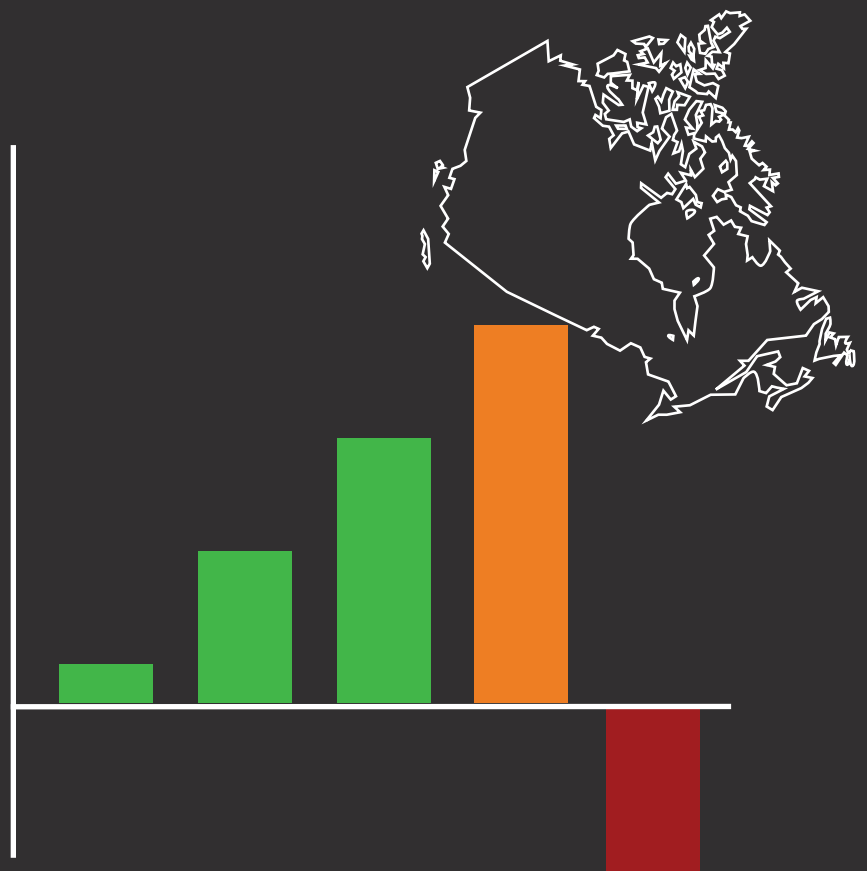
PACICC

Property and Casualty Insurance Compensation Corporation
Société d'indemnisation en matière d'assurances IARD

# How Big is Too Big?

Update to the PACICC P&C Industry Model

## The Tipping Point for Systemic Failure



*By*

**Grant Kelly**

The latest installment in the PACICC *Why insurers fail* research series

**2026 - Update**

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# PACICC's Mission and Principles

## Mission Statement

The mission of the Property and Casualty Insurance Compensation Corporation (PACICC) is to protect eligible policyholders from undue financial loss in the event that a Member Insurer becomes insolvent. We work to minimize the costs of insurer insolvencies and seek to maintain a high level of consumer and business confidence in Canada's property and casualty (P&C) insurance industry through the financial protection we provide to policyholders.

## Principles

- In the unlikely event that an insurance company becomes insolvent, policyholders should be protected from undue financial loss through prompt payment of covered claims
- Financial preparedness is fundamental to PACICC's successful management support of insurance company liquidations, requiring both adequate financial capacity and prudently managed compensation funds
- Good corporate governance, well-informed stakeholders and cost-effective delivery of Member services are foundations for success
- Frequent and open consultations with Members, Regulators, Liquidators and other stakeholders will strengthen PACICC's performance
- In-depth P&C insurance industry knowledge – based on applied research and analysis – is essential for effective monitoring of insolvency risk.

# Contents

## Acknowledgements

Thank you to my PACICC colleagues, Alister Campbell, Ian Campbell, Denika Hall and Jeff Stewart, for their contributions and assistance with this paper. The quality of this work has been enhanced through their collective input.

Facts, observations and conclusions in this report are drawn from publicly available information. The author is solely responsible for all points made in this study, as well as any errors and/or omissions.

Data used in this analysis were obtained from MSA Research, unless otherwise noted.

# Introduction

The Property and Casualty Insurance Compensation Corporation (PACICC) is a consumer protection agency whose mission is to assist Canadian policyholders in the unlikely event that their insurance company becomes insolvent and is closed by Regulators. In 2010, the PACICC Board of Directors asked a deceptively simple question, *"Is there a plausible scenario that could cause the Corporation to fail in its mission to protect Canada's property and casualty insurance policyholders from undue loss, should their insurer fail?"*

In response to our Board's question, PACICC developed its Systemic Risk Model. In 2013, PACICC estimated that some form of catastrophic event (e.g. earthquake, power grid failure, asteroid strike) would trigger the systemic failure of Canada's property and casualty (P&C) insurance industry, and established the "tipping point" to be approximately $30 billion. At the time, the paper was somewhat controversial because it found that there is a fixed upper bound for the capacity of Canada's P&C insurance industry. PACICC updated its Model estimate in 2017 and again in 2020, most recently finding that the industry's tipping point had increased to $35 billion. This paper marks the fourth time that PACICC has published its Model results.

Our analysis confirms that, despite strong regulation and the best efforts of highly-capitalized and well-reinsured private insurers to anticipate a catastrophic event (such as a major earthquake), there are clear and definable limits to the capacity of the private insurance market. The analysis also affirms the clear and compelling need for a federal backstop mechanism to protect Canadians from the impact of such a severe "tail-risk" event.

## Canada will experience a very large earthquake

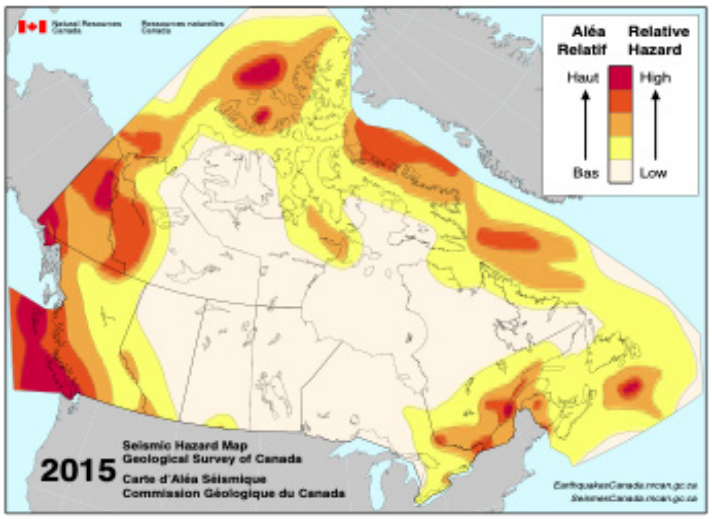
According to the Geological Survey of Canada, our country experiences approximately 4,000 earthquakes per year. Fortunately, almost all of these earthquakes are small and cause no damage. While most earthquakes in Canada are relatively small, over the last 100 years, there have been at least nine earthquakes with magnitudes greater than 7M (Modified Mercalli Intensity Scale). In a dense urban area, a strong quake will cause immense destruction. Earthquakes in Canada are most common along our three coasts: Pacific, Arctic and Atlantic. The regions most at risk of earthquakes are the coast of B.C., the St. Lawrence River/Ottawa River Valley corridor, and certain parts of the three northern Territories.

### *Western Canada*

Some of the world's largest earthquakes have occurred in western Canada, which is the most seismically active region in Canada. The region consists of several discrete areas of intense earthquake activity, each corresponding to a particular plate tectonic regime. The most seismically active of these regions is offshore, west of Vancouver Island. More than 100 earthquakes with a magnitude of 5M or greater have occurred there over the past 70 years.

Earthquake activity is also significant in what is known as the Cascadia Subduction Zone. Here, the Juan de Fuca Plate dips below the easterly neighbouring North American Plate. Another region of high seismic activity is defined by a zone immediately west of the Haida Gwaii ("Queen Charlotte fault"). Earthquakes of magnitude 7M occurred here in May 1929 and June 1970.

**Figure 1 – Seismic Hazard Map**



### *Eastern Canada*

Experts also highlight earthquake risk in a zone running from the Great Lakes to the St. Lawrence River, which includes major cities like Toronto, Hamilton, Ottawa, Montreal and Quebec City. Located just 100 km from Quebec City, the Charlevoix Seismic Zone (CSZ) is the most seismically active region in eastern Canada.

## Canada has a healthy and competitive insurance industry

Canada has a robust, competitive, and well-regulated P&C insurance sector. More than 160 PACICC Member Insurers provide a broad range of coverage right across the country. While the majority of insurance policies are issued by Canadian-owned companies, the Canadian P&C insurance market also features a wide range of foreign-owned insurers, including 18 very large PACICC Member Insurers, designated as Internationally Active Insurance Groups (IAIGs) by the International Association of Insurance Supervisors (IAIS).

Canada's insurers are currently well-capitalized and financially sound. Insurers have adapted pricing, refined coverage offerings and developed tools to better anticipate future costs. Some of the tools that insurers use to mitigate the solvency risk posed by natural disasters include:

- **Measuring and managing "Aggregation" –** Insurers manage down excessive exposure to particular geographic areas by carefully choosing which consumers to insure. For example, insurers avoid seeking to cover every home on a single street if they are concerned about concentration of damage following a hailstorm, tornado or extreme rainfall event
- **Employing computer models –** Insurers have been using models to assess their potential exposure to a severe earthquake for several decades. Recently, models have been developed to help insurers to better manage the risk associated with severe weather events, including hurricanes, floods and wildfires
- **Applying an explicit "Cat load" –** Insurers anticipate future losses when setting the price of homeowners' and commercial insurance policies in territories particularly prone to catastrophic events ("Cats")
- **Mitigating catastrophic risk through the purchase of reinsurance –** Insurers use catastrophe models to calculate their Probable Maximum Loss (PML). They then purchase reinsurance to ensure that the combination of their capital and prearranged access to contingent capital will leave them in a position to honour their financial obligations, even after such a catastrophic event.

## Canada has the toughest regulatory system for natural catastrophic risk in the world

Canada's regulatory framework specifically recognizes the solvency risk associated with natural disasters – especially earthquakes. During the 1990s, the companies that provide Canada's home, auto and business insurance worked with the federal prudential regulator (Office of the Superintendent of Financial Institutions, OSFI) to build earthquake risk into the supervisory systems. The goal of these systems is to ensure that insurers have the capital available to pay legitimate claims resulting from a major urban earthquake.

