

January 13, 2015

Douglas H. Murphy  
Superintendent of Insurance, Credit Unions, Trust and Loan Companies  
Nova Scotia Department of Finance and Treasury Board  
Financial Institutions Division  
1723 Hollis Street, P.O. Box 187  
Halifax, NS B3J 2N3

Dear Mr. Murphy,

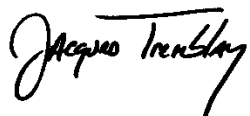
We understand that your office is in the process of conducting a review of section 4 of Automobile Insurance Tort Recovery Limitation Regulation 83/2003 under the Insurance Act. The Canadian Institute of Actuaries (CIA) has prepared a submission, which is attached, to assist you in that review.

Our key recommendations are as follows:

- a. Introduce a formula-based approach and an automatic “periodic reset” of the mandated discount rates, similar to the current section 4(2) but more specific and less ambiguous about exactly how the discount rate is to be determined.
- b. Adopt a stepped rate format to replace the level rate format of the current sections 4(1) and 4(2).
- c. Carefully consider the structure and number of mandated rates. For example, is it best to mandate “real” discount rates as at present, or instead mandate a nominal discount rate and a separate inflation assumption? Is it best to mandate the same discount rate for all heads of damage as at present, or instead to mandate different discount rates for different heads of damage?

Thank you for taking the time to review our submission. If you have any questions, please do not hesitate to contact Chris Fievoli, the CIA’s resident actuary, at 613-656-1927 or [chris.fievoli@cia-ica.ca](mailto:chris.fievoli@cia-ica.ca).

Yours truly,



Jacques Tremblay, CIA President  
[jacques.tremblay@cia-ica.ca](mailto:jacques.tremblay@cia-ica.ca)

## **Submission of the Canadian Institute of Actuaries to the Government of Nova Scotia**

### **Review of Prescribed Discount Rates for Civil Litigation Purposes (Injury or Death Related to a Motor Vehicle Accident)**

#### **Introduction**

The Canadian Institute of Actuaries (CIA) is the national organization of the actuarial profession in Canada. As you know, actuaries apply their specialized knowledge in mathematics of finance, statistics, contingencies, and risk theory to the problems faced by pension plans, government regulators, insurance companies, and other financial institutions, social programs, and individuals. Of specific relevance here, actuaries play a key role in civil litigation cases by assisting counsel and the courts in the quantification of pecuniary damages.

Actuaries are uniquely qualified to serve as expert witnesses in such matters. They assist the parties and the court by determining the present value of lost past and future earnings, lost pension and other benefits, lost valuable services, and the cost of future care. In these endeavours, our Standards of Practice require us to act in an independent, unbiased, and non-partisan manner.

The CIA holds the duty of the profession to the public above the needs of the profession and its individual members. We serve both the public interest and our members by:

- Establishing and maintaining professional guidance, quality education, validation of eligibility, and continuing professional development requirements;
- Conducting research;
- Maintaining a code of conduct and a disciplinary process of the highest standard; and
- Making meaningful and timely contributions to public policy.

This submission stems from our desire to contribute to public policy discussions, and to provide relevant research in support of government decisions.

#### **Terminology**

To actuaries, “prescribed” has two possible meanings. Discount rates are *prescribed* by legislation. Other actuarial assumptions may be *prescribed* by the Standards of Practice of the CIA. To avoid confusion, actuaries generally refer to assumptions being *mandated* when prescribed by legislation and *prescribed* when prescribed by their professional standards of practice. We have adopted this convention in this submission, and therefore refer to mandated discount rates.

“Nominal” rates refer to the rates of return on investments.

“Real” rates refer to the difference between the investment rate of interest and the rate of increase in earnings and/or price inflation.

#### **Actuaries’ Contribution to the Civil Litigation Process**

In Canada, actuaries participate regularly in the civil litigation process, usually in the role of an expert who is retained to opine on the value of pecuniary losses resulting from bodily injury, death, or wrongful dismissal.

