the industry's price expectations without PHP in the market.[22] As each mill's prices will differ dependent on its product mix, I applied the year-to-year price changes in the RISI forecast to each mill's net mill price to calculate the expected price changes. The October 2011 RISI price forecast went out to 2016. I apply the same percent change in 2016 to 2017 prices and variable costs, which yields a conservative estimate of damages.

24. Demand for SCP is relatively elastic.[23] Due to the significant substitutability between grades and common factor inputs, the prices of various SCP grades move together.[24] Therefore, the price changes indicated in the RISI SC-A price forecast are applicable to all grades of SCP. Resolute relies on the RISI price forecasts for what they expect market prices to be.[25] The RISI price forecast is shown in the table below. PHP is approximately 25 percent of capacity;[26] economic analysis leads to the conclusion that there will be a significant negative effect on prices when substantial capacity is added. This significant negative effect is observed in Table 2, where the RISI prices are

[22] As discussed in Dr. Kaplan's Expert Witness Statement (CWS-Kaplan), the addition of 360,000 MT had significant negative price effects as is expected by standard economic analysis.

[23] The USITC staff found that there is a demand elasticity of -2 to -4 although subsequently they found it might be closer to unitary. C-237, USITC Final Publication Staff Report II-24 and Commission Opinion p. 15.

[24] C-237, USITC Final Publication, Commission Opinion p. 15.

[25] Resolute had some internal forecast with constant prices for all of their paper products; however, RISI prices are a better indicator of the market. RISI is accepted as the industry standard on pricing in the SCP market.

[26] *See supra, footnote 5* (identifying 2017 capacity). C-239, "Paper Market Update: April 2016." *Quad Graphics.*

significantly higher than the actual mill net prices, holding other economic factors equal.

25. The observed price decreases after PHP's reopening compared to the RISI forecasts are consistent with economic analysis. 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. Taking the inverse of the price elasticity of demand along with the increase in capacity yields a prediction of the approximate price decrease caused by the increase in capacity. For example, using 2014 data from Table 2, I calculate the average price decrease for Dolbeau and Kénogami to be -12.4 percent. This price decrease follows from a price elasticity of -2.0, which is within range of -2 to -4 estimated by the ITC. For 2017, the average price decrease is -20.0 percent, which yields a price elasticity estimate of -1.3, which is closer to -1.0, which the ITC staff discussed. Using an average of price changes for 2013-2017, I estimate a price elasticity of -2.1. Thus, the Table 2 results which use the RISI price forecasts are consistent with the price elasticities estimated by the ITC staff and used by the ITC in its report.

26. I applied the RISI forecasted price change to each mill's 2012 Net Mill price,[27] as this was the last year without price effects from PHP's reopening. For each subsequent year, the RISI price change was multiplied by the prior year's price. I used the Net Mill price as the basis for calculating the contribution margin which is consistent with how

[27] The Net Mill price for each mill comes from each mill's Scorecards: Laurentide (RFP0009307, RFP0009308, RFP0009309), Dolbeau (RFP0009302, RFP0009303, RFP0009304, RFP0009305, and 2016 & 2017 Dolbeau Scorecards); and Kénogami (RFP0009311, RFP0009312, RFP0009313, RFP0009314 and 2016 & 2017 Kénogami Scorecards). *See* C-252 through C-266.

I calculated the profitability in the phase on jurisdiction and admissibility ("SOL phase"). [28]

27. The table below shows the calculation.

Table 1: Projected Price Calculation

	Net Mill Price in $/MT			RISI Projection %
	Laurentide	**Dolbeau**	**Kénogami**	
	[a]	[b]	[c]	[d]
2012 Actual				
2013				
2014				
2015				
2016				
2017				

Calculating Laurentide in 2013: 2012 [a]* 2013[d] = 2013 [a]
Note: Laurentide closed in October 2014. The RISI price forecasts were presented annually and not monthly. I use the annual price change to calculate the January to October 2014 price for Laurentide. The 2017 price changes are set to 2016 price change.
Source: Exhibits 2 and 3.

2. Actual Prices

29. Resolute provided Mill Scorecards for each of its mills; these detailed data are maintained in the ordinary course of business. I used the annual data reported in each mill's Scorecard in the "Act_mthly" tab for each year. [29]

Table 2: Expected and Actual Prices

	Expected Mill Net Price in $/MT				**Actual Mill Net Price in $/MT**		
Year	**Laurentide**	**Dolbeau**	**Kénogami**		**Laurentide**	**Dolbeau**	**Kénogami**
2013							
2014							
2015							

[28] I use the Mill Net price as the basis for calculating each mill's profit. Resolute's Net Sales price is the delivered price, which includes freight. While Resolute pays for the freight costs, it is not considered a part of the contribution margin and freight costs are passed on to customers. Thus, the Mill Net price is the price on which profit is calculated.

[29] As all values in the Scorecards were reported in Canadian dollars, I converted the values to U.S. dollars using an annual exchange rate provided in **Exhibit 3**.

2016			[redacted]												
2017			[redacted]												

Note: Laurentide closed in October 2014. The RISI price forecasts were presented annually and not monthly. I use the annual price change to calculate the January to October 2014 price for Laurentide. The 2017 price changes are set to 2016 price change.
Source: Exhibits 2 and 3.

3. Expected Variable Costs

30. I used two methodologies to calculate the future costs Resolute expected its mills would face based on the RISI costs forecasts from October 2011, and my understanding of Resolute's variable cost expectations.

31. RISI's October 2011 publication provides a five-year forecast for U.S. uncoated mechanical variable costs in the same table as the SC-A price forecasts. SCP is a type of uncoated mechanical paper, and therefore one would expect that the changes in variable costs to be similar.[30] As shown below, variable costs move slightly from year to year; the compound average growth rate (CAGR) is 1.4 percent, and the average of the variable cost changes is 2.4 percent. [31]

[30] While the [redacted].