Regulators in earthquake-prone regions (OSFI, Quebec and B.C.) updated their Guidelines on Earthquake Risk in 2013 to take into account emerging knowledge and best practices. The key components of the regulatory framework for insurers include:

1. Risk-based minimum capital tests, specifically the Minimum Capital Test (MCT) and Branch Adequacy of Assets Test (BAAT)
2. Own Risk and Solvency Assessments (ORSA)
3. Stress Testing
4. Earthquake Exposure Sound Practices (OSFI Guideline B-9).

Of these, the most relevant for this paper is OSFI Guideline B-9. This document sets out sound practices for the management and measurement of earthquake exposures. The policy objective of the Guideline is to improve the safety and soundness of Canada's financial services sector by increasing the insurance industry's capacity to handle a large earthquake. The regulatory requirement is that Canadian insurers must demonstrate readiness for a 1-500-year earthquake – a threshold as high as any that we are aware of in the world.

In comparison to Canada's 1-in-500-year requirement, under Solvency II (the European Union's harmonized, risk-based prudential regulatory framework), European insurers must hold capital to cover losses from extreme, low-frequency events at a 99.5% confidence level (1-in-200-year event). In the U.S., the regulatory system determines capital requirements based on a "worst-year-in-100" scenario, calculating net catastrophe losses and including a risk factor for uncollectible ceded reinsurance.

Canadian P&C Insurers must annually estimate their PML arising from a 1-in-500 year earthquake using forecasting models. Although all federally regulated insurers and reinsurers are encouraged to comply with the Guideline, only those with earthquake exposures in the B.C. and Quebec markets are required by OSFI to do so. Companies must demonstrate to OSFI that they have adequate financial resources to pay the estimated claims resulting from such an earthquake, from the following sources:

1. Dedicated earthquake reserves
2. Reinsurance
3. Up to 10% of the company's capital.

These reports must be presented to the company's Board of Directors or Chief Agent annually. The Guideline places responsibility for managing this earthquake risk squarely on the Board of Directors at each insurer, which in turn is responsible for ensuring and reporting readiness to OSFI.

### The missing piece: Canada does not have a Government-Insurance Industry partnership to manage extreme catastrophic risk

Most modern economies have recognized that governments play an important role in ensuring that their nation can recover from natural catastrophes. Many nations have developed programs that ensure that extreme catastrophic risk can be managed effectively, including: Australia, the Caribbean nations, Chile, Chinese Taipei, Denmark, France, Iceland, Japan, Kazakhstan, Morocco, New Zealand, Norway, Romania, Spain, Switzerland, Türkiye, United Kingdom, and the United States. These programs are all different. Nations face differing peak perils, market structures for risk transfer, and societal expectations regarding risk. However, all of these nations have concluded that, to be resilient, catastrophe risk needs to be shared between the public and private sectors. All of these governments face huge unfunded liabilities from catastrophic risk and, despite their differences, all have decided that it is in their best interest to have a viable private insurance sector to assist with risk transfer, supported by some form of risk-sharing mechanism.

The peak peril faced by Canada is a catastrophic urban earthquake. A large earthquake could cause multiple insurers to fail and, in the absence of some form of backstop mechanism, the resolution of these failed insurers following the earthquake would fall to the Court system…and ultimately, to PACICC.

## The role of the Court system

When a Regulator loses confidence in a P&C insurer's ability to fulfill its promises to policyholders, it then petitions the Court for a judicial Winding-up Order to close the company. In Canada, the *Winding-up and Restructuring Act (WURA)* will be applied. Once this happens, any decisions about who gets paid and how much any creditor receives will be made by the Court. Under *WURA*, the Court will appoint an independent Liquidator to assist it in making these decisions.

This means that, if an insurer fails because of a natural disaster, a court-appointed Liquidator will manage the winding-up of the company. PACICC will support the Liquidator as it settles the estate of the insolvent insurer, including the provision of the funds required to settle eligible policyholder claims and to refund unearned premiums. Settling the estate of an insurance company is a complicated and expensive process that can take many years to resolve. PACICC's payments to policyholders of a failed insurer guarantee the timely return of unearned premiums and the efficient settlement of claims, but only within established limits.

There are four notable points to appreciate about the Court system in the context of our study:

1. The funds within the estate of each failed insurer are frozen to give the Liquidator and the Court sufficient time to assess their value
2. In the legal process, it takes a very long time before creditors (including policyholders and claimants, unless otherwise compensated by PACICC) receive any payments from the estate. Final resolution typically takes 15 or more years
3. Canadian Courts have never dealt with an estate with hundreds (and maybe many thousands) of outstanding catastrophe claims requiring immediate funding
4. Canada's resolution system has never had to grapple with the failure of many insurers all at once, after a major earthquake overwhelms all of their capital and reinsurance capacity.

## The role of PACICC

PACICC's mission is to ensure that Canadian P&C insurance policyholders do not experience undue financial hardship in the unlikely event that a Member Insurer fails. The cost of settling claims against a failed insurance company is paid by PACICC and funded through General Assessments charged to "surviving"

Member Insurers. Insurance legislation requires companies operating in Canada to be PACICC Members, unless they are members of a Farm Mutual guarantee organization or operate exclusively in the provision of specialty lines of insurance not covered by PACICC (e.g. mortgage, marine or aviation insurance). PACICC coverage applies to approximately 95% of all P&C insurance written in Canada.

PACICC's policyholder compensation process has been in place for more than 35 years, and has successfully responded to the needs of policyholders of more than a dozen failed insurance companies, without imposing undue hardship on the insurance industry.

PACICC's policyholder protection extends to insurers that may fail as a result of a natural disaster. However, PACICC protection has defined limits (some of which are subject to annual inflation adjustments). For the policyholders of these companies, as of July 1, 2026, PACICC will pay:

- Up to $545,000 per Personal Property insurance policy
- Up to $435,000 per Auto insurance policy
- Up to $400,000 per Commercial insurance policy
- Up to $1,750 of unearned premiums.

Subject to these limits, PACICC provides funds to the Liquidator to pay eligible claims of policyholders of a failed insurer, but is granted priority to later reclaim those funds from the estate, as well as a portion of the costs that it incurs. The costs ultimately incurred by PACICC Members reflect both the shortfall in the estate of the insolvent insurer and the delay of many years between when it makes its payments and the subsequent recovery of funds from the estate (if any). PACICC therefore supports both the financial shortfall and the liquidity of the insurer in wind-up.

PACICC's Memorandum of Operation(MoO) sets out three steps that PACICC will take when a Member Insurer experiences an involuntary wind-up:

I. "The board of directors shall estimate an amount (the "Total Assessment") which reflects the best estimate of the Corporation anticipated by the board of directors in respect to the Insolvency of a particular Member." (Paragraph 14(1))

II. "The board shall then allocate the Total Assessment among each of the Participating Jurisdictions in which the insolvent Insurer was writing policies." (Paragraph 14(1))

III. "The Corporation shall levy assessments on each Member which is licensed... in a Contributing Participating Jurisdiction." (Paragraph 15)

The Court-appointed Liquidator provides the Board with a detailed analysis of the estate as a basis for determining the Total Assessment. This means that the Assessment process timeframe is partly determined by the circumstances of the failed insurer.

There is a legal limit to the amount that PACICC can assess Member Insurers in a given year. Assessments are limited to 1.5 percent of covered Direct Written Premiums for each insurer in the prior year. However, there is no limit on the number of years that the Member Insurer can be required to pay this amount. The Member is responsible for paying the full Assessment over time, but is only required to pay the annually limited portion in any single year. If a Member is at this maximum, and another insolvency occurs, the cost of that new insolvency would be added to future obligations. It is critical to appreciate that, under modern accounting rules, the full amount owed would be booked as a liability provision on the books of each Member Insurer – with potentially devastating impact on their solvency under the MCT that is monitored by their prudential supervisor.

With this context established, we can now turn to a discussion of our Model.

PACICC's Systemic Risk Model is not a forecast or prediction of future outcomes. It is a numerical calculation to determine the largest catastrophic event that Canada's P&C insurance industry can withstand, and to highlight the systemic risk in Canada's financial sector policy framework if an event exceeds this capacity.

Our Model assumes that Canadian regulators, policymakers and PACICC do not make major changes to the regulatory system immediately following the catastrophic event, and that each organization will act within the limits of its mandate and in a manner consistent with existing industry rules and/or procedures.

This latest iteration of the Model also reflects a major new enhancement. In 2025, after a 24-month dialogue with Members and regulators, our governing By-Law was amended to enable PACICC to require that all Members provide PACICC with their earthquake loss exposure data and essential reinsurance information. PACICC has always had access to the financial statements of all Members (federally- or provincially-supervised), including financial reports for insurers which do not publicly disclose their results. However, with this addional power to require reinsurance information, PACICC has been able to materially enhance the accuracy of its Systemic Risk Model.

The PACICC Model has four major steps. As we describe each of these steps, we will also disclose and discuss each of the key assumptions made.

### *Step 1: Estimate the total financial resources at each PACICC Member Insurer*

Following a large catastrophic loss, impacted insurers will use all available financial resources to pay earthquake claims, and do so in the following order:

a. **Dedicated earthquake reserves –** Reserves refer to the capital and financial resources that some P&C insurance companies in Canada set aside to cover potential claims from a major earthquake.