In determining the lump-sum present value of losses, the actuary must make assumptions concerning expected mortality and disability patterns and future economic conditions, and sometimes also concerning future earnings levels and future pension accruals.

Professional standards of practice require that the actuary comply with any applicable laws and regulations. For this reason, the actuary will use legally mandated assumptions where they exist. In the absence of mandated assumptions, the actuary will determine and use assumptions that are appropriate for the matter at hand.

### **Mandated Discount Rates for Nova Scotia**

As you know, section 4(1) of Automobile Insurance Tort Recovery Limitation Regulation 83/2003 under the Insurance Act, enacted in 2003, requires use of the mandated discount rate assumption of 3.5% when determining the lump-sum present value of lost future earnings or other future damages in respect of injury or death related to a motor vehicle accident. This mandated discount rate is generally interpreted by actuaries as a “real” discount rate, representing the difference between the investment rate of interest and the rate of general price inflation. However, this is not explicitly specified in the regulation.

Section 4(2) of the same regulation provides for an alternate mandated discount rate that is based on Government of Canada bonds and the Consumer Price Index (CPI), and is effective as of January 1, 2005. We understand that, prior to the 2013 Brocke Estate v. Crowell decision, there was uncertainty in the legal community concerning the applicability and the proper interpretation of section 4(2). Assuming that the formula refers to long-term nominal Government of Canada bonds and the total CPI, the resulting mandated rate for 2014 would be 1.94%.

In contrast to sections 4(1) and 4(2), rule 70.06(1) of the Nova Scotia Civil Procedure Rules requires use of a mandated discount rate of 2.5% when determining the lump-sum present value of lost future earnings or other future damages in respect of injury or death *not* resulting from a motor vehicle accident. We understand that this rule was adopted in 1980 and has not changed since then, although its scope was altered by the enactment of the Automobile Insurance Tort Recovery Limitation Regulations in 2003.

For purposes of comparison, a table summarizing the mandated discount rates in all of the Canadian jurisdictions is attached as appendix A to this submission. Appendices B and C then provide illustrative calculations of loss using the various mandated discount rates.

In the absence of mandated discount rates, the real rate of return would often be the most important assumption that an actuary would make in the context of an economic loss calculation. The discount rate is a critical determinant of the present lump-sum value of future losses or costs.

In the past few years, there has been growing concern in the actuarial evidence field that mandated discount rates in some Canadian jurisdictions have diverged materially from the discount rates that actuaries would use in the absence of mandated rates. Thus the review that you have initiated is timely.

**Evolution of the Economic Environment**

The CIA, in the course of its regular activities, observes key economic factors and produces the annual Report on Canadian Economic Statistics.

In the early 1980s, when many of Canada’s mandated discount rates were developed, both nominal rates of return and inflation rates were much higher than today:

| <b>Year</b> | <b>LT GOC Bond Yield<sup>1</sup></b> | <b>Total CPI Increase</b> | <b>Difference</b> |
|-------------|--------------------------------------|---------------------------|-------------------|
| 1977        | 9.2%                                 | 8.0%                      | 1.2%              |
| 1978        | 10.0%                                | 8.9%                      | 1.1%              |
| 1979        | 11.6%                                | 9.3%                      | 2.3%              |
| 1980        | 13.0%                                | 10.0%                     | 3.0%              |
| 1981        | 15.5%                                | 12.5%                     | 3.0%              |

However, for almost 20 years now, inflation rates have been lower and relatively stable. In 1991, Canada became the second country in the world (after New Zealand) to adopt an inflation-targeting framework for its central bank monetary policy. The framework has been reviewed and renewed on a regular basis, most recently in 2011. The next review will occur in 2016. Since 1995, the Bank of Canada’s goal has been to keep the CPI close to 2% and within the control range of 1% to 3%. For the most part, that has been achieved on a consistent basis.

Nominal rates of return have also decreased materially since the early 1980s. For example, the Government of Canada benchmark long-term bond yield (series V122544) was only 2.5% in November 2014.

