

1 **Transcript Reference: Nov 17, 2014, Pages 121-122, Lines 16-25 and 1-21**

2
3 Undertake to provide the 15 year analysis of the trend for the period ending December 2012 and
4 also ending June 2012

5
6 **Response:**

7
8 Attached are the loss trend regression statistics for the fifteen year period 1998-1 to 2012-2 for
9 each of frequency and severity separately. The regressions are prepared including the second
10 half of accident year 2012, for the “period ending December 2012” versions, and excluding the
11 second half of accident year 2012 for the “period ending June 2012.”

12
13 For the period ending December 2012, we calculate a severity trend rate of +1.53% and
14 frequency trend rate of -2.38%; for a combined loss cost trend rate of -0.9%.

15
16 For the period ending June 2012, we calculate a severity trend rate of +1.39% and frequency
17 trend rate of -2.43%; for a combined loss cost trend rate of -1.1%.

18
19 In the case of the severity, the data points 1998-1, 2001-2, 2002-1 and 2011-2 were excluded
20 from the regression analysis for the selected model. Similarly, in the case of the frequency, the
21 data points 2001-1 and 2003-1 were excluded from the regression analysis for the selected
22 model. We note that if none of the data points were excluded, the loss cost trend rates ending
23 December 2012 and June 2012 are -1.2% and -1.3%, respectively.

24
25 We included the seasonality parameter with the severity model, as this improves the fit of the
26 model based on the R2 statistic, and the inclusion or exclusion of this parameter does not affect
27 the calculated trend rate to the first decimal place.

28
29 We did not find the Bill parameter to statistically significant based on the T-tests and p-values,
30 and therefore did not include this parameter.

Province of Newfoundland and Labrador
Board of Commissioners of Public Utilities
Commercial Automobile