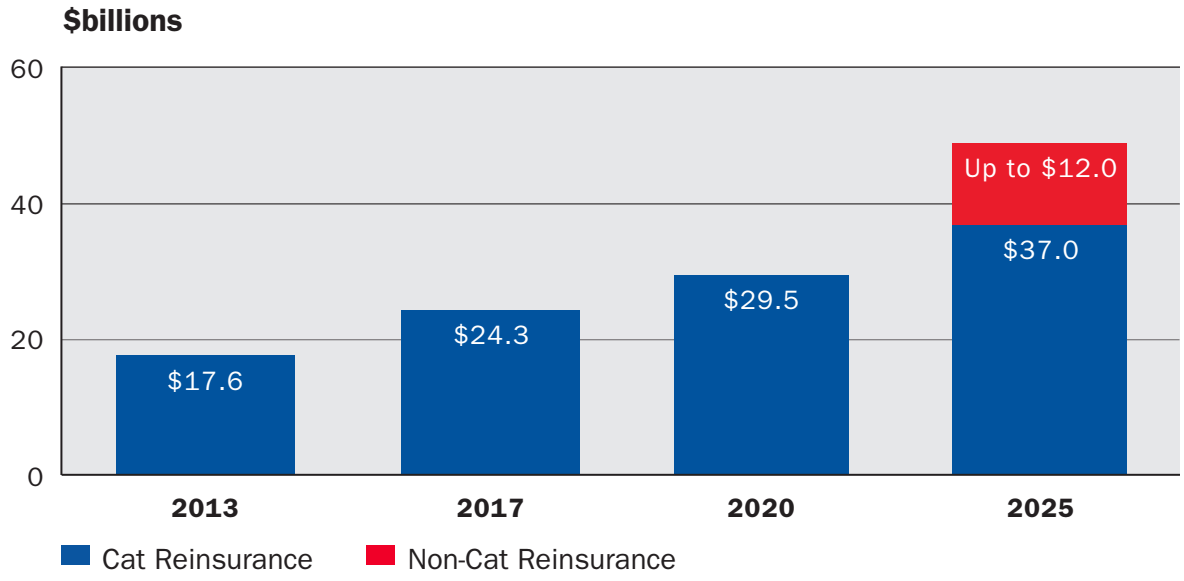
b. **Other (non-Cat) reinsurance –** PACICC Member Insurers employ a wide range of reinsurance protections separate from catastrophe reinsurance (including facultative, property-per-risk, and aggregate covers, as well as quota shares). The regulatory earthquake filings of Member Insurers show that they expect such non-catastrophe reinsurance to finance a significant portion of their PML. The total amount of other reinsurance available in the Model was calculated as the percentage of non-catastrophic reinsurance disclosed by each insurer in its

required earthquake filing, divided by the insurer's PML, and multiplied by 1.15. This recognizes that these types of reinsurance have upper limits and will (on average) be exhausted at 15% above each company's PML.

c. **Catastrophe reinsurance –** Catastrophe reinsurance contracts require the primary insurer to pay a portion of the loss, known as the "net retention." Any remaining catastrophe losses above that retention are paid under catastrophe reinsurance treaties – up to a defined limit. The amount of catastrophe reinsurance purchased by each insurer (or insurance group) is provided to PACICC in the company's 2025 required earthquake loss exposure data filings.

PACICC assumes that all claims made under reinsurance contracts will be honoured and that cash will flow into Canada promptly following a catastrophe. The rationale for this assumption is that the global reinsurance industry has a demonstrated history of reliably paying claims following mega-catastrophes outside of Canada, and holds capital adequate to cover other catastrophe events in the world with potentially even greater insured losses than our own peak peril.

**Figure 2 – Member Insurers were also highly reinsured**




Canadian insurers purchased $37 billion in Cat reinsurance in 2025. This is a 110% increase since 2013. They also purchased up to $12 billion in Non-Cat reinsurance in 2025. PACICC assumes that all of these funds will flow as promised.

Source: PACICC

Canada's P&C insurance industry purchases a significant amount of reinsurance. In 2013, PACICC estimated that the industry's reinsurance purchases totalled approximately $17 billion. In 2025, the same methodology indicated the industry's catastrophe reinsurance capacity to be approximately $37.5 billion. This estimate was confirmed in PACICC's analysis of the newly secured earthquake filings of each Member Insurer. It is worth noting that this represents a 110% increase since 2013.

The amount of catastrophe reinsurance allocated to each Member Insurer is based on their own earthquake exposure filing. This includes reinsurance purchased from both licensed and unlicensed reinsurers. A registered reinsurer is one that is either incorporated in Canada, or a foreign company authorized by OSFI. All other reinsurers are considered unregistered.

d. **Insurer capital –** Any claims above the catastrophe reinsurance limits remain with the company. If modelled losses exceed the amounts in (a), (b), and (c) above, then these excess claims must be paid by the insurer directly out of that company's capital. This impacts the insurer's MCT score.

### *Step 2: Introduce a financial shock to Canada's insurance industry*

PACICC introduces claims shocks of $5B, $15B, $25B, $35B, $45B, $55B and $100B in new insurance claims caused by a catastrophic event in B.C. or Quebec. All these shocks are assumed to occur as one "event" and are covered under existing reinsurance treaties.

It is important to note that the dollar thresholds estimated in this paper are not based on probabilistic analysis. Expert assessments in catastrophe modelling suggest that, in any given year, a large earthquake is more likely to occur in B.C. than an equivalent event in Quebec.

The insured catastrophe claims are distributed across the lines of insurance as follows:

**Table 1 – Insured catastrophe claims distributed across lines of insurance**

| For B.C | Personal Property | Auto | Commercial Property |
|---|---|---|---|
| $5B | 25.0% | 0.4% | 74.6% |
| $15B | 25.0% | 0.4% | 74.6% |

| | | | |
|---|---|---|---|
| $25B | 25.0% | 0.4% | 74.6% |
| $35B | 27.0% | 0.4% | 72.6% |
| $45B | 28.0% | 0.4% | 71.6% |
| $55B | 28.0% | 0.4% | 71.6% |
| $100B | 28.0% | 0.4% | 71.6% |

| For Quebec | Personal Property | Auto | Commercial Property |
|---|---|---|---|
| $5B | 25.0% | 0.4% | 74.6% |
| $15B | 25.0% | 0.4% | 74.6% |
| $25B | 25.0% | 0.4% | 74.6% |
| $35B | 27.0% | 0.4% | 72.6% |
| $45B | 25.0% | 0.4% | 74.6% |
| $55B | 25.0% | 0.4% | 74.6% |
| $100B | 23.0% | 0.4% | 76.6% |

Source: PACICC

This distribution of losses across lines of insurance differs significantly from previous PACICC papers. Earlier PACICC studies allocated 50% of expected claims to Personal Property. Our assumptions have been revised following discussions with earthquake modelling firms, reinsurance brokers, reinsurers and Member Insurers. Several major insurers have provided their own loss mix estimates to PACICC in confidence. There is an industry consensus that, in B.C., recent significant increases in Personal Property earthquake deductibles mean that a substantial portion of Personal Property losses would now be "below" the deductible. In Quebec, very few Personal Property policyholders purchase earthquake insurance at all. However, both regions remain highly prone to "fire-following losses," which would be fully covered under all policies.

All of that being said, our revised Model assumption anticipates roughly $3 in Commercial claims for every $1 in Personal Property claims in both regions. Section 3 of this paper discusses the sensitivity of our Model's conclusions to changes in this assumption.

Catastrophic losses are allocated among insurers based on market share by line of business in either B.C. or Quebec, as appropriate. PACICC recognizes that this assumption is imperfect. Experience shows that the damage burden is unlikely to be shared equally across insurance companies, since insurers have different risk profiles and exposures. Section 3 of this paper also discusses the impact of changing this assumption on our modelled Tipping Point estimates.

### *Step 3: Assess post-earthquake financial health and identify potential sources of capital inflow for each Member Insurer*

If claims incurred by an insurer exceed its financial resources, the event reduces the insurer's capital base. This directly reduces the total capital available under the MCT. The MCT is the PACICC Model's key indicator of financial health. The total reduction of assets available is the total of earthquake reserves, any claims retention required under catastrophic reinsurance contracts and all claims that exceed earthquake reserves and reinsurance.

There is also a secondary impact on capital required under the MCT. PACICC assumes that insurers must establish claims reserves for any claims that affect capital. Canadian regulators require insurers to set aside a buffer equal to 15% of reserves for Personal Property claims and 10% for Commercial Property claims. The total amount of claims reserves and buffers increases the capital required for MCT purposes. In this way, a large earthquake will actually have adverse impacts on both the numerator and the denominator in the MCT formula determining insurer solvency levels.

Under normal circumstances, a Canadian prudential supervisor would intervene if an insurer reported a MCT below its Internal Capital Target (a number always higher than the Supervisory Target). An insurer with a score of below 150% could be deemed insolvent. However, we anticipate that, following a catastrophic event, Canadian regulators would exercise significant regulatory forbearance. Accordingly, in our Model, any insurer that reports a MCT of less than 100% following a catastrophic event is deemed to be "distressed," but is allowed to continue operations.

Following a catastrophe, PACICC assumes that regulators will permit any distressed insurer to continue to operate if it can readily access enough reinsurance or capital from a related Canadian-regulated entity. Similarly, PACICC assumes that regulators will permit any distressed branch insurer to continue to operate, if the capital

injection required for that branch insurer is less than 10% of the parent company's global capital base, in order to recapitalize back up to the Supervisory Target of 150%. Our Model assumes that funds will flow from within Canada or from other countries, allowing some distressed insurers to continue operations. These transfers "save" the distressed insurer, unless and until the required capital inflow exceeds the total capital and reinsurance available from related entities. If the required capital exceeds that amount, the distressed insurer and all related domestic entities are deemed to be insolvent.

A branch insurer operates in Canada as a licensed company, but retains ties to a parent insurer in another country. When establishing a branch in Canada, the parent company must pledge 10% of its total capital base to the Canadian operation. A distressed branch would likely not fail if its foreign parent had sufficient capital. However, our Model recognizes that there is a practical limit beyond which foreign parents would likely cease to provide additional capital to pay continuing PACICC General Assessments (used to fund policyholder compensation following the failure of many other domestic and international insurers).

If the post-catastrophe MCT is below 100% and PACICC cannot identify sources of additional reinsurance or capital available from a related insurer regulated in Canada, or from a foreign parent (as described above), the distressed insurer is deemed to have failed.

We then assume that the regulator will seek to liquidate the insurer in Court under the *Winding-up and Restructuring Act (WURA)*.

### *Step 4: Estimate the PACICC Assessment required to protect policyholders at failed insurers*

When an insurer fails, the Court freezes all assets of the failed insurer. Any policyholder with a legitimate claim will rely on PACICC to provide the required funding to the Liquidator to enable claim payments. Our Model assumes that if a Member Insurer fails, PACICC will seek to fulfil its mission to protect policyholders from undue loss. However, there is a formal threshold to PACICC's financial capacity. Our Board has established that threshold to be two times our legal Annual Maximum Assessment – so for this iteration of the Model, we will use $3B as that maximum. Above that theshold the PACICC Board would be forced to trigger Article 36 ("Financial Difficulties") in our Memorandum of Operation (MoO) – also known as the "Circuit Breaker" clause. However, we also assume that our Board will act in good faith and explore any and all alternatives before being forced to take such a drastic step.