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<sup>1</sup> Bank of Canada benchmark yield for long-term Government of Canada bonds (series V122544) as of December of each year shown.

In recent years, there has been a general narrowing of the spread between nominal rates of return and inflation rates, and thus a decline in the real rate of return (which is typically defined as the difference between, or a ratio involving, the nominal rate of return and the inflation rate):

| Year | Long-Term Government of Canada Bond Yield <sup>2</sup> | Total CPI <sup>3</sup> | Difference |
|------|--|------------------------|------------|
| 1977 | 9.2%   | 8.0%                   | 1.2%       |
| 1978 | 10.0%  | 8.9%                   | 1.1%       |
| 1979 | 11.6%  | 9.3%                   | 2.3%       |
| 1980 | 13.0%  | 10.0%                  | 3.0%       |
| 1981 | 15.5%  | 12.5%                  | 3.0%       |
| 1982 | 11.9%  | 10.8%                  | 1.1%       |
| 1983 | 12.3%  | 5.9%                   | 6.4%       |
| 1984 | 12.0%  | 4.3%                   | 7.7%       |
| 1985 | 10.0%  | 4.0%                   | 6.0%       |
| 1986 | 8.9%   | 4.2%                   | 4.7%       |
| ...  | ...  | ...                    | ...        |
| 1991 | 9.0%   | 5.6%                   | 3.4%       |
| ...  | ...  | ...                    | ...        |
| 1996 | 5.7%   | 1.5%                   | 4.2%       |
| ...  | ...  | ...                    | ...        |
| 2001 | 4.1%   | 2.5%                   | 1.6%       |
| ...  | ...  | ...                    | ...        |
| 2006 | 4.1%   | 2.0%                   | 2.1%       |
| 2007 | 4.2%   | 2.1%                   | 2.1%       |
| 2008 | 3.5%   | 2.4%                   | 1.1%       |
| 2009 | 4.1%   | 0.3%                   | 3.8%       |
| 2010 | 3.5%   | 1.8%                   | 1.7%       |
| 2011 | 2.5%   | 2.9%                   | -0.4%      |
| 2012 | 2.4%   | 1.5%                   | 0.9%       |
| 2013 | 3.2%   | 0.9%                   | 2.3%       |
| 2014 | 2.5%   | 2.0%                   | 0.5%       |

Although there has been a general trend to lower real rates of return in recent years (the right-hand column of the table above), significant year-over-year fluctuations continue to occur.

### Observations

The determination as to whether or not the current section 4(1) mandated discount rate is appropriate in today's economic environment, and whether or not a more specific version of

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<sup>2</sup> Bank of Canada benchmark yield for long-term Government of Canada bonds (series V122544) as of December of each year shown (as of November 2014; December is not yet available).

<sup>3</sup> Average total CPI for each calendar year.

section 4(2) should be introduced, will be based on both a technical actuarial/economic analysis and on the relative importance of other considerations, such as:

- Equity between the parties;
- Protection of the interests of possibly financially unsophisticated plaintiffs/victims;
- Control of insurance claim costs;
- Recognition (or not) of potential future “productivity” effects; and
- Recognition (or not) of investment management costs.

Such considerations are valid reasons for diverging from an unbiased estimate of future real returns—the “actuarially or economically correct” rate. Thus, the relative importance of these considerations may dictate mandated discount rates that are “too high” (to control the cost of claims and indirectly control insurance costs, for example) or “too low” (to bias settlements in favour of the financial security of the plaintiff, for example). We recognize that these “public policy” considerations will necessarily take precedence over any technical considerations. However, decision-makers would ideally identify the objectives behind the mandated rates and communicate them to stakeholders. As we suggest in our first recommendation, identified objectives may not necessarily be best achieved by mandated discount rates that are fixed over long periods of time across a variety of economic conditions.

At any time, the financial impact of using mandated discount rates that are inconsistent with the current economic environment is significant. The impact of the discount rate of 3.5% that is mandated under section 4(1) is adverse for plaintiffs at present, but also potentially for defendants at some future date. We agree that a review of the current regime is in the public interest, to ensure that the courts make pecuniary damage awards that are reflective of the government’s overall objectives in this area.