Third Party Liability - Bodily Injury

| Accident Period | Time | Seasonal | Bill | Earned Exposures | Ultimate Counts | Ultimate Losses | ULAE Adjustment | Adjusted Ultimate Losses | Ultimate Freq. per 1000 | Fitted Freq. per 1000 |
|-----------------|------|----------|------|------------------|-----------------|-----------------|-----------------|--------------------------|-------------------------|-----------------------|
| x 1998.1 | 1 | 0 | 0 | 7,520 | 50 | 1,186 | 1,145 | 1,358 | 6.65 | 7.65 |
| x 1998.2 | 2 | 1 | 0 | 8,312 | 53 | 2,203 | 1,145 | 2,523 | 6.38 | 7.56 |
| x 1999.1 | 3 | 0 | 0 | 7,876 | 51 | 2,349 | 1,106 | 2,598 | 6.48 | 7.47 |
| x 1999.2 | 4 | 1 | 0 | 7,925 | 51 | 2,601 | 1,106 | 2,877 | 6.44 | 7.38 |
| x 2000.1 | 5 | 0 | 0 | 7,874 | 53 | 2,182 | 1,093 | 2,385 | 6.73 | 7.29 |
| x 2000.2 | 6 | 1 | 0 | 8,370 | 82 | 3,474 | 1,093 | 3,798 | 9.80 | 7.20 |
| x 2001.1 | 7 | 0 | 0 | 8,417 | 99 | 3,330 | 1,082 | 3,603 | 11.76 | |
| x 2001.2 | 8 | 1 | 0 | 9,548 | 68 | 5,551 | 1,082 | 6,006 | 7.12 | 7.03 |
| x 2002.1 | 9 | 0 | 0 | 9,092 | 81 | 6,073 | 1,068 | 6,486 | 8.91 | 6.95 |
| x 2002.2 | 10 | 1 | 0 | 9,190 | 75 | 2,712 | 1,068 | 2,897 | 8.16 | 6.86 |
| x 2003.1 | 11 | 0 | 0 | 9,088 | 103 | 3,632 | 1,076 | 3,909 | 11.33 | |
| x 2003.2 | 12 | 1 | 0 | 9,680 | 70 | 3,510 | 1,076 | 3,778 | 7.23 | 6.70 |
| x 2004.1 | 13 | 0 | 0 | 9,363 | 68 | 3,361 | 1,080 | 3,630 | 7.26 | 6.62 |
| x 2004.2 | 14 | 1 | 1 | 9,830 | 65 | 2,391 | 1,080 | 2,582 | 6.61 | 6.54 |
| x 2005.1 | 15 | 0 | 1 | 9,682 | 59 | 1,917 | 1,066 | 2,045 | 6.09 | 6.46 |
| x 2005.2 | 16 | 1 | 1 | 9,960 | 66 | 2,854 | 1,066 | 3,043 | 6.63 | 6.38 |
| x 2006.1 | 17 | 0 | 1 | 9,683 | 59 | 2,574 | 1,072 | 2,760 | 6.09 | 6.31 |
| x 2006.2 | 18 | 1 | 1 | 10,236 | 58 | 2,603 | 1,072 | 2,790 | 5.67 | 6.23 |
| x 2007.1 | 19 | 0 | 1 | 10,087 | 58 | 2,519 | 1,072 | 2,700 | 5.74 | 6.16 |
| x 2007.2 | 20 | 1 | 1 | 10,199 | 69 | 4,271 | 1,072 | 4,577 | 6.76 | 6.08 |
| x 2008.1 | 21 | 0 | 1 | 9,737 | 66 | 3,081 | 1,075 | 3,312 | 6.75 | 6.01 |
| x 2008.2 | 22 | 1 | 1 | 10,382 | 60 | 2,920 | 1,075 | 3,138 | 5.75 | 5.94 |
| x 2009.1 | 23 | 0 | 1 | 10,223 | 61 | 2,393 | 1,073 | 2,567 | 5.98 | 5.87 |
| x 2009.2 | 24 | 1 | 1 | 10,931 | 71 | 3,359 | 1,073 | 3,603 | 6.54 | 5.80 |
| x 2010.1 | 25 | 0 | 1 | 10,775 | 52 | 2,510 | 1,056 | 2,650 | 4.86 | 5.73 |
| x 2010.2 | 26 | 1 | 1 | 11,140 | 59 | 3,204 | 1,056 | 3,382 | 5.28 | 5.66 |
| x 2011.1 | 27 | 0 | 1 | 11,010 | 60 | 2,698 | 1,052 | 2,839 | 5.47 | 5.59 |
| x 2011.2 | 28 | 1 | 1 | 11,524 | 65 | 5,203 | 1,052 | 5,476 | 5.66 | 5.52 |
| x 2012.1 | 29 | 0 | 1 | 11,448 | 53 | 2,997 | 1,052 | 3,154 | 4.62 | 5.46 |
| x 2012.2 | 30 | 1 | 1 | 12,361 | 69 | 3,944 | 1,052 | 4,150 | 5.58 | 5.39 |

Avg Annual Trend -2.38%

| | | |
|-------------------------|-----------------|----------|
| Regression Coefficients | Constant | 7.7411 |
| | Time | 0.9880 |
| | | - |
| Regression Statistics | Deg. of Freedom | 26.0000 |
| | F-Statistic | 19.4329 |
| | R2 | 0.4277 |
| | SSReg | 0.3120 |
| | SSResid | 0.4174 |
| | Adjusted R2 | 0.4057 |
| p-Values | Constant | 0.0000 |
| | Time | 0.0002 |
| T-Statistics | Constant | 41.1184 |
| | Time | (4.4083) |

Province of Newfoundland and Labrador
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Commercial Automobile