Our Model also assumes that PACICC will strictly enforce its established benefit limits. If a Canadian solvency regulator loses confidence in the ability of a Member Insurer to remain a going concern, and the company is placed into liquidation, then PACICC offers two types of benefits to policyholders (limits as of July 1, 2026):

1. Rebates for any premiums paid for coverage that has been paid in advance, up to a maximum of 70% of $2,500 ($1,750), and
2. Claims coverage up to PACICC's claims limits of $545,000 for Personal Property, $435,000 for Auto and $400,000 for Commercial policies.

PACICC will levy a General Assessment on surviving insurers in accordance with the methodology set out in its MoO. In 2024, the MoO was changed to eliminate the requirement that PACICC estimate the "maximum exposure" for any required General Assessment. Instead, PACICC is now required to make its "best estimate" of the required Assessment.

For this paper, the best estimate is calculated to be the sum of:

a. **Rebate for Premiums paid in Advance** is calculated to be: Liability for Remaining Coverage (page 20.14, column (02), row 629) + Loss Component (page 20.14, column (06), row 629). LRC is reduced to 25% if Commercial Direct Premiums Written are 80% of the insurer's total business. If LRC is negative, rebate is zero.

**+**

b. **Non-Earthquake Claims:** are the sum of: [Liabilities for incurred claims not under PPA (page 20.14, column (10), row 629) + Expected Present Value of Future Cash Flows (page 20.14, column (12), row 629) + Risk Adjustment (page 20.14, column (16), row 629)]*110%[1] LESS: 100% of Registered Reinsurance Assets (page 70.50, column (79), row 29) + 80% of Unregistered Reinsurance Assets (page 70.60, column (79), row 29).

**+**

c. **Earthquake Claims:** All earthquake claims that are not covered by reinsurance treaties.

[1] PACICC's experience in managing insolvencies suggests that claims settlement costs would be higher than average, as the Liquidator would likely pay a premium (relative to a going-concern) to settle claims as quickly as possible

The PACICC General Assessments also cover any administrative and legal costs required to settle the estate of the failed insurer. In past insolvencies, these costs have been high. This Model assumes a flat 15% surcharge on the PACICC best estimate to cover these expenses. PACICC Member Insurers would be required to recognize their share of the PACICC General Assessment under current International Financial Reporting Standards. The resulting liability reduces their MCT scores. We then repeat Step 3 to determine if the new General Assessment causes any other insurer's MCT to fall (back) below 100%. For each earthquake scenario, PACICC also measures if it will be able to collect General Assessments quickly enough to fund the cashflow needs of the estate of the failed insurer. The expected cashflow needs of the estate are assumed to follow this claims development curve: (Table 2)

We now move to a presentation of the Model results for both quake-exposed regions.

**Table 2 – Claims development curve**

| Quarter following catastrophic event | Percentage of Cash required |
|---|---|
| 1 | 12.0% |
| 2 | 42.0% |
| 3 | 58.0% |
| 4 | 62.0% |
| 5 | 72.0% |
| 6 | 78.0% |
| 7 | 80.0% |
| 8 | 82.0% |
| 9 | 84.0% |
| 10 | 86.0% |
| 11 | 88.0% |
| 12 | 90.0% |
| 13 | 92.0% |
| 14 | 94.0% |
| 15 | 95.0% |
| 16 | 96.0% |
| 17 | 97.0% |
| 18 | 97.5% |
| 19 | 98.0% |
| 20 | 98.5% |

Source: PACICC

# PACICC Model Results for a Major Catastrophic Event in Quebec

Measuring the size of a natural disaster by the dollar value of damage allows PACICC to overcome the uncertainty within earthquake models. Those models estimate the "average" earthquake that will likely occur in a given time period. As a guarantee fund, PACICC must be concerned about a worse-than-average earthquake with insured losses "outside" of its Model. Such large earthquakes can result in broken gas lines causing fires, but "fire-following" an earthquake event is difficult to model. Nor do the models estimate business interruption claims or damage from tsunamis. By using a single dollar figure for total insured losses, the PACICC Model seeks to avoid these types of uncertainty.

Our Model estimates three distinct event thresholds for Canada's P&C insurance industry:

1. Green Zone: Estimated size of a catastrophic loss that P&C insurance system could handle before any significant insurer failures begin to cause systemic stress
2. Orange Zone: Estimated size of a catastrophic loss that could cause the failure of multiple insurers and place extreme stress on PACICC's ability to fulfil its mission to protect consumers. At this level of loss, Canada's P&C insurance industry would be under severe strain. While PACICC General Assessments would likely cause solvency ratios at surviving insurers to fall below regulatory minimums, PACICC believes that the system would still function as currently designed. There will, however, be potentially severe issues of affordability and availability of insurance across Canada
3. Red Zone: Estimated size of a catastrophic loss that would overwhelm Canada's insurance industry and PACICC's policyholder protection capacity – at (or past) the tipping point.

PACICC estimates the event thresholds for our seven earthquake event scenarios in Quebec as follows:

## $5 billion event in Quebec

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 2.9% of claims are paid using existing earthquake reserves
- 29.9% of claims are paid using non-Cat reinsurance

- 41.5% of claims are paid using catastrophe reinsurance
- 26.5% of claims erode the capital base of these insurers. The industry's capital base declines by $1.3 billion.

Impact on the solvency of insurers:

- The earthquake impacts 65 Member Insurers. Before the earthquake, their average MCT score was 265.6%
- 18 insurers exhaust all of their reinsurance
- 10 insurers report a post-event MCT below 150%
- Seven insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for all distressed insurers that, when transferred, would enable them to raise their MCT score above 100%
- **No insurers fail**
- **No PACICC General Assessments are required.**

## $15 billion event in Quebec

**Losses by type of insurance:**

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 0.7% of claims are paid using existing earthquake reserves
- 18.3% of claims are paid using non-Cat reinsurance
- 56.5% of claims are paid using catastrophe reinsurance
- 24.5% of claims erode the capital base of these insurers. The industry's capital base declines by approximately $3.7 billion.

Impact on the solvency of insurers:

- The earthquake impacts 65 Member Insurers. Before the earthquake, their average MCT score was 265.6%. After the earthquake, their average MCT falls to 227.7%
- 26 insurers exhaust all of their reinsurance
- 17 insurers report a post-event MCT below 150%

- 14 insurers report a post-event MCT below 100% (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 13 of the 14 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%. The model assumes that regulators would allow them to continue to operate
- PACICC cannot identify additional capital and/or reinsurance for one PACICC Member Insurer. The Model assumes that the regulator would then petition the Court to close this insurer under *WURA*
- **PACICC's Total Assessment required would be $240 million**
- **General Assessments of this size do not cause any additional Member Insurers to fail.**

## $25 billion event in Quebec

**Losses by type of insurance:**

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 0.4% of claims are paid using existing earthquake reserves
- 14.4% of claims are paid using non-Cat reinsurance
- 51.7% of claims are paid using catastrophic reinsurance
- 33.5% of claims erode the capital base of these insurers. The industry's capital base declines by approximately $8 billion.

Impact on the solvency of insurers:

- The earthquake impacts 65 Member Insurers. Before the earthquake, their average MCT score was 265.6%. After the earthquake, their average MCT falls to 173.5%
- 30 insurers exhaust all of their reinsurance
- 22 insurers report a post-event MCT below 150%
- 18 insurers report a post-event MCT below 100% (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 17 of the 18 distressed insurers that, when transferred, would enable them to raise their MCT

score above 100%. The Model assumes that regulators would allow them to continue to operate

- PACICC cannot identify additional capital and/or reinsurance for one PACICC Member Insurer. The Model assumes that the regulator would then petition the Court to close this insurer under *WURA*
- **PACICC's Total Assessment required would be $390 million**
- **General Assessments of this size do not cause any additional Member Insurers to fail**
- **The Average industry MCT after the PACICC General Assessments falls to 172.6%.**

## $35 billion event in Quebec

**Losses by type of insurance:**

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 27.0% | 0.4% | 72.6% |

Source: PACICC

How claims are paid:

- 0.4% of claims are paid using existing earthquake reserves
- 14.4% of claims are paid using non-Cat reinsurance
- 51.7% of claims are paid using catastrophe reinsurance
- 33.5% of claims erode insurers' capital base. The industry's capital base declines by $15.3 billion.

Impact on the solvency of insurers:

- The earthquake impacts 65 Member Insurers. Before the earthquake, their average MCT score was 265.6%. After the earthquake, their average MCT falls to 116.8%
- 35 insurers exhaust all of their reinsurance
- 28 insurers report a post-event MCT below 150%
- 23 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 18 of the 23 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%

- PACICC cannot identify additional capital and/or reinsurance for five PACICC Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA*
- **The required PACICC Total Assessment would be $1.2 billion**
- **General Assessments of this size would be difficult for the surviving insurers, but do not cause any additional Member Insurers to fail**
- **The industry's post-Assessment MCT falls to 113.2%**
- **The national market share of the distressed insurers is approximately 30% of the Canadian market**
- **The loss of this share of Canada's insurance industry would make it difficult for PACICC to collect the required amounts quickly. There could be liquidity issues in funding these estates. Policyholders would likely be forced to wait for claim settlement**
- **There would be reduced availability of insurance in all parts of Canada.**

## $45 billion event in Quebec

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 0.4% of claims are paid using existing earthquake reserves
- 14.4% of claims are paid using non-Cat reinsurance
- 51.7% of claims are paid using catastrophe reinsurance
- 33.5% of claims erode insurers' capital base. The industry's capital base declines by $22.5 billion.

Impact on the solvency of insurers:

- The earthquake impacts 65 Member Insurers. Before the earthquake, their average MCT score was 265.6%. After the earthquake, their average MCT falls to 77.6%
- 42 insurers exhaust all of their reinsurance
- 36 insurers report a post-event MCT below 150%
- 31 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")

- PACICC identifies additional capital and/or reinsurance for 10 of the 31 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%
- **PACICC cannot identify additional capital and/or reinsurance for 21 PACICC Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be approximately $33 billion**
- **Once claims reach $45 billion, the required PACICC General Assessments would cause all PACICC Member Insurers (already weakened by the catastrophe) to fail. This is the tipping point. A systemic collapse has occurred. A catastrophic event causing $45 billion in insurance claims in Quebec simply exceeds the capacity of Canada's P&C insurance industry to respond.**

## $55 billion event in Quebec

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 0.2% of claims are paid using existing earthquake reserves
- 7.6% of claims are paid using non-Cat reinsurance
- 54.3% of claims are paid using catastrophe reinsurance
- 37.9% of claims erode insurers' capital base. The industry's capital base declines by $30 billion.