[31] Based on the 2011-2016 projections.

Table 3: RISI U.S. Uncoated Mechanical Variable Costs Forecasts, Dollars per Ton

Year	$/Ton	% Change
2010 - Actual		
2011		
2012		
2013		
2014		
2015		
2016		

Source: Exhibit 2

32. It is my understanding that Resolute's variable costs by mill do not change significantly from year to year, and that Resolute expects variable costs to typically increase by about two percent a year. This outcome is similar to the RISI costs forecasts CAGR and simple average. For the Tribunal's convenience, I separately report the damages calculated under the two different cost assumptions; I refer to these calculations as the RISI Costs model and the 2% Costs model.

33. Due to the start-up costs at Dolbeau in late 2012, and the closure of PM 10 at Laurentide in the same time frame, I adjusted the variable cost data for these two mills. The variable cost calculation at Kénogami was straightforward. To calculate the expected variable costs, I first applied the 2013 expected variable cost change to the 2012 variable cost per metric ton. The variable cost per ton calculation is shown below.

Table 4: Kénogami Expected Variable Costs in Dollars per MT

	Var. Costs $/MT		RISI % Change	RISI Cost $/MT		2% Change	2% Cost $/MT
	[a]		[b]	[c]		[d]	[e]
2012 Actual	[redacted]						
2013			[redacted]	[redacted]		2	[redacted]
2014						2	
2015						2	
2016						2	
2017						2	

2013: [a]*2013 [b] = 2013 [c]; [a]*2013[d]=2013[e]
2014: 2013 [c]* 2014 [b] = 2014 [c]; 2013[e]*2014[d]=2014[e] calculating 2015-2017 is similar to calculating 2014.
The 2017 percent change is equal to 2016 percent change for RISI model.
Source: Exhibit 2

34. I then multiplied the expected per unit variable cost by each mill's shipment quantities as provided in each mill's Scorecard. I repeated this calculation for each subsequent year to 2017, using the prior year's per unit variable cost and applying the appropriate percentage change according to either RISI or Resolute's two percent expectation.

Table 5: Kénogami Expected Variable Costs in $1,000

	Var. Costs	RISI Cost	2% Costs
2012 Actual	[redacted]		
2013		[redacted]	[redacted]
2014			
2015			
2016			
2017			

Source: Exhibit 2

35. For Dolbeau and Laurentide, I could not use the 2012 variable cost data as external, non-recurring circumstances affected the data.[32] For each mill, I used the variable cost per ton for Q1 2013 based on the actual Scorecard data for the baseline year, 2013.

[32] Dolbeau's startup led to [redacted]. The Laurentide data in 2012 include the [redacted] PM 10 [redacted].

Table 6: Dolbeau Expected Variable Costs in Dollars per MT

	Var. Costs $/MT	RISI % Change	RISI Cost $/MT		2% Change	2% Cost $/MT
	[a]	[b]	[c]		[d]	[e]
Q1 2013	[redacted]					
2014		[redacted]	[redacted]		2	[redacted]
2015		[redacted]	[redacted]		2	[redacted]
2016		[redacted]	[redacted]		2	[redacted]
2017		[redacted]	[redacted]		2	[redacted]

2014 [c]: [a]*2014 [b] = 2014 [c]; 2014[e]= [a]*2014[d]
2015 [c]: 2014 [c]* 2015 [b] = 2015 [c]; 2015 [e]=2014[e]*2% calculating 2016-2017 is similar to calculating 2015
The 2017 percent change is equal to 2016 percent change for RISI model.
Source: Exhibit 2

Table 7: Laurentide Expected Variable Costs in Dollars per MT

	Var. Costs $/MT	RISI % Change	RISI Cost $/MT		2% Change	2% Cost $/MT
	[a]	[b]	[c]=[a]*[b]		[d]	[e]=[a]*[d]
Q1 2013	[redacted]					
2014		[redacted]	[redacted]		2	[redacted]

Source: Exhibit 2

36. I then multiplied the Q1 2013 variable cost per ton by the actual shipments, to generate the 2013 expected variable cost. For 2014 to 2017, I applied either RISI's forecasted variable cost changes or Resolute's two percent expectation to the prior year's variable costs.

Table 8: Dolbeau Variable Costs in $1,000

	RISI Cost	2% Costs
2013	[redacted]	[redacted]
2014		
2015		
2016		
2017		

Source: Exhibit 2

Table 9: Laurentide Variable Costs in $1,000

	RISI Cost	2% Costs
2013	[redacted]	[redacted]
Jan-Oct 2014	[redacted]	[redacted]

Source: Exhibit 2

4. Actual Variable Costs

37. Resolute provided its costs for each mill in its Mill Scorecards. [redacted][33] [redacted][34] [redacted]

38. [redacted]

[33] [redacted] was made to Dolbeau and Kénogami as Laurentide was already closed by this point.

[34] *See* Laurentide (RFP0009308, RFP0009309), Dolbeau (RFP0009303, RFP0009304, RFP0009305, and 2016 & 2017 Dolbeau Scorecards); and Kénogami (RFP0009312, RFP0009313, RFP0009314 and 2016 & 2017 Kénogami Scorecards). *See generally* C-252 to C-266.

39. It is my understanding that the fixed costs are based on the service Resolute had with Hydro Québec for access to [redacted] of power per month, which it refers to as "peak demand." [35] The cost to Resolute is set at about [redacted] per month per point of peak demand; thus, Dolbeau and Kénogami were required to pay around [redacted] per month, independent of the variable power costs it would incur.[36]

40. [redacted].[37] In order to present the real economic cost of producing SCP at Kénogami and Dolbeau, I remove these real fixed power costs from the total variable costs in 2016 and 2017.