Third Party Liability - Bodily Injury

| Accident Period | Time | Seasonal | Bill | Earned Exposures | Ultimate Counts | Ultimate Losses | ULAE Adjustment | Adjusted Ultimate Losses | Ultimate Severity | Fitted Severity |
|-----------------|------|----------|------|------------------|-----------------|-----------------|-----------------|--------------------------|-------------------|-----------------|
| 1998.1 | 1 | 0 | 0 | 7,520 | 50 | 1,186 | 1.145 | 1,358 | 27,153 | |
| 1998.2 | 2 | 1 | 0 | 8,312 | 53 | 2,203 | 1.145 | 2,523 | 47,595 | 45,524 |
| 1999.1 | 3 | 0 | 0 | 7,876 | 51 | 2,349 | 1.106 | 2,598 | 50,933 | 41,283 |
| 1999.2 | 4 | 1 | 0 | 7,925 | 51 | 2,601 | 1.106 | 2,877 | 56,405 | 46,219 |
| 2000.1 | 5 | 0 | 0 | 7,874 | 53 | 2,182 | 1.093 | 2,385 | 44,995 | 41,914 |
| 2000.2 | 6 | 1 | 0 | 8,370 | 82 | 3,474 | 1.093 | 3,798 | 46,312 | 46,925 |
| 2001.1 | 7 | 0 | 0 | 8,417 | 99 | 3,330 | 1.082 | 3,603 | 36,395 | 42,554 |
| 2001.2 | 8 | 1 | 0 | 9,548 | 68 | 5,551 | 1.082 | 6,005 | 88,329 | |
| 2002.1 | 9 | 0 | 0 | 9,092 | 81 | 6,073 | 1.068 | 6,486 | 80,068 | |
| 2002.2 | 10 | 1 | 0 | 9,190 | 75 | 2,712 | 1.068 | 2,897 | 38,623 | 48,370 |
| 2003.1 | 11 | 0 | 0 | 9,088 | 103 | 3,632 | 1.076 | 3,909 | 37,956 | 43,864 |
| 2003.2 | 12 | 1 | 0 | 9,680 | 70 | 3,510 | 1.076 | 3,778 | 53,975 | 49,108 |
| 2004.1 | 13 | 0 | 0 | 9,363 | 68 | 3,361 | 1.080 | 3,630 | 53,377 | 44,534 |
| 2004.2 | 14 | 1 | 1 | 9,830 | 65 | 2,391 | 1.080 | 2,582 | 39,727 | 49,858 |
| 2005.1 | 15 | 0 | 1 | 9,682 | 59 | 1,917 | 1.066 | 2,045 | 34,654 | 45,214 |
| 2005.2 | 16 | 1 | 1 | 9,960 | 66 | 2,854 | 1.066 | 3,043 | 46,107 | 50,620 |
| 2006.1 | 17 | 0 | 1 | 9,683 | 59 | 2,574 | 1.072 | 2,760 | 46,771 | 45,905 |
| 2006.2 | 18 | 1 | 1 | 10,236 | 58 | 2,603 | 1.072 | 2,790 | 48,097 | 51,393 |
| 2007.1 | 19 | 0 | 1 | 10,087 | 58 | 2,518 | 1.072 | 2,700 | 46,598 | 46,606 |
| 2007.2 | 20 | 1 | 1 | 10,199 | 69 | 4,271 | 1.072 | 4,577 | 66,411 | 52,178 |
| 2008.1 | 21 | 0 | 1 | 9,737 | 66 | 3,081 | 1.075 | 3,312 | 50,354 | 47,318 |
| 2008.2 | 22 | 1 | 1 | 10,382 | 60 | 2,920 | 1.075 | 3,138 | 52,552 | 52,975 |
| 2009.1 | 23 | 0 | 1 | 10,223 | 61 | 2,393 | 1.073 | 2,567 | 42,014 | 48,040 |
| 2009.2 | 24 | 1 | 1 | 10,931 | 71 | 3,359 | 1.073 | 3,603 | 50,422 | 53,784 |
| 2010.1 | 25 | 0 | 1 | 10,775 | 52 | 2,510 | 1.056 | 2,650 | 50,657 | 48,774 |
| 2010.2 | 26 | 1 | 1 | 11,140 | 59 | 3,204 | 1.056 | 3,382 | 57,459 | 54,606 |
| 2011.1 | 27 | 0 | 1 | 11,010 | 60 | 2,698 | 1.052 | 2,839 | 47,127 | 49,519 |
| 2011.2 | 28 | 1 | 1 | 11,524 | 65 | 5,203 | 1.052 | 5,476 | 83,886 | |
| 2012.1 | 29 | 0 | 1 | 11,448 | 53 | 2,997 | 1.052 | 3,154 | 59,581 | 50,276 |
| 2012.2 | 30 | 1 | 1 | 12,361 | 69 | 3,944 | 1.052 | 4,150 | 60,201 | 56,287 |