## **Recommendations**

As mentioned earlier, the CIA holds the duty of the profession to the public above the needs of the profession and its individual members. We have chosen not to make a specific recommendation concerning the most appropriate mandated discount rate for pecuniary damages related to Nova Scotia motor vehicle accidents. However, we offer the following general recommendations which we hope you find helpful.

### **a. Formula and regular periodic reset mechanism**

The economic environment can change rapidly. This was most recently demonstrated in 2008. In jurisdictions where civil litigation discount rates are explicitly specified in the legislation, the value of pecuniary damages based on the mandated rates may be materially higher or lower than the value based on actual real rates of return available at the time that a damage award is made.

The legislation could mandate a formula instead of a value. The format would be similar to the current section 4(2), but with more specificity. The formula might have a structure such as: “the average of a certain yield measure over an n-month period ending two months prior to application of the formula, divided by the average inflation rate over the same time period”. The discount rate determined by the formula would apply for the period of time specified in the

legislation. At the end of that period, the formula would be used to determine the new mandated discount rate for the next period. The resulting discount rates would be automatically more responsive to evolving economic circumstances.

The frequency of reset should strike a reasonable balance between simplicity and responsiveness. The period of averaging in the formula should strike a reasonable balance between stability and responsiveness.

We recommend that you consider a mandated formula approach, and that the formula provide for changes to the mandated discount rate to occur on a regularly-scheduled basis.

#### **b. Stepped rate format**

Interest and inflation rates will change over time. A level mandated real discount rate, as exists today in most Canadian jurisdictions, assumes that the underlying real rate of return will continue indefinitely.

We recommend adoption of a stepped interest and inflation (if applicable) rate format structured as follows:

- The rate for the first n years after the valuation date would be formula-based as described above; and
- The rate beginning at the end of n years from the valuation date would be fixed by regulation.

This structure implicitly assumes an eventual return to historical norms regardless of the then-current economic environment.

In reality, yield rates change slowly over time as assets mature and are reinvested in the then-current environment. The step in discount rates at n years is a convenient simplification of a more complex, theoretically more accurate discount rate model. In actuarial practice, n is typically between 10 and 20 years depending on the circumstances of the calculation.

This approach has the following advantages:

- It reflects the current economic environment to some degree, but does not rely on it entirely;
- It incorporates a reversion to historical norms, thus minimizing volatility from year to year; and
- The formula can be structured to ensure that the mandated rates are determinable several months in advance of the effective date, allowing all stakeholders time to prepare for the change.

The Province of Ontario has established a regime that is structured in the above manner. A staff member at the Ministry of the Attorney General calculates the mandated rates each year in early September. Members of the CIA Committee on Actuarial Evidence independently calculate the same rates and confirm the ministry's calculation. The mandated rates are then posted to the ministry's website. The CIA would be pleased to offer the same support to Nova Scotia if a formula-based regime is adopted.

### **c. Carefully consider the structure and number of mandated rates**

Most future streams of loss-related payments will increase over time. However, certain future streams of loss-related payments will remain constant. Examples include non-indexed pensions and long-term disability benefits. The present regime does not provide guidance in respect of this latter category.

Also, income tax gross-up calculations require use of separate nominal return and inflation assumptions.

Regarding loss-related payments expected to increase over time, some will increase in line with general price inflation but others may not. For example, some medical care costs might be expected to increase at a rate higher than general price inflation. Earnings may also increase at a higher-than-inflation rate due to improvements in labour productivity, but may increase at a lower-than-inflation rate in some sectors for a variety of reasons.

As noted earlier, as this review progresses, we suggest that you consider questions such as:

- Is it best to mandate “real” discount rates as at present, or instead mandate a nominal discount rate and a separate inflation assumption?
- Is it best to mandate the same discount rate for all heads of damage as at present, or instead to mandate different discount rates for different heads of damage?