Table 10: Actual Variable Costs in Dollars per MT and $1,000

	Actual Variable Costs in $/MT			Actual Variable Costs in $1,000		
	Laurentide	Dolbeau	Kénogami	Laurentide	Dolbeau	Kénogami
2013	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2014	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2015	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2016	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2017	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Note: 2016 and 2017 costs adjusted to [redacted]
Source: Exhibit3

5. Calculated Profits

41. To calculate expected "but for" profits, I multiply the expected prices calculated in Table 1 by the quantities of shipments, to generate the mill's revenue for each year. Next, I deduct the expected variable costs, calculated in Table 5, Table 8, and Table 9

[35] It is my understanding that Resolute's service agreement is for access to [redacted] at the applicable tariff rate, with offsetting credits for supply at high voltage and adjustment for transformation loss. The tariff rate and offsetting credits come out to approximately $[redacted].

[36] In the 2012-2015 Scorecard Data the variable portion of the power costs are directly related to the real energy usage, and the fixed portion of the power costs relate to the peak demand invoicing.

[37] I used Resolute's 2015 fixed power costs of each mill from its Mill Scorecards to calculate 2016 and 2017 fixed power costs using the appropriate exchange rate for each year.

above, from the mill's revenues. The result is the mill's expected economic profits. In Table 11, I include expected profits together with the actual profits calculated from the Scorecard data.[38] The total difference between expected profits and actual profits is between $100.2 million and $106.4 million.

Table 11: Laurentide Expected and Actual Profits in $1,000, 2013 – Jan-Oct 2014

	Expected Profits		Actual Profits
	RISI Costs	2% Costs	
2013	[redacted]	[redacted]	[redacted]
Jan - Oct 2014	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

Source: Exhibit 2

Table 12: Dolbeau Expected and Actual Profits in $1,000, 2013-2017

	Expected Profits		Actual Profits
	RISI Costs	2% Costs	
2013	[redacted]	[redacted]	[redacted]
2014	[redacted]	[redacted]	[redacted]
2015	[redacted]	[redacted]	[redacted]
2016	[redacted]	[redacted]	[redacted]
2017	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

Source: Exhibit 2

Table 13: Kénogami Expected and Actual Profits in $1,000, 2013-2017

	Expected Profits		Actual Profits
	RISI Costs	2% Costs	
2013	[redacted]	[redacted]	[redacted]
2014	[redacted]	[redacted]	[redacted]
2015	[redacted]	[redacted]	[redacted]
2016	[redacted]	[redacted]	[redacted]
2017	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

Source: Exhibit 2

[38] It is my understanding that Resolute sold some of the land at Laurentide and received C$[redacted] in 2017, or $[redacted]. This payment is not included in the damages calculation as the land would have been sold in the actual and the "but for" world.

B. Profit Calculation, 2018-2028

42. For the periods in which there are no actual prices or costs, I forecasted the 2018-2028 actual and expected profits based on an annual [redacted] percent decline in profits from each mill's 2017 actual and expected profits, as presented in Table 11 to Table 13 above. The [redacted] percent decline in profits is the appropriate profit decay rate for two reasons. The first reason is that I understand Resolute expects a [redacted] percent decline in future profits. The second reason is that the RISI price and cost forecasts show that costs are growing at a faster rate than prices will rise. CAGR implied in the price forecast over 2012 to 2016 was 0.84 percent, while the CAGR of the variable costs forecast was 1.49 percent over the same time period. By using the [redacted] percent decline, I take a more conservative approach in calculating future profits.

43. In addition, I used 2028 as the terminal year for damages. It is my understanding that Resolute has plans to run the Dolbeau and Kénogami mills beyond 2028 without large planned investments, and that the longevity of the mills is dependent upon demand for SCP. Based on my experience in the paper industry, and the overall demand declines in the printed media industry, I have confidence that the SCP industry will exist in its present state in 10 years, but beyond 10 years I am less certain.[39] The 2028 year terminal date used in the future profits calculations is a conservative approach.

[39] According to the Third-Party Cost Benchmark, there are 10 higher cost mills than Kénogami. Thus, with demand declines these mills would exit the market before Kénogami. As this presentation was prepared before Dolbeau had reopened it is not on the graph; [redacted], *see* C-109, RFP0004970. In the event that the Dolbeau or Kénogami mill does close from lower prices and quantities due to PHP's reopening, these future damages are conservative. Thus, while overall industry demand could be lower with higher prices in the "but for" world, the Resolute mills would be expected to continue to produce as in the actual world, because higher cost non-Resolute mills would reduce production if demand decreased.

Table 14: Dolbeau and Kénogami Expected and Actual Future Profits, 2018-2028

	Dolbeau				Kénogami		
	Expected Profits		**Actual Profits**		**Expected Profits**		**Actual Profits**
	RISI	**2%**			**RISI**	**2%**	
2017	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2018	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2019	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2020	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2021	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2022	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2023	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2024	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2025	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2026	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2027	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
2028	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]
Total 2018-2028	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]

Source: Exhibit 2

C. Calculation of Damages

44. The damages suffered by Resolute at its three SCP mills are equal to the present value of the incremental revenues that would have been realized had PHP not entered the market, less the incremental costs of producing additional shipments. To measure the impact of PHP's reopening in 2013 to 2017, I calculated the difference between the expected profits and the actual profits. For Dolbeau and Kénogami's 2018 to 2028 profits, I discounted the future profits and the actual profits to 2017 using Resolute's internal weighted average cost of capital (WACC).[40] I then deducted the discounted actual profits from the discounted future profits.

[40] The future profits were calculated based on the expectation in 2017, and were first discounted back to 2017, and summed by mill; these represented the lost profits looking forward from the end of 2017.