Avg Annual Trend 1.53%

| Regression Coefficients | Constant | Time | Seasonal |
|-------------------------|-----------------|----------|----------|
| | 40,355 | 1,0076 | 1,1111 |
| Regression Statistics | Deg. of Freedom | 23,0000 | |
| | F-Statistic | 3,8882 | |
| | R2 | 0,2527 | |
| | SSReg | 0,1652 | |
| | SSResid | 0,4886 | |
| | Adjusted R2 | 0,1877 | |
| p-Values | Constant | 0,0000 | |
| | Time | 0,0392 | |
| | Seasonal | 0,0786 | |
| T-Statistics | Constant | 151,1884 | |
| | Time | 2,1865 | |
| | Seasonal | 1,8405 | |

Province of Newfoundland and Labrador
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Third Party Liability - Bodily Injury

| Accident Period | Time | Seasonal | Bill | Earned Exposures | Ultimate Counts | Ultimate Losses | ULAE Adjustment | Adjusted Ultimate Losses | Ultimate Freq. per 1000 | Fitted Freq. per 1000 | |
|-----------------|--------|----------|------|------------------|-----------------|-----------------|-----------------|--------------------------|-------------------------|-----------------------|------|
| x | 1998.1 | 1 | 0 | 0 | 7,520 | 50 | 1,186 | 1,145 | 1,358 | 6.65 | 7.67 |
| x | 1998.2 | 2 | 1 | 0 | 8,312 | 53 | 2,203 | 1,145 | 2,523 | 6.38 | 7.57 |
| x | 1999.1 | 3 | 0 | 0 | 7,876 | 51 | 2,349 | 1,106 | 2,598 | 6.48 | 7.48 |
| x | 1999.2 | 4 | 1 | 0 | 7,925 | 51 | 2,601 | 1,106 | 2,877 | 6.44 | 7.39 |
| x | 2000.1 | 5 | 0 | 0 | 7,874 | 53 | 2,182 | 1,093 | 2,385 | 6.73 | 7.30 |
| x | 2000.2 | 6 | 1 | 0 | 8,370 | 82 | 3,474 | 1,093 | 3,798 | 9.80 | 7.21 |
| x | 2001.1 | 7 | 0 | 0 | 8,417 | 99 | 3,330 | 1,082 | 3,603 | 11.76 | |
| x | 2001.2 | 8 | 1 | 0 | 9,548 | 68 | 5,551 | 1,082 | 6,006 | 7.12 | 7.03 |
| x | 2002.1 | 9 | 0 | 0 | 9,092 | 81 | 6,073 | 1,068 | 6,486 | 8.91 | 6.95 |
| x | 2002.2 | 10 | 1 | 0 | 9,190 | 75 | 2,712 | 1,068 | 2,897 | 8.16 | 6.86 |
| x | 2003.1 | 11 | 0 | 0 | 9,088 | 103 | 3,632 | 1,076 | 3,909 | 11.33 | |
| x | 2003.2 | 12 | 1 | 0 | 9,680 | 70 | 3,510 | 1,076 | 3,778 | 7.23 | 6.70 |
| x | 2004.1 | 13 | 0 | 0 | 9,363 | 68 | 3,361 | 1,080 | 3,630 | 7.26 | 6.61 |
| x | 2004.2 | 14 | 1 | 1 | 9,830 | 65 | 2,391 | 1,080 | 2,582 | 6.61 | 6.53 |
| x | 2005.1 | 15 | 0 | 1 | 9,682 | 59 | 1,917 | 1,066 | 2,045 | 6.09 | 6.45 |
| x | 2005.2 | 16 | 1 | 1 | 9,960 | 66 | 2,854 | 1,066 | 3,043 | 6.63 | 6.37 |
| x | 2006.1 | 17 | 0 | 1 | 9,683 | 59 | 2,574 | 1,072 | 2,760 | 6.09 | 6.30 |
| x | 2006.2 | 18 | 1 | 1 | 10,236 | 58 | 2,603 | 1,072 | 2,790 | 5.67 | 6.22 |
| x | 2007.1 | 19 | 0 | 1 | 10,087 | 58 | 2,519 | 1,072 | 2,700 | 5.74 | 6.14 |
| x | 2007.2 | 20 | 1 | 1 | 10,199 | 69 | 4,271 | 1,072 | 4,577 | 6.76 | 6.07 |
| x | 2008.1 | 21 | 0 | 1 | 9,737 | 66 | 3,081 | 1,075 | 3,312 | 6.75 | 5.99 |
| x | 2008.2 | 22 | 1 | 1 | 10,382 | 60 | 2,920 | 1,075 | 3,138 | 5.75 | 5.92 |
| x | 2009.1 | 23 | 0 | 1 | 10,223 | 61 | 2,393 | 1,073 | 2,567 | 5.98 | 5.85 |
| x | 2009.2 | 24 | 1 | 1 | 10,931 | 71 | 3,359 | 1,073 | 3,603 | 6.54 | 5.78 |
| x | 2010.1 | 25 | 0 | 1 | 10,775 | 52 | 2,510 | 1,056 | 2,650 | 4.86 | 5.71 |
| x | 2010.2 | 26 | 1 | 1 | 11,140 | 59 | 3,204 | 1,056 | 3,382 | 5.28 | 5.64 |
| x | 2011.1 | 27 | 0 | 1 | 11,010 | 60 | 2,698 | 1,052 | 2,839 | 5.47 | 5.57 |
| x | 2011.2 | 28 | 1 | 1 | 11,524 | 65 | 5,203 | 1,052 | 5,476 | 5.66 | 5.50 |
| x | 2012.1 | 29 | 0 | 1 | 11,448 | 53 | 2,997 | 1,052 | 3,154 | 4.62 | 5.43 |
| x | 2012.2 | 30 | 1 | 1 | 12,361 | 69 | 3,944 | 1,052 | 4,150 | 5.58 | |