Impact on the solvency of insurers:

- The earthquake impacts 65 Member Insurers. Before the earthquake, their average MCT score was 265.6%. After the earthquake, their average MCT falls to 49.6%
- 44 insurers exhaust all of their reinsurance
- 40 insurers report a post-event MCT below 150%
- 33 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")

- PACICC identifies additional capital and/or reinsurance for eight of the 33 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%
- **PACICC cannot identify additional capital and/or reinsurance for 25 PACICC Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be approximately $40 billion**
- **Once claims reach $55 billion, the required PACICC General Assessments would cause all PACICC Member Insurers (already weakened by the catastrophe) to fail. This is well beyond the tipping point. A systemic collapse has occurred. A catastrophic event causing $55 billion in insurance claims in Quebec exceeds the capacity of Canada's P&C insurance industry to respond.**

## $100 billion event in Quebec

**Losses by type of insurance:**

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 23.0% | 0.4% | 76.6% |

Source: PACICC

How claims are paid:

- 0.1% of claims are paid using existing earthquake reserves
- 5.0% of claims are paid using non-Cat reinsurance
- 28.3% of claims are paid using catastrophe reinsurance
- 66.7% of claims erode insurers' capital base. The industry's capital base declines by $66 billion.

Impact on the solvency of insurers:

- The earthquake impacts 65 Member Insurers. Before the earthquake, their average MCT score was 265.6%. After the earthquake, their average MCT falls to -16.2%
- 56 insurers exhaust all of their reinsurance
- 55 insurers report a post-event MCT below 150%
- 45 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")

- PACICC identifies additional capital and/or reinsurance for 12 of the 45 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%
- **PACICC cannot identify additional capital and/or reinsurance for 33 PACICC Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be approximately $70 billion**
- **Once claims reach $100 billion, the required PACICC General Assessments would cause all PACICC Member Insurers (already weakened by the catastrophe) to fail. This is completely beyond the tipping point. A systemic collapse has occurred. A catastrophic event causing $100 billion in insurance claims in Quebec far exceeds the capacity of Canada's P&C insurance industry to respond.**

### Summary – Quebec

- **Up to $35 billion –** Our modelling indicates that Canada's insurers can fully respond to a massive disaster shock, with little or no impact on the solvency of well-run, healthy insurance companies. While there may be a failure or two, the system will work
- **Between $35 billion and $45 billion –** The insurance industry appears to have sufficient financial capacity to respond to a large natural disaster generating insurance claims of up to $45 billion. However, the system would be severely strained. PACICC would need to establish an emergency response capacity because it has never been required to respond to multiple Member insolvencies. However, the required Total Assessment itself would not cause systemic contagion. Insurance pricing and availability would be a national-scale crisis in all regions and across all lines of coverage
- **Greater than $45 billion –** A catastrophic loss of this size in Quebec would exceed the existing capacity of Canada's P&C insurance industry and would also exceed PACICC's ability to address the needs of policyholders. This is the point where PACICC General Assessments cause otherwise healthy insurers – even those not exposed to the initial catastrophe – to fail regulatory solvency tests.

# PACICC Model Results for a Major Catastrophic Event in B.C.

PACICC estimates the event thresholds based on the seven earthquake event scenarios for B.C. as follows:

## $5 billion event in B.C.

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 40.1% of claims are paid using non-Cat reinsurance
- 41.8% of claims are paid using catastrophe reinsurance
- 18.1% of claims erode the capital base of these insurers. The industry's capital base declines by $0.9 billion.

Impact on the solvency of insurers:

- The earthquake impacts 101 Member Insurers. Before the earthquake, their average MCT score was 262.1%. After the earthquake, their MCT score falls to 254.5%
- 25 insurers exhaust all of their reinsurance
- Nine insurers report a post-event MCT below 150%
- Eight insurers report a post-event MCT below 100% (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for all distressed insurers that, when transferred, would enable these distressed insurers to raise their MCT score above 150%
- **No insurers fail**
- **No PACICC General Assessments are required.**

## $15 billion event in B.C.

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 25.9% of claims are paid using non-Cat reinsurance
- 58.2% of claims are paid using catastrophe reinsurance

- 15.8% of claims erode the capital base of these insurers. The capital base of these insurers is eroded by $0.8 million.

Impact on the solvency of insurers:

- The earthquake impacts 101 Member Insurers. Before the earthquake, their average MCT score was 262.1%. After the earthquake, their MCT score falls to 249.5%
- 29 insurers exhaust all of their reinsurance
- 18 insurers report a post-event MCT below 150%
- 12 insurers report a post-event MCT below 100% (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 10 of the 12 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%. The Model assumes that regulators would allow them to continue to operate
- **PACICC cannot identify additional capital and/or reinsurance for two PACICC Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be $310 million**
- **General Assessments of this size do not cause any additional Member Insurers to fail**

## $25 billion event in B.C.

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 25.0% | 0.4% | 74.6% |

Source: PACICC

How claims are paid:

- 20.9% of claims are paid using non-Cat reinsurance
- 62.1% of claims are paid using catastrophe reinsurance
- 17.1% of claims erode the capital base of these insurers. The capital base of these insurers is eroded by $0.9 billion.

Impact on the solvency of insurers:

- The earthquake impacts 101 Member Insurers. Before the earthquake, their average MCT score was 262.1%. After the earthquake, their MCT score falls to 225.3%
- 40 insurers exhaust all of their reinsurance
- 28 insurers report a post-event MCT below 150%
- 22 insurers report a post-event MCT below 100% (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 18 of the 22 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%. The Model assumes that regulators would allow them to continue to operate
- **PACICC cannot identify additional capital and/or reinsurance for four PACICC Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be $660 million**
- **A General Assessments of this size do not cause any additional Member Insurers to fail.**

## $35 billion event in B.C.

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 27.0% | 0.4% | 72.6% |

Source: PACICC

How claims are paid:

- 12.5% of claims are paid using non-Cat reinsurance
- 63.1% of claims are paid using catastrophe reinsurance
- 24.4% of claims are paid by reducing the insurance company's capital. The capital base of these insurers is eroded by $1.2 billion

Impact on the solvency of insurers:

- The earthquake impacts 101 Member Insurers. Before the earthquake, their average MCT score was 262.1%. After the earthquake, their average MCT falls to 175.5%

- 45 insurers exhaust all of their reinsurance
- 32 insurers report a post-event MCT below 150%
- 26 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 18 of the 26 distressed insurers within the regulatory system that, when transferred, would enable them to raise their MCT score above 100%
- **PACICC cannot identify additional capital and/or reinsurance for eight PACICC Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be $1.2 billion. The national market share of the distressed insurers is approximately 14% of the Canadian market. The loss of this share of Canada's insurance industry would make it difficult for PACICC to collect the required amount quickly. There could be liquidity issues in funding these estates. Policyholders would likely be forced to wait for claim settlement**
- **General Assessments of this size would be difficult for the surviving insurers, but it do not cause any additional Member Insurers to fail**
- **There would be reduced availability of insurance in all parts of Canada.**

## $45 billion event in B.C.

**Losses by type of insurance:**

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 28.0% | 0.4% | 71.6% |

Source: PACICC

How claims are paid:

- 13.0% of claims are paid using non-Cat reinsurance
- 56.8% of claims are paid using catastrophe reinsurance
- 30.2% of claims are paid by reducing the insurance company's capital. The capital base of these insurers is eroded by $1.5 billion

Impact on the solvency of insurers:

- The earthquake impacts 101 Member Insurers. Before the earthquake, their average MCT score was 262.1%. After the earthquake, their average MCT falls to 175.6%

- 58 insurers exhaust all of their reinsurance
- 41 insurers report a post-event MCT below 150%
- 35 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 10 of the 31 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%
- **PACICC cannot identify additional capital and/or reinsurance for 21 Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be approximately $3.3 billion. The national market share of these failed insurers is approximately 30 percent of the Canadian market**
- **The loss of this share of Canada's insurance industry would make it impossible for PACICC to collect this amount in the time required**
- **Once claims reach $45 billion, the required PACICC General Assessments would cause at least two additional PACICC Member Insurers (already weakened by the catastrophe) to fail. This is the tipping point. A systemic collapse has occurred. A catastrophic event causing $45 billion in insurance claims in B.C. simply exceeds the capacity of Canada's P&C insurance industry to respond.**

## $55 billion event in B.C.

**Losses by type of insurance:**

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 28.0% | 0.4% | 71.6% |

Source: PACICC

How claims are paid:

- 11.0% of claims are paid using non-Cat reinsurance
- 50.3% of claims are paid using catastrophe reinsurance
- 38.7% of claims are paid by reducing the insurance company's capital. The capital base of these insurers is eroded by $1.9 billion.

Impact on the solvency of insurers:

- The earthquake impacts 101 Member Insurers. Before the earthquake, their average MCT score was 262.1%. After the earthquake, average MCT falls to 84.4%

- 63 insurers exhaust all of their reinsurance
- 55 insurers report a post-event MCT below 150%
- 44 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 32 of the 44 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%
- **PACICC cannot identify additional capital and/or reinsurance for 12 Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be approximately $5.4 billion. The national market share of these failed insurers is approximately 30 percent of the Canadian market. The loss of this share of Canada's P&C insurance industry would make it impossible for PACICC to collect this amount in the time required**
- **Once claims reach $55 billion, the required PACICC General Assessments would cause at least three additional Member Insurers (already weakened by the catastrophe) to fail. This is now beyond the tipping point. A systemic collapse has occurred. A catastrophic event causing $55 billion in insurance claims in B.C. far exceeds the capacity of Canada's P&C insurance industry to respond.**

## $100 billion event in B.C.

### Losses by type of insurance:

| Personal Property | Auto | Commercial Property |
|---|---|---|
| 28.0% | 0.4% | 71.6% |

Source: PACICC

How claims are paid:

- 6.7% of claims are paid using non-Cat reinsurance
- 30.3% of claims are paid using catastrophe reinsurance
- 63.0% of claims are paid by reducing the insurance company's capital. The capital base of these insurers is eroded by $63.0 billion.