45. In Table 15 the NPV of damages incurred by the end of 2017 is approximately $100.2 million to $106.4 million and the NPV of future damages incurred during the period 2018-2028 is $60.6 million to $92.7 million.

Table 15: Net Present Value of Damages in $1,000

	Laurentide			Dolbeau			Kénogami	
	Damages RISI	**Damages 2%**		**Damages RISI**	**Damages 2%**		**Damages RISI**	**Damages 2%**
2013-2017	[redacted]	[redacted]		[redacted]	[redacted]		[redacted]	[redacted]
2018-2028								
Total	[redacted]	[redacted]		[redacted]	[redacted]		[redacted]	[redacted]

Source: Exhibit 2

46. In order to account for the cumulative interest that Resolute would have earned on these lost profits, I also applied an interest rate from the respective date of each period's lost profits. The interest compensates Resolute for the time value and opportunity cost of money.

47. It is my understanding that the Tribunal can add pre-judgement interest to the award. I used the Government of Canada Treasury Bill rate as a conservative approach to calculate the interest on Resolute's lost profits, and the annual interest for the relevant period is shown below. Rates that other NAFTA tribunals have considered have been used in Appendix A. [41]

Table 16: Government of Canada Treasury Bill Rate

Treasury Bill Rate	
2013	1.05%
2014	0.99%
2015	0.53%
2016	0.56%

[41] I recommend that the Tribunal apply post-award interest to Resolute for the time value of money from the date of the award until payment is received. I can provide the updated 2018 and monthly 2019 interest rate to the Tribunal at the time of the award.

2017	0.99%

Source: Bank of Canada, Data and Statistics Office

48. I report the damages after applying the interest rate Resolute would have received at the time in the table below. I compounded the interest annually. Damages are between $163.7 million and $201.9 million with the components listed below. I use the more conservative $163.7 million as my final damages calculation.

Table 17: Total Damages, RISI Cost Model, in $1,000

	Calculated	**Interest Adjusted**
Observed Damages 2013-2017	106,404	109,253*
Future Damages 2018-2028	155,446	92,650**
TOTAL DAMAGES		**201,903**

*Includes pre-judgement interest
**Present discounted value
Source: Exhibit 2

Table 18: Total Damages, 2% Cost Model, in $1,000

	Calculated	**Interest Adjusted**
Observed Damages 2013-2017	100,248	103,050*
Future Damages 2018-2028	101,750	60,646**
TOTAL DAMAGES		**163,695**

*Includes pre-judgement interest
**Present discounted value
Source: Exhibit 2

I affirm my genuine belief of the opinions expressed in this Expert Report.

Jerry Allen Hausman

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Appendix A

For the Tribunal's convenience, I have calculated pre-judgement interest using the Canadian prime rate and the Canadian prime rate plus one percent. It is my understanding that the Government of Canada agreed to the Canadian prime rate for pre-judgment interest in *Windstream v. Canada*, and the Tribunal awarded the Canadian prime rate plus one percent in *S.D. Myers v. Canada*.

The Canadian prime rate and the Canadian prime rate plus one percent for the relevant time period are listed in the table below.

Table 19: Canadian Prime Rate and Canadian Prime Rate +1%

	Canadian Prime Rate	Canadian Prime Rate + 1%
2013	3.00	4.00
2014	3.00	4.00
2015	2.78	3.78
2016	2.70	3.70
2017	2.91	3.91

Source: Bank of Canada, Data and Statistics Office

If the Tribunal adopts either one of the rates, the tables below are the damages after applying the interest rate, with interest compounded annually. Using the Canadian prime rate, damages are $171.4 million to $209.7 million. The Canadian prime rate plus one percent yields damages of $175.4 million to $213.7 million.

Table 20: Total Damages, RISI Cost Model, in $1,000 – Canadian Prime Rate

	Calculated	Interest Adjusted
Observed Damages 2013-2017	106,404	117,079*
Future Damages 2018-2028	155,446	92,650**
TOTAL DAMAGES		**209,728**

Table 21: Total Damages, 2% Cost Model, in $1,000 - Canadian Prime Rate

	Calculated	Interest Adjusted
Observed Damages 2013-2017	100,248	110,791*
Future Damages 2018-2028	101,750	60,646**
TOTAL DAMAGES		**171,436**

Table 22: Total Damages, RISI Cost Model, in $1,000 – Canadian Prime Rate + 1%

	Calculated	Interest Adjusted
Observed Damages 2013-2017	106,404	121,038*
Future Damages 2018-2028	155,446	92,650**
TOTAL DAMAGES		**213,687**

Table 23: Total Damages, 2% Cost Model, in $1,000 - Canadian Prime Rate + 1%

	Calculated	Interest Adjusted
Observed Damages 2013-2017	100,248	114,706*
Future Damages 2018-2028	101,750	60,646**
TOTAL DAMAGES		**175,352**

Professor Jerry A. Hausman

October 2018

EDUCATION:

OXFORD UNIVERSITY
D. Phil. 1973 (Ph.D), B. Phil. 1972

BROWN UNIVERSITY
A.B. (Summa Cum Laude), 1968

THESIS: "A Theoretical and Empirical Study of Vintage Investment and Production in Great Britain," Oxford University, 1973.

