

**CAC (MPI) 1-1****Reference:****Volume 1, Pre-filed****Testimony, PT.MM, p.3**

**Subject:** Use of DCAT methodology to establish the level of the rate stabilization reserve (RSR)

**Preamble:** Ms. McLaren States that: "A robust review of the DCAT prepared by Mr. Johnston at AI.11 should result in a shared understanding that this accredited methodology provides a realistic assessment of specific and tangible risks to the financial stability of the Basic Autopac insurance fund. The plausible adverse events are just that, plausible. The methodology also lends itself to a consensual process of adverse event identification that can then be modeled and reported. We believe it to be vastly superior to any other methodology."

- a) Please explain whether the comparison of "any other methodology" extends beyond the DCAT, MCT and RA/VaR risk assessment methodologies and, if so, what other methodologies were considered.
- b) Please explain what criteria were used in comparing the methodologies.
- c) Please explain what metric has been used to judge the DCAT to be "vastly" superior.
- d) Please explain how "plausible" can be defined using scientific (probabilistic) terminology.
- e) Please explain what "consensual process of adverse event identification" is expected to be used, who would be involved in arriving at the consensus, and how the consensus would be achieved in cases where there are differences of opinion over appropriate "adverse event identification"?
- f) Please indicate whether MPI considers the "consensual process of adverse event identification" to be a crucial aspect of the proposal to use the DCAT methodology to set the level of the RSR.

**RESPONSE:**

- a) Dynamic Capital Adequacy Testing is the only accredited methodology (by Office of Superintendent of Financial Institutions [OSFI] and Canadian Institute of Actuaries [CAS]) that explicitly measures the potential financial impact from the Corporation's key risk factors, produces a RSR target that is directly tied to the Corporation's risk level, and is directly responsive to the purpose of the RSR. For these reasons, the Corporation believes it is superior to any other methodology. The Corporation did not test, or find it necessary to test, other methodologies beyond the DCAT, MCT, RA/VaR, and Kopstein method.
- b) AI.11 provides a thorough comparison of the pros and cons of the DCAT, MCT, RA/VaR, and Kopstein methodologies.
- c) AI.11 provides details of why the DCAT is vastly superior to other methodologies.
- d) As per page 9 of the Canadian Institute of Actuaries Educational Note on Dynamic Capital Adequacy Testing (link provided below):

"When stochastic models with reasonable predictability are available, an adverse scenario would be considered plausible if it reflects the 95th to 99th percentile of outcomes. Generally, a 95th percentile or greater result would be required for a scenario to be deemed adverse, but less than or equal to a 99th percentile for the scenario to be deemed plausible. However, in some circumstances the actuary may feel it is appropriate to examine higher percentile outcomes. For risks where no stochastic models with predictive capabilities are available, the actuary would consider the variability in historical results and credibility of data, among other things, in selecting plausible adverse scenarios. It is expected that each of the adverse scenarios selected would be in the range of a 95th to 99th percentile outcome.

An alternative approach for selecting adverse scenarios is stress testing. This involves, first, determining how far the risk factor(s) in question has to be changed in order to drive the insurer's surplus negative during the forecast period, and then evaluating whether that degree of change is plausible. Likewise, the actuary may adjust the level of

the risk factor to get a scenario result that is in the 95th to 99th percentile range. Depending on the insurer's circumstances, the Board or Chief Agent and management may also be interested in scenarios that cross other break points, in which case further stress testing may be beneficial."

<http://www.actuaries.ca/members/publications/2007/207108e.pdf>

- e) As per AI.11.C, "The adverse scenarios and associated assumptions can be discussed and debated at the General Rate hearings and, if warranted, modified in the next DCAT report. Since the DCAT is done in-house, the Corporation can provide the impacts of alternate adverse scenarios at the request of the Public Utilities Board."

For purposes of establishing the RSR target, the Corporation is urging the Board to utilize the DCAT process, in a manner that conforms to Canadian Actuarial Standards of Practice.

- f) See part (e).