Impact on the solvency of insurers:

- The earthquake impacts 101 Member Insurers. Before the earthquake, their average MCT score was 262.1%. After the earthquake, their average MCT falls to -12.4%

- 79 insurers exhaust all of their reinsurance
- 70 insurers report a post-event MCT below 150%
- 65 insurers report a post-event MCT below 100%. (These insurers are deemed to be financially "distressed")
- PACICC identifies additional capital and/or reinsurance for 30 of the 65 distressed insurers that, when transferred, would enable them to raise their MCT score above 100%
- **PACICC cannot identify additional capital and/or reinsurance for 30 Member Insurers. The Model assumes that the regulator would then petition the Court to close these insurers under *WURA***
- **The required PACICC Total Assessment would be approximately $56.0 billion. The national market share of these failed insurers is approximately 45 percent of the Canadian market**
- **The loss of this share of Canada's insurance industry would make it impossible for PACICC to collect this amount for many years**
- **Once claims reach $100 billion, the required PACICC General Assessments would cause all additional Member Insurers (already weakened by the catastrophe) to fail. This is well past the tipping point. A systemic collapse has occurred. A catastrophic event causing $100 billion in insurance claims in B.C. far exceeds the capacity of Canada's P&C insurance industry to respond.**

### Summary – B.C.

- **Up to $35 billion –** Our Model indicates that Canada's P&C insurers can fully respond up to a $35 billion disaster shock in B.C., with little or no impact on the solvency of well-run, healthy insurance companies. The system will work
- **Between $35 billion and $45 billion –** The insurance industry appears to have sufficient financial capacity to respond to a large natural disaster generating insurance claims of up to $45 billion. However, at this level, numerous previously solvent insurance companies are expected to fail. PACICC would need to establish an emergency response capacity because it has never been required to respond to multiple Member insolvencies. However, the required General Assessments would not cause systemic contagion. Pricing and availability of insurance would be a national crisis in all regions and for all lines of coverage

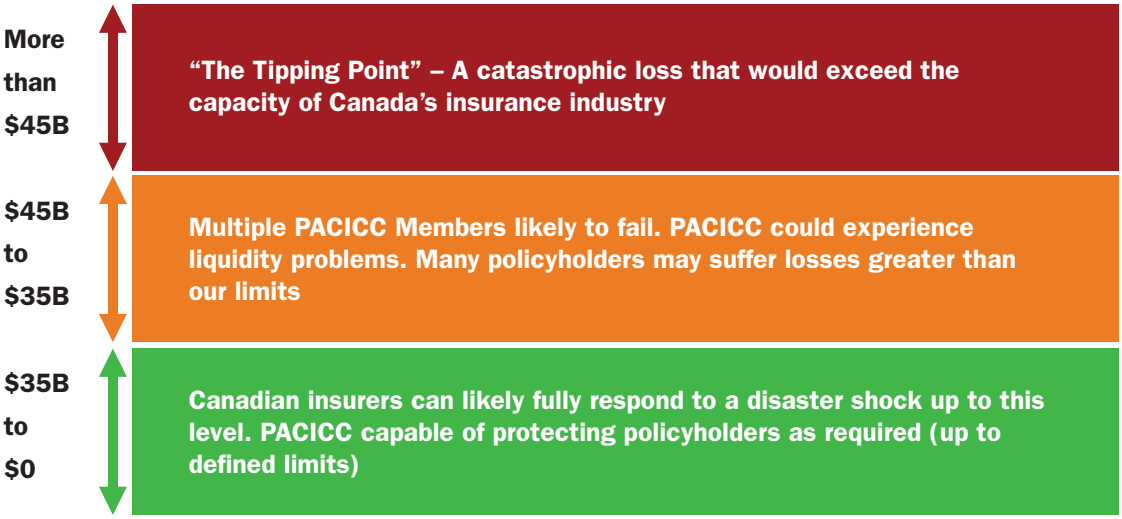
- **Greater than $45 billion –** A catastrophic loss of this size would exceed the existing capacity of Canada's P&C insurance industry and would also exceed PACICC's ability to address the needs of policyholders. This is the point where a PACICC General Assessment causes otherwise healthy insurers – even those not exposed to the initial catastrophe – to fail regulatory solvency tests.

# Canada's Tipping Point

Despite strong regulation and the best efforts of highly capitalized and well-reinsured private insurers to anticipate a very large catastrophic event (such as a major earthquake), there are clear and definable limits to the capacity of Canada's private insurance system. A catastrophe resulting in insurance claims exceeding $45 billion would likely overwhelm the capacity of Canada's insurance industry.

While there are differences in the impact of such a large event in Quebec and B.C., due to differences in market make-up and degrees of earthquake coverage, when insured losses reach $45 billion, many insurers experience financial distressed and some fail...in both regions. These failures would result in contagion across the industry, as PACICC Assessments to address losses from failed insurers would trigger defaults among insurers that would have otherwise survived the earthquake. Losses above this level exceed the capacity of Canada's private insurance marketplace. This is the tipping point.

**Figure 3 – PACICC Systemic Risk Model – 2026 Update of The "Tipping Point"**



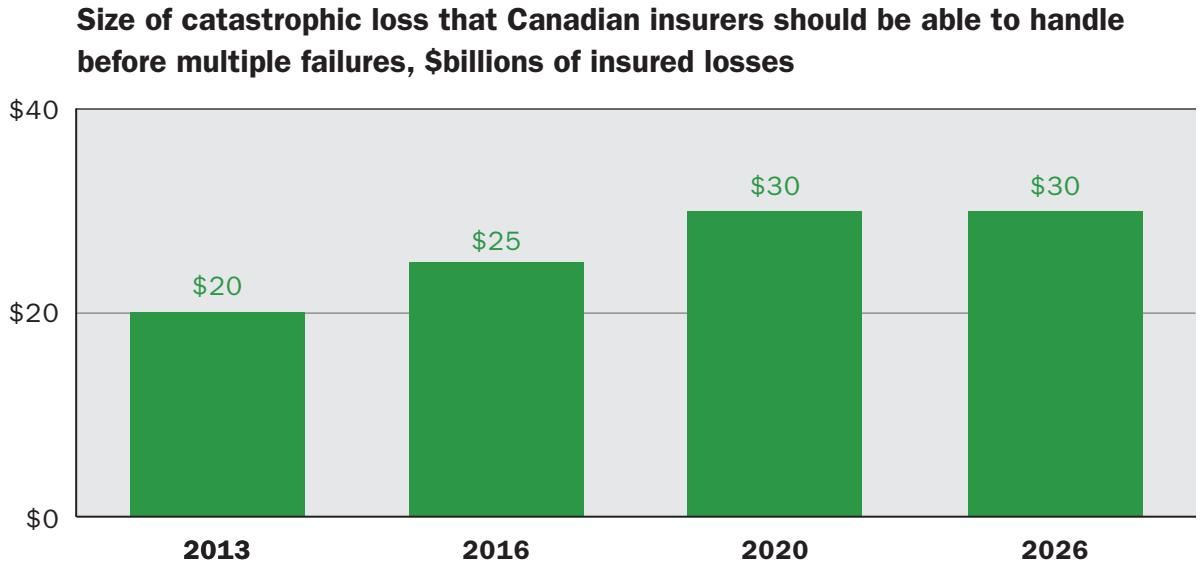

Source: PACICC

# The PACICC Model – Evolution in Insurance Capacity over Time

## Estimating the Green Zone: PACICC modelling of potential failures due to catastrophes

An event causing less than $30 billion in insurance claims is unlikely to cause Canada's P&C insurers to become systemically distressed. This is not to say that insurers would escape such an event unscathed. It would result in significant stress and financial losses for insurers and would likely result in future price increases for policyholders. It is also possible that a single insurer could fail, if its mix of policies sold was concentrated in an area hit hardest by the event. However, PACICC has experience dealing with the insolvency of a single insurer and this should not cause major problems for PACICC or the industry as a whole.

### Figure 4 – PACICC Systemic Risk Model – Evolution in estimated "Green Zone" over time



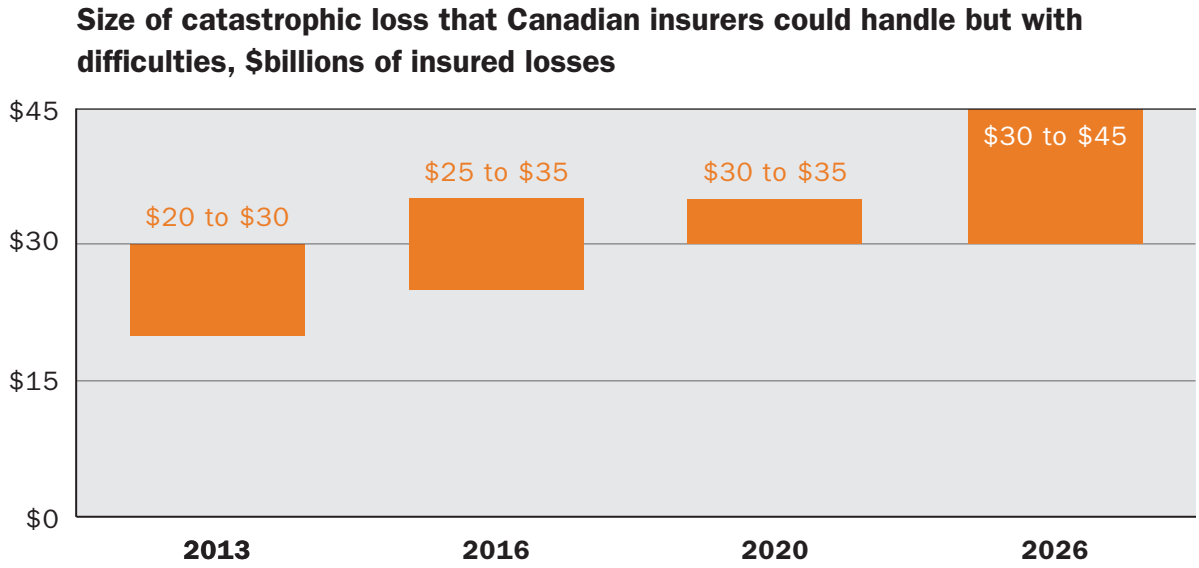

The Canadian P&C Industry continues to build capital and purchase greater amounts of reinsurance – and can thus handle ever larger events.

Source: PACICC

### Orange Zone: Estimated size of catastrophic losses that could cause extreme stress to PACICC's ability to fulfil its mission to protect consumers (multiple insurers failing)

The "Orange Zone" represents PACICC's estimate of the absolute maximum-sized event that Canada's P&C insurance industry could stretch to handle. In the Orange Zone, multiple PACICC Member insurers would fail. A small number of additional insurers would fail due to the resulting PACICC Assessments. There are also significant liquidity concerns in the Orange Zone. At this level of catastrophic loss, consumers would need to wait, possibly years, for PACICC to collect the cash needed to pay the resulting insurance claims. There would be significant economic hardship for many policyholders waiting so long to see their claims paid. However, the P&C insurance industry would continue to function. Policyholders would have their claims paid over a period of time – and even unearned premiums could be reimbursed, eventually.