FELLOWSHIPS, HONORS AND AWARDS:

Phi Beta Kappa
Marshall Scholar at Oxford, 1970-1972
Scholarship at Nuffield College, Oxford, 1971-1972
Fellow, Econometric Society, 1979
Frisch Medal of the Econometric Society, 1980
Fisher-Schultz Lecture for the Econometric Society, 1982
John Bates Clark Award of the American Economic Association, 1985
Smith Lectures, Brigham Young University 1986
Jacob Marschak Lecture for the Econometric Society, 1988
Hooker Lectures, Macmaster University 1989
Fellow, National Academy of Social Insurance, 1990
American Academy of Arts and Sciences, 1991
Fellow, Journal of Econometrics, 1998
Shann Memorial Lecture for the Australian Economics Society, 2003
Cenmap International Fellow, University College London, 2004
Honorary Professor, Xiamen University, 2005
Biennial Medal of the Modeling and Simulation Society of Australia and New Zealand, 2005
Fellow, Modeling and Simulation Society of Australia and New Zealand, 2005
Condliffe Memorial Lecture, University of Canterbury, NZ, 2005
Keynote Lecture, Far East Meetings of Econometric Society, Beijing 2006
Keynote Speaker, ACCC Conference, Australia, 2006
Keynote Speaker, Panel Data Conference, Xiamen China, 2007
Keynote Speaker, FTC/Northwestern Antitrust Conference, 2008
Honorary Fellow, Nuffield College, Oxford University, 2008
Journal of Applied Econometrics Lectures, 2009
Leigh Lecture, Washington State University, 2009
MIT UEA Teaching Award, 2009
Journal of Financial Economics “All Star Paper”, 2009
Honorary Advisory Board, Chang Mai University, Thailand, 2009-
Honorary Degree, Chang Mai University, Thailand 2010
Keynote Speaker, UC Berkeley Conference on Mobile Telecommunications, 2010
Keynote Speaker, Xiamen University (China) conference on 30 Years of Specification Tests, 2010
Tinbergen Lectures, Tinbergen Institute, Netherlands, 2011
Keynote Speaker, Econometrics Conference, Cambridge Univ., UK, 2011
HOH Lectures, Humboldt Univ. Berlin, 2011
Gorman Lectures, University College London, 2011
Conference on the Hausman Specification Test, Louisiana State Univ., 2012
Keynote Speaker, 18th Panel Data Conference, Paris, 2012
American Economic Association Distinguished Fellow 2013
Keynote Speaker, Cambridge University Conference on Panel Data, 2013

Conference in Honor of Jerry Hausman, Curtin University, Fremantle, Australia, 2013
Keynote Speaker, Africa-Asia-Australia Telecommunications Conference, Perth, Australia, 2013
Keynote Speaker, Conference on TOU Prices, Nenching China, 2013
Conference in Honor of Jerry Hausman, Xiamen University China, 2014
Keynote Speaker, Conference in Honor of Jerry Hausman, Xiamen University China, 2014
Keynote Speaker, 22nd Panel Data conference, Fremantle, Australia, 2016
Bateman Lecture, University of Western Australia, 2016
Keynote Lecture, Universidad Nacional de Colombia, Bogota, 2016
Distinguished Speaker Series, UCLA, 2017
G. Chow lecture, Xiamen University, China 2017
British Academy, Corresponding Member, 2018
Keynote Speaker, Chinese Academy of Sciences UCI Conference, 2018

EMPLOYMENT:

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2016-	John and Jennie S. MacDonald Professor, Post-tenure
1992-2016	John and Jennie S. MacDonald Professor
1979-	Professor, Department of Economics
1976-79	Associate Professor, Department of Economics
1973-76	Assistant Professor, Department of Economics
1972-73	Visiting Scholar, Department of Economics

VISITING APPOINTMENTS:

2016-	Distinguished Visiting Professor of Economics, UCLA
1986-87	Visiting Professor, Harvard Business School
1982-83	Visiting Professor, Harvard University Department of Economics
	Visiting Positions: University of Washington, Australian National University, Ecole Normale Supérieure, Oxford University, University of Sydney, Wuhan University, Beijing University, University of Western Australia, University College London, Uppsala University, Xiamen University, Sorbonne

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1968-70	Corps of Engineers

PROFESSIONAL ACTIVITIES:

Associate Editor, Bell Journal of Economics, 1974-1983
Associate Editor, Rand Journal of Economics, 1984-1988
Associate Editor, Econometrica, 1978-1987
Reviewer, Mathematical Reviews, 1978-1980
American Editor, Review of Economic Studies, 1979-82
Associate Editor, Journal of Public Economics, 1982-1998
Associate Editor, Journal of Applied Econometrics, 1985-1993, 2009-
Advisory Editor, Economics Research Network and Social Science Research , 1998-
Advisory Editor, Journal of Sports Economics, 1999-
Advisory Editor, Journal of Competition Law & Economics, 2004-
Advisory Editor, Journal of Applied Economics, 2005-
Member of MIT Center for Energy and Environmental Policy Research, 1973-1995
Research Associate, National Bureau of Economic Research, 1979-
Member, American Statistical Association Committee on Energy Statistics, 1981-1984
Special Witness (Master) for the Honorable John R. Bartels, U.S. District Court for the Eastern District of New York in Carter vs. Newsday, Inc., 1981-82
Member of Governor's Advisory Council (Massachusetts) for Revenue and Taxation, 1984-1992
Advisor US Social Security Commission 1982-1983

Member, Committee on National Statistics, 1985-1990
Member, National Academy of Social Insurance, 1990-
Member, Committee to Revise U.S. Trade Statistics 1990-1992
Director, MIT Telecommunications Economics Research Program, 1988-
Board of Directors, Theseus Institute, France, 1988-1995
Member, Conference on Income and Wealth, National Bureau of Economic Research, 1992-
Member, Committee on the Future of Boston, 1998
Member, GAO Expert Panel to Advise USDA on Econometric Models of Cattle Prices, 2001-2
Advisor, China Ministry of Information on Telecommunications Regulation, 2002-2006
Member, FTC Panel on Merger Evaluation, 2005
Advisor, New Zealand Commerce Commission 2010
Member, Panel Data Conference Advisory Board, 2017