Avg Annual Trend -2.43%

| | | |
|-------------------------|-----------------|----------|
| Regression Coefficients | Constant | 7.7616 |
| | Time | 0.9878 |
| Regression Statistics | Deg. of Freedom | 25.0000 |
| | F-Statistic | 17.6788 |
| | R2 | 0.4142 |
| | SSReg | 0.2942 |
| | SSResid | 0.4161 |
| | Adjusted R2 | 0.3908 |
| p-Values | Constant | 0.0000 |
| | Time | 0.0003 |
| T-Statistics | Constant | 39.7473 |
| | Time | (4.2046) |

Province of Newfoundland and Labrador
Board of Commissioners of Public Utilities
Commercial Automobile

Third Party Liability - Bodily Injury

| Accident Period | Time | Seasonal | Bill | Earned Exposures | Ultimate Counts | Ultimate Losses | ULAE Adjustment | Adjusted Ultimate Losses | Ultimate Severity | Fitted Severity |
|-----------------|------|----------|------|------------------|-----------------|-----------------|-----------------|--------------------------|-------------------|-----------------|
| 1998.1 | 1 | 0 | 0 | 7,520 | 50 | 1,186 | 1,145 | 1,358 | 27,153 | |
| 1998.2 | 2 | 1 | 0 | 8,312 | 53 | 2,203 | 1,145 | 2,523 | 47,595 | 45,652 |
| 1999.1 | 3 | 0 | 0 | 7,876 | 51 | 2,349 | 1,106 | 2,598 | 50,933 | 41,662 |
| 1999.2 | 4 | 1 | 0 | 7,925 | 51 | 2,601 | 1,106 | 2,877 | 56,405 | 46,287 |
| 2000.1 | 5 | 0 | 0 | 7,874 | 53 | 2,182 | 1,093 | 2,385 | 44,995 | 42,241 |
| 2000.2 | 6 | 1 | 0 | 8,370 | 82 | 3,474 | 1,093 | 3,798 | 46,312 | 46,931 |
| 2001.1 | 7 | 0 | 0 | 8,417 | 99 | 3,330 | 1,082 | 3,603 | 36,395 | 42,829 |
| 2001.2 | 8 | 1 | 0 | 9,548 | 68 | 5,551 | 1,082 | 6,006 | 88,329 | |
| 2002.1 | 9 | 0 | 0 | 9,092 | 81 | 6,073 | 1,068 | 6,486 | 80,068 | |
| 2002.2 | 10 | 1 | 0 | 9,190 | 75 | 2,712 | 1,068 | 2,897 | 38,623 | 48,245 |
| 2003.1 | 11 | 0 | 0 | 9,088 | 103 | 3,632 | 1,076 | 3,909 | 37,956 | 44,028 |
| 2003.2 | 12 | 1 | 0 | 9,680 | 70 | 3,510 | 1,076 | 3,778 | 53,975 | 48,916 |