**Figure 5 – PACICC Systemic Risk Model – Evolution in estimated "Orange Zone" over time**



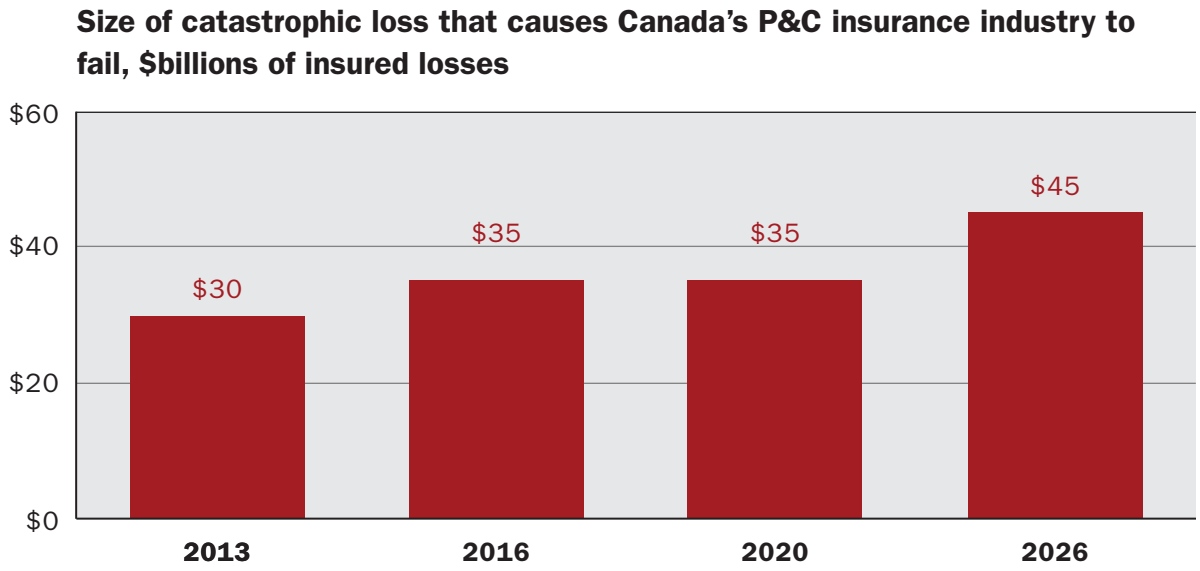

Multiple PACICC Members likely to fail. Some additional insurers could fail due to PACICC Assessments. PACICC could experience liquidity problems. Consumers may have to wait to have claims paid or premiums reimbursed.

Source: PACICC

### Red Zone: Estimated size of catastrophic loss that would result in systemic contagion and overwhelm Canada's insurance industry

PACICC's 2013 estimate of the size of a catastrophic event that would overwhelm Canada's P&C insurance industry was $30 billion. The "Red Zone" Tipping Point has now increased to $45 billion in our latest update to the Model. While the Canadian P&C industry has materially increased its capacity to handle a truly massive loss, there still remains a threshold above which the capacity of the private sector is simply exhausted.

**Figure 6 – PACICC Systemic Risk Model – The "Tipping Point" over time**




Canada's P&C insurers can handle a catastrophic event much greater than in 2023. BUT...even with this increased resilience, there is a Tipping Point!

Source: PACICC

# Sensitivity Analysis: Factors that impact the Tipping Point

The next section of this paper examines the impact of changes to key assumptions made in the PACICC Model. The purpose of this analysis is to determine if changing key assumptions has a significant impact on the Green-Orange-Red Zones estimated above.

Our sensitivity analysis has focused on four key questions:

1. What happens if there is an aftershock earthquake?
2. What if PACICC issued a bond and funded claims obligations with debt, rather than immediately assessing Member Insurers?
3. Which assumptions made in the Systemic Risk Model have the largest impact on the Tipping Point?
4. Could a government-industry partnership eliminate the Tipping Point?

## 1. What happens if there is an aftershock earthquake?

According to the Government of Canada, following an earthquake, Canadians should *"Stay calm and assess the situation. Be prepared for aftershocks."*[1]

Scientists are very clear that when a large earthquake occurs, it is normal for aftershock earthquakes to happen as the earth's crust settles.[2] Amongst themselves, Geoscientists measure aftershocks using Båth's Law, which states "the largest aftershock is typically no larger than about one magnitude unit smaller than the mainshock." Aftershocks are most likely to occur "soon" after the mainshock but can extend for a long time before returning to the background (pre-mainshock) level of seismicity. The key insight for insurers and policyholders is that a geoscientist's definition of "soon" is unlikely to align with the standard 72-hour clause contained in most modern reinsurance contracts.

PACICC has modelled a potential aftershock scenario in B.C. The Tipping Point for Canada's P&C insurance industry is materially lower when the Model includes two moderately sized earthquakes rather than one large shock.

To model the impact of an aftershock requires adding several additional assumptions in the PACICC Model:

[2] https://www.canada.ca/en/services/policing/emergencies/preparedness/get-prepared/hazards-emergencies/earthquakes.html

[3] https://www.pacicc.ca/wp-content/uploads/Solvency_Matters_27_September-D1.pdf (After-shocked: A Seismologist's Perspective on Insuring Multiple Earthquake Events - by T.E. Hobbs, PhD, MSCE)

1. Immediately following the first earthquake ("Earthquake #1"), all impacted insurers must immediately pay a reinstatement premium of 2.5% of all catastrophe reinsurance used. This is a cash payment that reduces capital available under the MCT test. This makes the first earthquake slightly more impactful, but allows insurers to "reload" their catastrophe reinsurance programs
2. Any insurer that is part of a group, or has a foreign parent, will receive a capital injection required to increase their post-Earthquake #1 MCT score to 175%. PACICC assumes that following Earthquake #1, billions in new capital will flow into Canada's P&C insurance industry. Insurers that survive the first earthquake will begin to recover.

PACICC has then modelled outcomes in the following aftershock scenario[3]:

a. Earthquake #1: $20 billion in insured losses in B.C.

b. Earthquake #2 occurs three months later, causing $20 billion in additional insured losses in B.C.

In this scenario, Canada's P&C insurance industry failed following two earthquakes that, in total, resulted in losses less than PACICC's estimated $45 billion Tipping Point. Multiple Member Insurers failed during the first earthquake. The required PACICC General Assessments were large, but the industry survived Earthquake #1. However, the second earthquake caused an additional cluster of failures among already weakened insurers, and the required PACICC General Assessments to address this second cluster led to systemic collapse.

**Finding**

Scientists expect aftershocks to happen following a large earthquake. Considering the impact of aftershocks to be material, this would, in all likelihood, significantly reduce the industry's estimated Tipping Point.

[4] This aftershock scenario was built for us by Natural Resources Canada.

## 2. What if PACICC issued a bond instead of immediately assessing Member Insurers following the earthquake?

PACICC was conceived and established as a (primarily) ex-post resolution funding mechanism. Today, our funding tools are as follows:

a. Compensation Fund ($65M approx.)

b. Standby Line of Credit ($250M)

c. General Assessment of Members (Maximum of $1.47B per year, as of 2026) a portion of which must be used to repay funds drawn on the LoC and replenish the Compensation Fund.

PACICC's MoO and By-Law permit the Corporation to issue debt. Such post-insolvency funding measures have recently become more common and have been used by insurance guarantee funds in the United States (notably in Louisiana and Florida). Following a series of hurricanes in those states, their insurance guarantee funds faced a less severe version of PACICC's worst-case earthquake scenario. Multiple insurer failures required Assessments on surviving insurers that could have created systemic risk. Both States addressed their liquidity and timing challenges by borrowing the required funds from private investors in the bond market, rather than immediately assessing surviving insurers for amounts that would have exceeded their practical capacity.

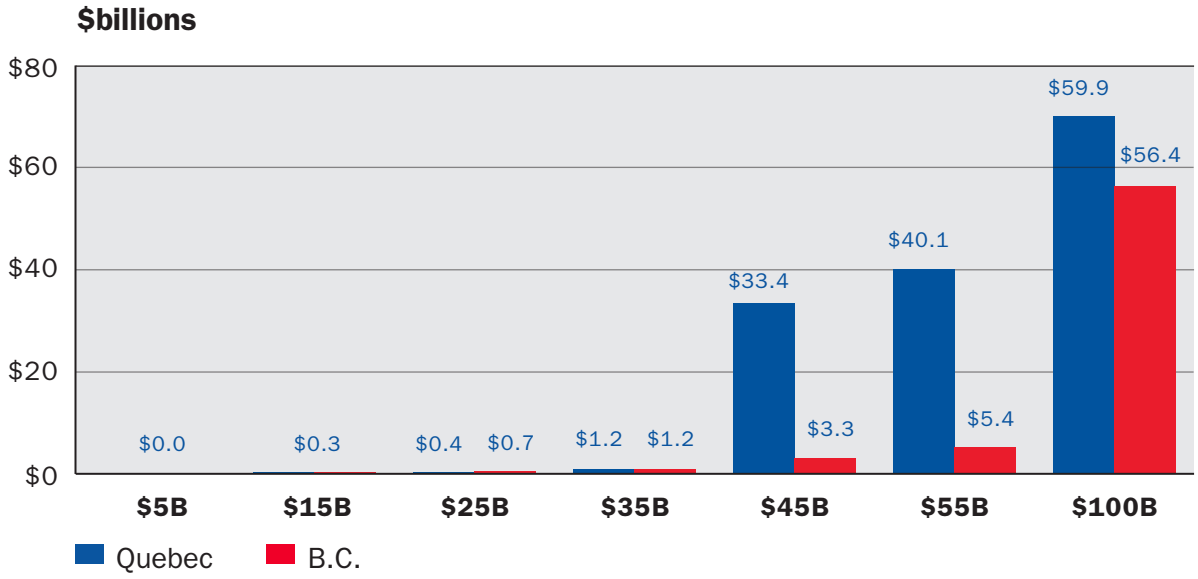
In October 2024, PACICC successfully secured credit ratings from two leading bond rating agencies. These ratings are private and cannot be publicly disclosed; however, both are in the "high investment-grade" category. This indicates that PACICC might be able to structure and successfully market a bond issue to reduce systemic risk following a major earthquake. If PACICC were able to issue a substantial bond on behalf of the industry – repayable over a longer period – the Tipping Point threshold could be increased.