PUBLICATIONS:

I. Econometrics

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"Estimation and Inference in Nonlinear Structural Models," *Annals of Economic and Social Measurement, 653-665, October 1975.* (with E. Berndt, R.E. Hall, and B.H. Hall)

"An Instrumental Variable Approach to Full-Information Estimators in Linear and Certain Nonlinear Econometric Models," *Econometrica, Vol. 43(4), 727-738, 1975.*

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"Increasing the Power of Specification Tests", (with T. Woutersen), January 2017, forthcoming Journal of Econometrics

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"Specification Test on Mixed Logit Models", (with J. Hahn and J. Lustig), December 2017, mimeo

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II. Public Finance and Regulation

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Lost Profits Summary - RISI Costs - Interest Adjusted

	2013-2017	2018-2028	Total
Laurentide	[redacted]	0	[redacted]
Dolbeau	[redacted]	[redacted]	[redacted]
Kenogami			
Total			[redacted]

Lost Profits Summary - 2% Costs - Interest Adjusted

	2013-2017	2018-2028	Total
Laurentide	[redacted]	0	[redacted]
Dolbeau	[redacted]	[redacted]	[redacted]
Kenogami			
Total			[redacted]

Laurentide - Expected and Lost Profit Calculation
RISI Costs

2013-2017 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:

2013 [a] = RISI price forecast percent change*2012 actual price from Exhibit 3 - Actual Scorecard Data in USD

Jan-Oct 2014 [a]= 2013[a]*RISI price forecast percent change

2013[b]= Q1 2013 Variable Costs in USD, see RFP0009308 and Exhibit 3 for exchange rate

2014 [b] = 2013[b]*RISI forecast variable cost percent change, see table attached to this exhibit

[c] from Laurentide scorecards, RFP0009308-RFP0009309

[g] from Exhibit 3- Actual Scorecard Data in USD

Laurentide - Cumulative Interest Calculation
RISI Costs

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%	

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

2015-2017 [i] = Prior year [k]

Laurentide - Expected and Lost Profit Calculation
2% Costs

2013-2017 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:

2013 [a] = RISI price forecast percent change*2012 actual price from Exhibit 3 - Actual Scorecard Data in USD

Jan-Oct 2014 [a]= 2013[a]*RISI price forecast percent change

2013[b]= Q1 2013 Variable Costs in USD, see RFP0009308 and Exhibit 3 for exchange rate

2014 [b] = 2013[b]*2%

[c] from Laurentide scorecards, RFP0009308-RFP0009309

[g] from Exhibit 3- Actual Scorecard Data in USD

Laurentide - Cumulative Interest Calculation
2% Costs

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%	

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

2015-2017 [i] = Prior year [k]

Dolbeau - Expected and Lost Economic Profit Calculation
RISI Costs

2013-2017 Lost Profits

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

Notes and Sources:

2013 [a] = RISI price forecast percent change*2012 actual price from Exhibit 3 - Actual Scorecard Data in USD

2014-2017 [a]= Prior year [a]*RISI price forecast change, see table included in this exhibit

2013[b]= Q1 2013 Variable Costs in USD, see RFP0009303 and Exhibit 3 for exchange rate

2014-2017 [b] = Prior year [b]*RISI variable cost forecast percent change, see table attached to this exhibit

[c] from Dolbeau scorecards, RFP0009303-RFP0009305, and Dolbeau 2016-2017 Scorecards

[g] from Exhibit 3- Actual Scorecard Data in USD

Dolbeau - Expected and Lost Economic Profit Calculation
RISI Costs

	2018-2028 Lost Profits				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2017	[redacted]	[redacted]			
1	2018	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2019	[redacted]	[redacted]	0.82645	[redacted]	[redacted]
3	2020	[redacted]	[redacted]	0.75131	[redacted]	[redacted]
4	2021	[redacted]	[redacted]	0.68301	[redacted]	[redacted]
5	2022	[redacted]	[redacted]	0.62092	[redacted]	[redacted]
6	2023	[redacted]	[redacted]	0.56447	[redacted]	[redacted]
7	2024	[redacted]	[redacted]	0.51316	[redacted]	[redacted]
8	2025	[redacted]	[redacted]	0.46651	[redacted]	[redacted]
9	2026	[redacted]	[redacted]	0.42410	[redacted]	[redacted]
10	2027	[redacted]	[redacted]	0.38554	[redacted]	[redacted]
11	2028	[redacted]	[redacted]	0.35049	[redacted]	[redacted]
	Total				[redacted]	[redacted]

2018-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:
[i] = Years after 2017
2017 [j] and [k] from 2013-2017 table
2018-2028[j] and [k] = [redacted] decline from prior year
[l] = [redacted] ^[a], [redacted]

Dolbeau - Cumulative Interest Calculation
RISI Costs

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

Notes and Sources:

2013 [p] = 2013[h]

2014-2017 [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 Economic Profit Calculation
2% Costs

2013-2017 Lost Profits

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

Notes and Sources:

2013 [a] = RISI price forecast percent change*2012 actual price from Exhibit 3 - Actual Scorecard Data in USD

2014-2017 [a]= Prior year [a]*RISI price forecast change, see table included in this exhibit

2013[b]= Q1 2013 Variable Costs in USD, see RFP0009303 and Exhibit 3 for exchange rate

2014-2017 [b] = Prior year [b]*2%

[c] from Dolbeau scorecards, RFP0009303-RFP0009305, and Dolbeau 2016-2017 Scorecards