| 2004.1 | 13 | 0 | 0 | 9,363 | 68 | 3,361 | 1,080 | 3,630 | 53,377 | 44,640 |
| 2004.2 | 14 | 1 | 1 | 9,830 | 65 | 2,391 | 1,080 | 2,582 | 39,727 | 49,597 |
| 2005.1 | 15 | 0 | 1 | 9,662 | 59 | 1,917 | 1,066 | 2,045 | 34,654 | 45,261 |
| 2005.2 | 16 | 1 | 1 | 9,960 | 66 | 2,854 | 1,066 | 3,043 | 46,107 | 50,286 |
| 2006.1 | 17 | 0 | 1 | 9,683 | 59 | 2,574 | 1,072 | 2,760 | 46,771 | 45,860 |
| 2006.2 | 18 | 1 | 1 | 10,236 | 58 | 2,603 | 1,072 | 2,790 | 48,097 | 50,986 |
| 2007.1 | 19 | 0 | 1 | 10,087 | 58 | 2,519 | 1,072 | 2,700 | 46,598 | 46,529 |
| 2007.2 | 20 | 1 | 1 | 10,199 | 69 | 4,271 | 1,072 | 4,577 | 66,411 | 51,695 |
| 2008.1 | 21 | 0 | 1 | 9,737 | 66 | 3,081 | 1,075 | 3,312 | 50,354 | 47,176 |
| 2008.2 | 22 | 1 | 1 | 10,382 | 80 | 2,920 | 1,075 | 3,138 | 52,552 | 52,413 |
| 2009.1 | 23 | 0 | 1 | 10,223 | 61 | 2,393 | 1,073 | 2,567 | 42,014 | 47,832 |
| 2009.2 | 24 | 1 | 1 | 10,931 | 71 | 3,359 | 1,073 | 3,603 | 50,422 | 53,142 |
| 2010.1 | 25 | 0 | 1 | 10,775 | 52 | 2,510 | 1,056 | 2,650 | 50,657 | 48,497 |
| 2010.2 | 26 | 1 | 1 | 11,140 | 59 | 3,204 | 1,056 | 3,382 | 57,459 | 53,881 |
| 2011.1 | 27 | 0 | 1 | 11,010 | 60 | 2,698 | 1,052 | 2,839 | 47,127 | 49,171 |
| 2011.2 | 28 | 1 | 1 | 11,524 | 65 | 5,203 | 1,052 | 5,476 | 83,886 | |
| 2012.1 | 29 | 0 | 1 | 11,448 | 53 | 2,997 | 1,052 | 3,154 | 59,581 | 49,855 |
| 2012.2 | 30 | 1 | 1 | 12,361 | 69 | 3,944 | 1,052 | 4,150 | 60,201 | |

Avg Annual Trend 1.39%

| Regression Coefficients | Constant | 40,808 |
|-------------------------|-----------------|----------|
| | Time | 1.0069 |
| | Seasonal | 1.1034 |
| Regression Statistics | Deg. of Freedom | 22,0000 |
| | F-Statistic | 2.6891 |
| | R2 | 0.1964 |
| | SSReg | 0.1181 |
| | SSResid | 0.4830 |
| | Adjusted R2 | 0.1234 |
| p-Values | Constant | 0.0000 |
| | Time | 0.0804 |
| | Seasonal | 0.1142 |
| T-Statistics | Constant | 142.2201 |
| | Time | 1.8325 |
| | Seasonal | 1.6448 |