### **Conclusion**

We hope that you find this submission helpful. Please do not hesitate to contact us if you require clarification of any element of the submission.



## Appendix A

### Summary of Provincial and Territorial Legislation Pertaining to Discount Rates for Civil Litigation

| Province                  | Mandated Rates as of 2015  | Date of Most Recent Change   | Reference/Background  |
|---------------------------|--|--|---|
| Alberta                   | No mandated rate   | N/A  | N/A   |
| British Columbia          | Loss of earnings: 1.5%<br>Future care/other damages:<br>2.0%                                   | 2014<br><br>Note: Prior to April 30, 2014, the mandated rates were:<br><br>Loss of earnings: 2.5%<br>Future care/other damages: 3.5% | Law and Equity Act, R.S.B.C. 1996, c. 253, s. 56<br>Law and Equity Regulation, BC Reg. 352/81         |
| Manitoba                  | 3.0%   | 1993   | Court of Queen's Bench Act, S.M. 1988-89, c. 4 (C.C.S.M. c. C280), s. 83(2)<br>S.M. 1993, c. 19, s. 5 |
| New Brunswick             | 2.5% is the <i>default</i> rate, but evidence can be led that another rate is more appropriate | 2014<br><br>Note: Prior to October 1, 2014, 2.5% had been the <i>required</i> rate since 1986  | New Brunswick Rules of Court, N.B. Reg. 82-73, Rule 54.10(2)  |
| Newfoundland and Labrador | No mandated rate   | N/A  | N/A   |

| Province              | Mandated Rates as of 2015  | Date of Most Recent Change   | Reference/Background  |
|-----------------------|--|--|---|
| Nova Scotia           | <p>NOT a motor vehicle accident (non-MVA): 2.50%</p> <p>MVA: 3.50%. However, the regulation provides that, effective January 1, 2005, the discount rate for each calendar year <i>may</i> be based on the difference between the rate set for Government of Canada bonds and the Consumer Price Index for the previous 12 months</p> | <p>Non-MVA: 1980</p> <p>MVA: 2003</p> <p>Notes: Prior to November 2003, the mandated rate for MVAs was 2.50%</p> <p>The MVA mandated rate rule is currently under review</p> | <p>Civil Procedure Rules r. 70.06(1)</p> <p>Insurance Act s.113C</p> <p>Automobile Insurance Tort Recovery Limitation Regulations O.I.C. 2003-457, N.S Reg. 182/2003, s. 113c</p> |
| Northwest Territories | 2.50%  | Could not confirm  | Judicature Act, R.S.N.W.T. 1988, c. J-1, s. 57(1)   |
| Nunavut               | 2.50%  | 1998   | Judicature Act, SNWT (Nu) 1998, c 34 s 1, s. 57(1)  |