[g] from Exhibit 3- Actual Scorecard Data in USD

Dolbeau - Expected and Lost Economic Profit Calculation
2% Costs

	2018-2028 Lost Profits				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2017	[redacted]	[redacted]			
1	2018	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2019	[redacted]	[redacted]	0.82645	[redacted]	[redacted]
3	2020	[redacted]	[redacted]	0.75131	[redacted]	[redacted]
4	2021	[redacted]	[redacted]	0.68301	[redacted]	[redacted]
5	2022	[redacted]	[redacted]	0.62092	[redacted]	[redacted]
6	2023	[redacted]	[redacted]	0.56447	[redacted]	[redacted]
7	2024	[redacted]	[redacted]	0.51316	[redacted]	[redacted]
8	2025	[redacted]	[redacted]	0.46651	[redacted]	[redacted]
9	2026	[redacted]	[redacted]	0.42410	[redacted]	[redacted]
10	2027	[redacted]	[redacted]	0.38554	[redacted]	[redacted]
11	2028	[redacted]	[redacted]	0.35049	[redacted]	[redacted]
	Total				[redacted]	[redacted]

2018-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:
[i] = Years after 2017
2017 [j] and [k] from 2013-2017 table
2018-2028 [j] and [k] = [redacted] decline from prior year
[l] = [redacted]^[a], [redacted]

Dolbeau - Cumulative Interest Calculation
2% Costs

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

Notes and Sources:

2013 [p] = 2013[h]

2014-2017 [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
RISI Costs

2013-2017 Lost Profits

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

Notes and Sources:

2013 [a] = RISI price forecast percent change*2012 actual price from Exhibit 3 - Actual Scorecard Data in USD

2014-2017 [a]= Prior year [a]*RISI price forecast change, see table included in this exhibit

2013[b]= 2012 Variable price*RISI variable cost forecast change, see Exhibit 3 - Actual Scorecard Data in USD and table included in this exhibit

2014-2017 [b] = Prior year [b]*RISI variable cost forecast percent change, see table attached to this exhibit

[c] from Kénogami scorecards, RFP0009312-RFP0009314, and Kénogami 2016-2017 Scorecards

[g] from Exhibit 3- Actual Scorecard Data in USD

Kénogami - Expected and Lost Economic Profit Calculation
RISI Costs

	2018-2028 Lost Profits				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2017	[redacted]	[redacted]			
1	2018	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2019	[redacted]	[redacted]	0.82645	[redacted]	[redacted]
3	2020	[redacted]	[redacted]	0.75131	[redacted]	[redacted]
4	2021	[redacted]	[redacted]	0.68301	[redacted]	[redacted]
5	2022	[redacted]	[redacted]	0.62092	[redacted]	[redacted]
6	2023	[redacted]	[redacted]	0.56447	[redacted]	[redacted]
7	2024	[redacted]	[redacted]	0.51316	[redacted]	[redacted]
8	2025	[redacted]	[redacted]	0.46651	[redacted]	[redacted]
9	2026	[redacted]	[redacted]	0.42410	[redacted]	[redacted]
10	2027	[redacted]	[redacted]	0.38554	[redacted]	[redacted]
11	2028	[redacted]	[redacted]	0.35049	[redacted]	[redacted]
	Total				[redacted]	[redacted]

2018-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:
[i] = Years after 2017
2017 [j] and [k] from 2013-2017 table
2018-2028[j] and [k] = [redacted] decline from prior year
[l] = [redacted])^[a], [redacted]

Kénogami - Cumulative Interest Calculation
RISI Costs

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

Notes and Sources:

2013 [p] = 2013[h]

2014-2017 [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
2% Costs

2013-2017 Lost Profits

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

Notes and Sources:

2013 [a] = RISI price forecast percent change*2012 actual price from Exhibit 3 - Actual Scorecard Data in USD

2014-2017 [a]= Prior year [a]*RISI price forecast change, see table included in this exhibit

2013[b]= 2012 Variable price*2%, see Exhibit 3 - Actual Scorecard Data in USD

2014-2017 [b] = Prior year [b]*2%

[c] from Kénogami scorecards, RFP0009312-RFP0009314, and Kénogami 2016-2017 Scorecards

[g] from Exhibit 3- Actual Scorecard Data in USD

Kénogami - Expected and Lost Economic Profit Calculation
2% Costs

	2018-2028 Lost Profits				Discounted	
	Year	Expected Profits	Actual Profits	Discount Factor	Expected Profits	Actual Profits
[i]		[j]	[k]	[l]	[m]=[j]*[l]	[n]=[k]*[l]
	2017	[redacted]	[redacted]			
1	2018	[redacted]	[redacted]	0.90909	[redacted]	[redacted]
2	2019	[redacted]	[redacted]	0.82645	[redacted]	[redacted]
3	2020	[redacted]	[redacted]	0.75131	[redacted]	[redacted]
4	2021	[redacted]	[redacted]	0.68301	[redacted]	[redacted]
5	2022	[redacted]	[redacted]	0.62092	[redacted]	[redacted]
6	2023	[redacted]	[redacted]	0.56447	[redacted]	[redacted]
7	2024	[redacted]	[redacted]	0.51316	[redacted]	[redacted]
8	2025	[redacted]	[redacted]	0.46651	[redacted]	[redacted]
9	2026	[redacted]	[redacted]	0.42410	[redacted]	[redacted]
10	2027	[redacted]	[redacted]	0.38554	[redacted]	[redacted]
11	2028	[redacted]	[redacted]	0.35049	[redacted]	[redacted]
	Total				[redacted]	[redacted]

2018-2028 Lost Profits	[redacted]	[o]=Total [m] - Total [n]

Notes and Sources:
[i] = Years after 2017
2017 [j] and [k] from 2013-2017 table
2018-2028[j] and [k] = [redacted] decline from prior year
[l] = [redacted] ^[a], [redacted]