| Province | Mandated Rates as of 2015   | Date of Most Recent Change | Reference/Background |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
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| Ontario  | <p>For trials commencing after January 1 of:</p> <table border="1"> <thead> <tr> <th data-bbox="457 370 541 402">Year</th> <th data-bbox="562 370 688 402">Select (1)</th> <th data-bbox="709 370 865 402">Ultimate (2)</th> </tr> </thead> <tbody> <tr><td>2000</td><td>3.00%</td><td>2.50%</td></tr> <tr><td>2001</td><td>2.75%</td><td>2.50%</td></tr> <tr><td>2002</td><td>2.50%</td><td>2.50%</td></tr> <tr><td>2003</td><td>2.50%</td><td>2.50%</td></tr> <tr><td>2004</td><td>2.25%</td><td>2.50%</td></tr> <tr><td>2005</td><td>1.50%</td><td>2.50%</td></tr> <tr><td>2006</td><td>1.00%</td><td>2.50%</td></tr> <tr><td>2007</td><td>0.75%</td><td>2.50%</td></tr> <tr><td>2008</td><td>0.75%</td><td>2.50%</td></tr> <tr><td>2009</td><td>0.75%</td><td>2.50%</td></tr> <tr><td>2010</td><td>1.25%</td><td>2.50%</td></tr> <tr><td>2011</td><td>0.50%</td><td>2.50%</td></tr> <tr><td>2012</td><td>0%</td><td>2.50%</td></tr> <tr><td>2013</td><td>-0.50%</td><td>2.50%</td></tr> <tr><td>2014</td><td>0.30%</td><td>2.50%</td></tr> <tr><td>2015</td><td>0.30%</td><td>2.50%</td></tr> </tbody> </table> <p>(1) Select Rate applies for the 15-year period from the start of the trial</p> <p>(2) Ultimate Rate applies thereafter</p> | Year                       | Select (1)           | Ultimate (2) | 2000 | 3.00% | 2.50% | 2001 | 2.75% | 2.50% | 2002 | 2.50% | 2.50% | 2003 | 2.50% | 2.50% | 2004 | 2.25% | 2.50% | 2005 | 1.50% | 2.50% | 2006 | 1.00% | 2.50% | 2007 | 0.75% | 2.50% | 2008 | 0.75% | 2.50% | 2009 | 0.75% | 2.50% | 2010 | 1.25% | 2.50% | 2011 | 0.50% | 2.50% | 2012 | 0% | 2.50% | 2013 | -0.50% | 2.50% | 2014 | 0.30% | 2.50% | 2015 | 0.30% | 2.50% | <p>Annual review</p> <p>Current rule was introduced beginning with 2014 trials</p> <p>From 2000 to 2013, a different rule for automatic annual reset was in place</p> <p>Between 1980 and 1999, the mandated rate was 2.5% for all periods</p> | <p>Rules of Civil Procedure, R.R.O. 1990, Reg. 194 r. 53.09(1)(b)</p> <p>Ontario also mandates inflation rates for income tax gross-up calculations as follows:</p> <p>For trials commencing after January 1 of:</p> <table border="1"> <thead> <tr> <th data-bbox="1419 565 1503 597">Year</th> <th data-bbox="1524 565 1650 597">Select (1)</th> <th data-bbox="1671 565 1827 597">Ultimate (2)</th> </tr> </thead> <tbody> <tr><td>2000</td><td>2.25%</td><td>2.75%</td></tr> <tr><td>2001</td><td>3.00%</td><td>3.50%</td></tr> <tr><td>2002</td><td>3.25%</td><td>3.25%</td></tr> <tr><td>2003</td><td>3.00%</td><td>3.25%</td></tr> <tr><td>2004</td><td>3.00%</td><td>2.75%</td></tr> <tr><td>2005</td><td>3.50%</td><td>2.50%</td></tr> <tr><td>2006</td><td>3.50%</td><td>2.00%</td></tr> <tr><td>2007</td><td>3.75%</td><td>1.75%</td></tr> <tr><td>2008</td><td>3.50%</td><td>1.75%</td></tr> <tr><td>2009</td><td>3.25%</td><td>1.50%</td></tr> <tr><td>2010</td><td>2.75%</td><td>1.25%</td></tr> <tr><td>2011</td><td>3.25%</td><td>1.25%</td></tr> <tr><td>2012</td><td>3.25%</td><td>1.00%</td></tr> <tr><td>2013</td><td>3.00%</td><td>0.00%</td></tr> <tr><td>2014</td><td>2.30%</td><td>0.10%</td></tr> <tr><td>2015</td><td>2.40%</td><td>0.20%</td></tr> </tbody> </table> <p>(1) Select