Kénogami - Cumulative Interest Calculation
2% Costs

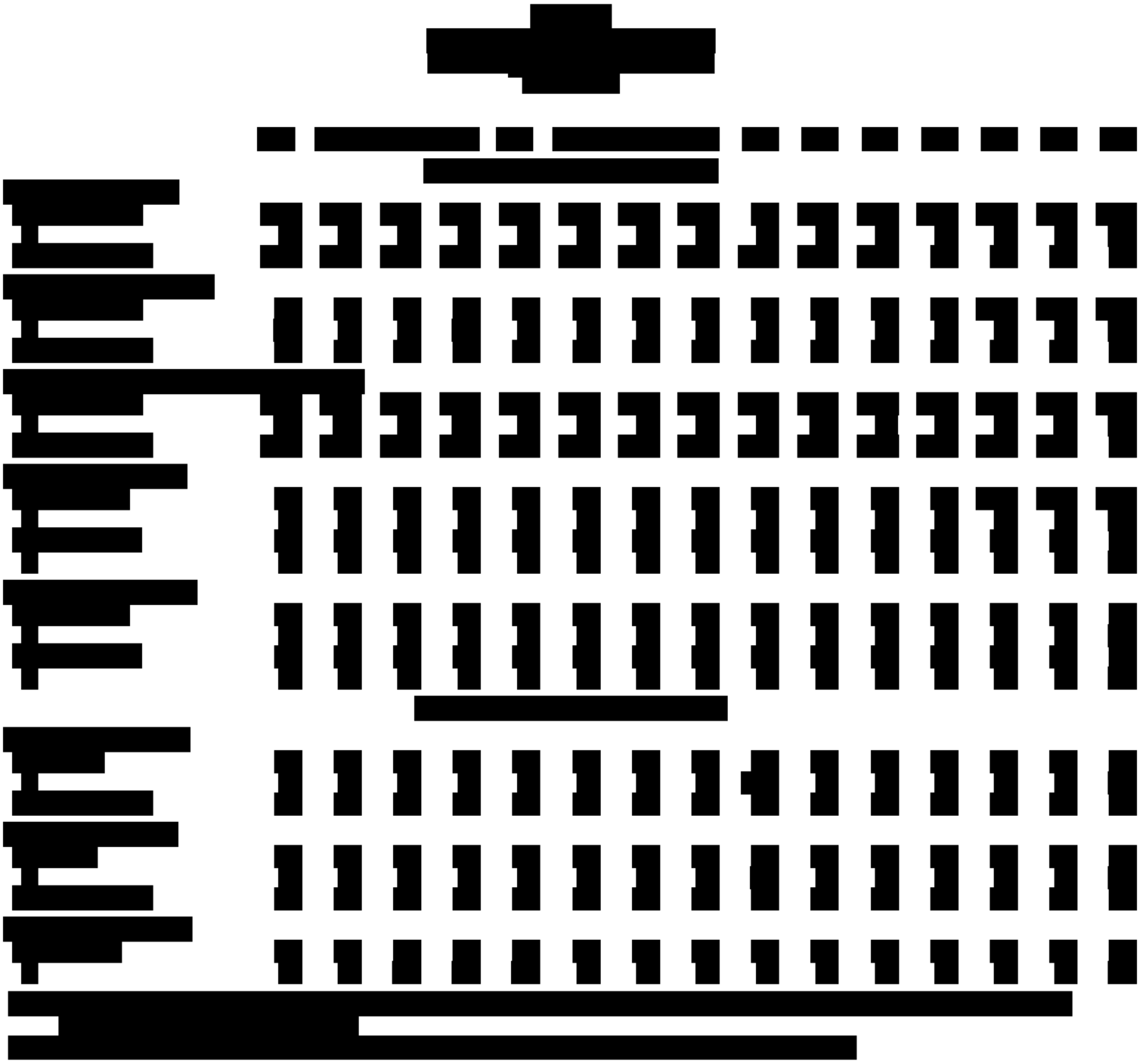
Year	Beginning Value	Interest Rate	Ending Value
	[p]	[q]	[r]=[p]*[1+q]
2013	[redacted]	1.05%	[redacted]
2014	[redacted]	0.99%	[redacted]
2015	[redacted]	0.53%	[redacted]
2016	[redacted]	0.56%	[redacted]
2017	[redacted]	0.99%	[redacted]

Notes and Sources:

2013 [p] = 2013[h]

2014-2017 [p] = Prior year [r] + Current year [h]

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



Laurentide in USD

Profit & Loss		**2012**	**2013**	**2014**	
Mill Net Price	$/MT				[a]
Sales tonnage	MT				[b]
Mill Net Revenue	$000's				[c]=[a]*[b]
Variable Costs (Direct Costs)	$000's				[d]
Actual Economic Profit	$000's				[e]=[c]-[d]

Sources: Scorecards (RFP0009307-RFP0009309) and the exchange rate table attached in this exhibit.

Dolbeau in USD

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

2016-2017 [e] from Scorecard data. costs in CAD converted to USD using applicable exchange rate, *see* RFP000905 and the exchange rate table attached in this exhibit.

Sources: Scorecards (RFP0009302-RFP0009305), 2016 and 2017 Dolbeau Scorecards, and the exchange rate table attached in this exhibit.

Kénogami in USD

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

2016-2017 [e] from Scorecard data. 2016-2017 in CAD converted to USD using applicable exchange rate, *see* RFP0009314 and the exchange rate table attached in this exhibit.

Sources: Scorecards (RFP0009311-RFP0009314), 2016 and 2017 Kénogami Scorecards, and **e**xchange rate table**.**

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

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

US Dollar per **1** Canadian Dollar Monthly average

Year	Month	1C$=USD
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
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

Sources: https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&year=2012
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&year=2013
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&year=2014
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&year=2015
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&year=2016
https://www.x-rates.com/average/?from=CAD&to=USD&amount=1&year=2017