Rate applies for the 15-year period from the start of the trial</p> <p>(2) Ultimate Rate applies thereafter</p> | Year | Select (1) | Ultimate (2) | 2000 | 2.25% | 2.75% | 2001 | 3.00% | 3.50% | 2002 | 3.25% | 3.25% | 2003 | 3.00% | 3.25% | 2004 | 3.00% | 2.75% | 2005 | 3.50% | 2.50% | 2006 | 3.50% | 2.00% | 2007 | 3.75% | 1.75% | 2008 | 3.50% | 1.75% | 2009 | 3.25% | 1.50% | 2010 | 2.75% | 1.25% | 2011 | 3.25% | 1.25% | 2012 | 3.25% | 1.00% | 2013 | 3.00% | 0.00% | 2014 | 2.30% | 0.10% | 2015 | 2.40% | 0.20% |
| Year     | Select (1)  | Ultimate (2)               |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2000     | 3.00%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2001     | 2.75%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2002     | 2.50%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2003     | 2.50%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2004     | 2.25%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2005     | 1.50%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2006     | 1.00%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2007     | 0.75%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2008     | 0.75%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2009     | 0.75%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2010     | 1.25%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2011     | 0.50%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2012     | 0%  | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2013     | -0.50%  | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2014     | 0.30%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2015     | 0.30%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| Year     | Select (1)  | Ultimate (2)               |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2000     | 2.25%   | 2.75%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2001     | 3.00%   | 3.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2002     | 3.25%   | 3.25%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2003     | 3.00%   | 3.25%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2004     | 3.00%   | 2.75%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2005     | 3.50%   | 2.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2006     | 3.50%   | 2.00%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2007     | 3.75%   | 1.75%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2008     | 3.50%   | 1.75%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2009     | 3.25%   | 1.50%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2010     | 2.75%   | 1.25%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2011     | 3.25%   | 1.25%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2012     | 3.25%   | 1.00%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2013     | 3.00%   | 0.00%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2014     | 2.30%   | 0.10%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |
| 2015     | 2.40%   | 0.20%                      |                      |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |    |       |      |        |       |      |       |       |      |       |       |  |   |      |            |              |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |

| Province             | Mandated Rates as of 2015  | Date of Most Recent Change   | Reference/Background  |
|----------------------|--|--|---|
| Prince Edward Island | 2.50%  | Not since 1994<br><br>PEI adopted the Ontario Rules of Civil Procedure in 1990 but does not seem to have harmonized subsequent to Ontario's 1999 changes | Prince Edward Island Rules of Civil Procedure, r. 53.09(1)  |
| Québec               | Loss of earnings: 2.00%<br>Future care (goods): 3.25%<br>Future care (services): 2.00% | Act: 1991<br>Regulation: 1997  | Civil Code of Québec (S.Q., 1991, c. 64.)<br>Regulation under article 1614 of the Civil Code respecting the discounting of damages for bodily injury, RRQ, c. CCQ, r. 1 |
| Saskatchewan         | 3.00%  | Could not confirm  | Saskatchewan Queen's Bench Rules, r. 284B(1)(b)   |
| Yukon                | No mandated rate   | N/A  | N/A   |

## Appendix B

### Illustration of the Effect of Different Mandated Discount Rates across Canada – Loss of Earnings

Present value of a loss of \$50,000 annually until age 65, to a male, mortality decrement only (Statistics Canada 2009-11 Life Table)

|                         | Discount Rate                                     | Valuation age 12<br>Commencement age 25 | Percentage<br>of Current | Valuation age 40<br>Commencement age 40 | Percentage<br>of Current |
|-------------------------|---|---|--------------------------|---|--------------------------|
| Nova Scotia (non-MVA)   | 2.5%  | \$893,000                               | 100%                     | \$904,000                               | 100%                     |
| Alberta                 | -   | -                                       | -                        | -                                       | -                        |
| British Columbia        |   |   |                          |   |                          |
| • Previous              | 2.5%  | \$893,000                               | 100%                     | \$904,000                               | 100%                     |
| • Current               | 1.5%  | \$1,200,000                             | 134%                     | \$1,009,000                             | 112%                     |
| Manitoba                | 3.0%  | \$775,000                               | 100%                     | \$857,000                               | 100%                     |
| New Brunswick (default) | 2.5%  | \$893,000                               | 100%                     | \$904,000                               | 100%                     |
| Newfoundland & Labrador | -   | -                                       | -                        | -                                       | -                        |
| Nova Scotia (2014)      |   |   |                          |   |                          |
| • MVA Reg 4(1)          | 3.5%  | \$675,000                               | 76%                      | \$814,000                               | 90%                      |
| • MVA Reg 4(2)          | 1.94%   | \$1,052,000                             | 118%                     | \$961,000                               | 106%                     |
| Northwest Territories   | 2.5%  | \$893,000                               | 100%                     | \$904,000                               | 100%                     |
| Nunavut                 | 2.5%  | \$893,000                               | 100%                     | \$904,000                               | 100%                     |
| Ontario                 |   |   |                          |   |                          |
| • 2013 trials           | -0.5% for 15<br>years, then<br>2.5%<br>thereafter | \$1,391,000                             | 156%                     | \$1,213,000                             | 134%                     |
| • 2014 and 2015 trials  | 0.3% for 15<br>years, then<br>2.5%<br>thereafter  | \$1,235,000                             | 138%                     | \$1,118,000                             | 124%                     |
| Prince Edward Island    | 2.5%  | \$893,000                               | 100%                     | \$904,000                               | 100%                     |
| Québec                  | 2.0%  | \$1,033,000                             | 116%                     | \$955,000                               | 106%                     |
| Saskatchewan            | 3.0%  | \$775,000                               | 87%                      | \$857,000                               | 95%                      |
| Yukon                   | -   | -                                       | -                        | -                                       | -                        |

## Appendix C

### Illustration of the Effect of Different Mandated Discount Rates across Canada – Future Care Costs (Goods)

Present value of a loss of \$20,000 annually for life, to a male, mortality decrement only (Statistics Canada 2009-11 Life Table)

|                         | Discount Rate                                     | Valuation age 12<br>Commencement age 12 | Percentage<br>of Current | Valuation age 40<br>Commencement age 40 | Percentage<br>of Current |
|-------------------------|---|---|--------------------------|---|--------------------------|
| Nova Scotia (non-MVA)   | 2.5%  | \$647,000                               | 100%                     | \$500,000                               | 100%                     |
| Alberta                 | -   | -                                       | -                        | -                                       | -                        |
| British Columbia        |   |   |                          |   |                          |
| • Previous              | 3.5%  | \$516,000                               | 80%                      | \$425,000                               | 85%                      |
| • Current               | 2.0%  | \$735,000                               | 114%                     | \$547,000                               | 109%                     |
| Manitoba                | 3.0%  | \$576,000                               | 89%                      | \$460,000                               | 92%                      |
| New Brunswick (default) | 2.5%  | \$647,000                               | 100%                     | \$500,000                               | 100%                     |
| Newfoundland & Labrador | -   | -                                       | -                        | -                                       | -                        |
| Nova Scotia (2014       |   |   |                          |   |                          |
| • MVA Reg 4(1)          | 3.5%  | \$516,000                               | 80%                      | \$425,000                               | 85%                      |
| • MVA Reg 4(2)          | 1.94%   | \$747,000                               | 115%                     | \$553,000                               | 111%                     |
| Northwest Territories   | 2.5%  | \$647,000                               | 100%                     | \$500,000                               | 100%                     |
| Nunavut                 | 2.5%  | \$647,000                               | 100%                     | \$500,000                               | 100%                     |
| Ontario                 |   |   |                          |   |                          |
| • 2013 trials           | -0.5% for 15<br>years, then<br>2.5%<br>thereafter | \$931,000                               | 144%                     | \$702,000                               | 140%                     |
| • 2014 and 2015 trials  | 0.3% for 15<br>years, then<br>2.5%<br>thereafter  | \$843,000                               | 130%                     | \$639,000                               | 128%                     |
| Prince Edward Island    | 2.5%  | \$647,000                               | 100%                     | \$500,000                               | 100%                     |
| Québec                  | 3.25%   | \$545,000                               | 84%                      | \$442,000                               | 88%                      |
| Saskatchewan            | 3.0%  | \$576,000                               | 89%                      | \$460,000                               | 92%                      |
| Yukon                   | -   | -                                       | -                        | -                                       | -                        |