There is clearly some limit to the amount that PACICC could expect to raise as a first-time issuer in Canada. For example, in May 2026, Alphabet Inc.'s C$8.5 billion (approx. US$6.2 billion) four-part bond sale was the largest first-time bond issue (debut deal) in Canadian history[4]. For the purposes of modelling, we have assumed that this amount would be the maximum that PACICC would be able to raise.

[5] https://www.theglobeandmail.com/business/article-behind-alphabets-record-breaking-canadian-bond-deal/

It is also important to flag that there remain some issues to be resolved regarding how surviving Member Insurers would need to account for their share of the outstanding debt obligation. Work on this is now underway, and there do appear to be workable scenarios where any contingent liability could be legitimately booked as a Note in their IFRS 17 statements rather than as an explicit liability on the balance sheet of each insurer.

**Figure 7 – PACICC Model - B.C. & Quebec**
**Required Assessments on PACICC Members**




PACICC Assessments are calculated as: outstanding catastrophic claims + outstanding non-catastrophic claims + return of premiums paid in advance by policyholders
Source: PACICC

**Finding**

Using the Alphabet transaction's $8 billion as the absolute ceiling for a first-time issuer in Canada, and since PACICC's Assessment requirements are below this maximum amount in B.C., it is conceivable that PACICC could issue a bond sufficient to raise the Tipping Point in B.C. past $55 billion.

There is no realistic prospect of PACICC being able to borrow enough to increase the Tipping Point in Quebec from the current estimate of $45 billion.

## 3. Which assumptions made in the Systemic Risk Model have the largest impact on the Tipping Point?

PACICC has deliberately made all the assumptions in its Systemic Risk Model as transparent as possible. Model risk is very real, and it is important to understand which of the many assumptions would, if changed, meaningfully alter the Tipping Point estimate.

Before discussing the list of assumptions that we have identified as critical, we need to flag one central assumption that we know is wrong. The entire industry and all of our regulatory partners are trusting the major earthquake models. They are sophisticated models grounded in science and are always improving. However, they will be wrong. The obvious risk is that they are wrong on the wrong side. For this reason, it is our firm view that any threshold for a federal backstop should be lower, rather than higher. Our Tipping Point thresholds should also be seen in that context.

### *Critical Assumption #1: The breakdown of losses between Commercial and Personal lines insurers.*

The assumptions for loss mix used in this version of the Model differ significantly from those used in previous PACICC estimates. Feedback from Member Insurers, Reinsurers, Reinsurance Brokers and Modelling Companies was that using the previous estimates would inappropriately over-allocate claims to Personal lines insurers and under-allocate claims to Commercial insurers. We are grateful for the assistance of several major insurers, which shared their own loss mix assumptions in confidence to help to improve our own modelling assumptions.

PACICC tested different assumptions to spread insured losses. These changes materially impact which insurers become distressed and which insurers fail. This matters very much to the final Tipping Point estimates.

**Finding**

The direction of the change proved to be different in B.C. than in Quebec. In B.C., many Commercial insurers in the market are part of international insurance groups. The market in B.C. is also much less concentrated than in Quebec. Further increasing the allocation of losses to Commercial insurers in B.C. increases the Tipping Point.

In contrast, the Quebec Commercial insurance market is very concentrated, with four domestic insurers holding large market shares. Increasing the share of Commercial claims in Quebec decreases the Tipping Point.

### *Critical Assumption #2: The spread of losses across insurance companies*

This is likely the most problematic assumption within the PACICC Model. Our Model assumes that losses are evenly distributed according to market shares in the province. In the real world, this has never happened! The spread of losses across insurers is a result of many things, including underwriting skill, risk concentration management and pure luck. Our considered view is that the allocation of losses by market share is likely conservative. Those companies that provide the most insurance are accepting earthquake risk and should therefore be the most prepared for the event. However, scenarios where some insurers have greater losses than their market share, and others have less, might yield materially different outcomes.

**Finding**

In preparing this version of the Model, PACICC tested the spreading of losses across insurers, based on the Total Insured Value figures provided in their earthquake filings. This did not materially impact the Tipping Point estimates provided above. The companies with the largest market shares generally reported the highest Total Insured Value numbers.

Future iterations of our Model will test different assumptions to spread losses across insurance companies, using more sophisticated methodologies. The limits to our current Model are another good reason for biasing the establishment of any backstop threshold to the low side.

### *Critical Assumption #3: The amount of reinsurance and capital available at each company*

In 2025, Member insurers and regulators approved an amendment to PACICC's By-Law. PACICC now requires all Members to submit earthquake loss exposure data and related reinsurance information. This has significantly improved the accuracy of the Tipping Point estimate. However, regulatory filings require Member Insurers to demonstrate preparedness for a one-in-500 year earthquake. This differs from PACICC's central question: *How large an earthquake are insurers actually prepared to withstand?*

Analysis of our Member Insurer earthquake filings indicates that many insurers report a "plug-in number" in their formal filings. This suggests that some insurers

may maintain reinsurance coverage beyond what is disclosed to regulators, in order to meet the one-in-500 year event requirement. As a result, the upper limits of reinsurance programs may exceed the $37.5 billion in catastrophic reinsurance capacity assumed in PACICC's Systemic Risk Model.

PACICC tested the impact of increasing available reinsurance from $37.5 billion to $50 billion (a 30% increase) on the Tipping Point estimates. The results showed no change. While this may appear counterintuitive, the Model does not automatically designate distressed insurers as failures. Instead, PACICC staff conduct a qualitative analysis of each distressed insurer. This process appears to insulate the Tipping Point analysis from this potential source of error. Why? It is likely that the insurers that buy higher levels of reinsurance already have stronger balance sheets, or are part of a group that offers greater reinsurance and capital capacity.

**Finding**

Reflecting additional reinsurance does impact the Model's outcomes. Increasing reinsurance reduces the estimated capital injections required to restore distressed insurers' MCT ratios to 150%. However, it does not alter the estimated Tipping Point in either B.C. or Quebec.

### *Critical Assumption #4: The decision made by regulators to put the Member into wind-up using WURA*

Under the Canadian regulatory system, prudential regulators decide when they have lost confidence that an insurance company remains a viable going concern. PACICC is a risk-accepting enterprise with only limited input into regulators' decisions.

The Systemic Risk Model assumes a significant degree of regulatory forbearance. It assumes that, following an earthquake, insurers will be allowed to operate at levels significantly below the current status quo. The Model also assumes that regulators will reduce the current regulatory minimum MCT score from 150% to below 100% if the distressed insurer can demonstrate the ability to quickly access additional capital.

**Finding**

If regulators were to act with less leniency, this would lower the estimated Tipping Point. If regulators were to allow insurers to temporarily report negative MCT scores, this could increase the estimated Tipping Point.

## 4. Could a government-industry partnership eliminate the Tipping Point?

As discussed earlier, most modern economies have recognized that governments play an important role in ensuring that their nation can recover from natural catastrophes. Their solutions are all different, reflecting different risk environments, market structures and societal expectations around risk transfer and risk sharing. Canada is a rare case of a major, developed economy with significant peak and secondary perils, but with no structured public-private partnerships to share risk above certain thresholds of loss. Consequently, consumers are paying the full cost for these risks…and, as we have illustrated in the previous sections, there is a "Tipping Point" beyond which the private market system will fail.

The Insurance Bureau of Canada (IBC) has developed a potential cost-sharing model for Canada to mitigate the risk from our peak peril – earthquake. It has proposed a framework based on the *United States Terrorism Risk Insurance Act (TRIA)*. PACICC has modelled alternative outcomes at varying event thresholds, assuming some version of a government/industry cost-sharing program based on this framework.

### *How TRIA works*

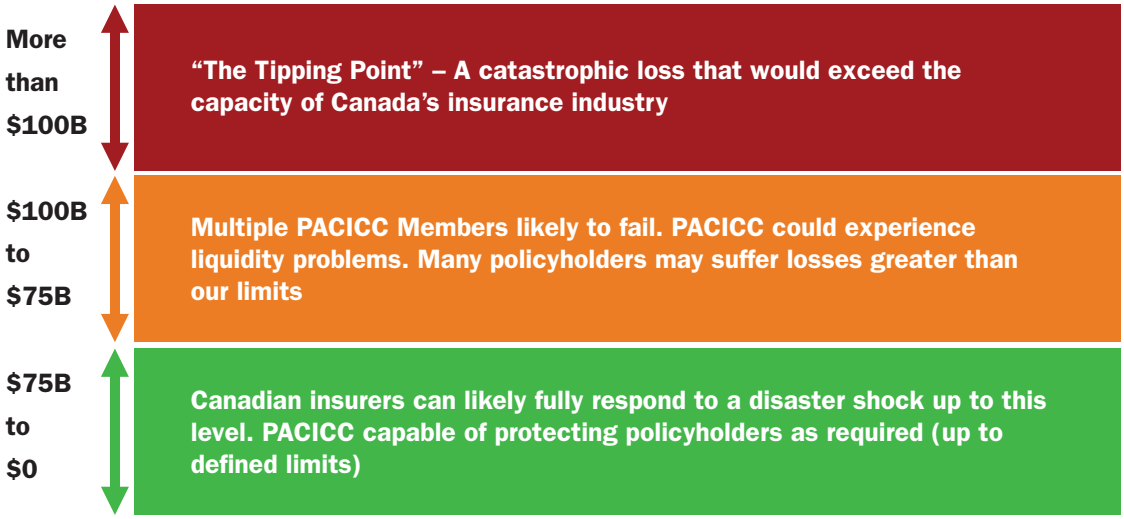
In the aftermath of a terrorist attack with losses above a defined threshold, private insurers would pay claims based on the existing policies (which include coverage for terrorism-related losses). Insurers would then approach the Treasury for partial reimbursement. For reimbursements to occur under *TRIA*, the U.S. Secretary of the Treasury must certify the attack, including that the single attack caused more than $5 million in losses and that aggregate annual terrorism losses exceed $200M. After these industry-wide thresholds are met, each insurer would be responsible for a deductible equal to 20% of its premiums on *TRIA*-eligible lines of insurance. The Treasury would then reimburse the insurers for 80% of their losses from the terrorist attack, above this deductible. The maximum available from the U.S. Treasury would be $100B. It is important to note that there is a "recoupment" element to the design of this program. Industry would repay all funds received over a period of years, in the future (with a mark-up). This last point is central to the design framework – the program is structured to be funded "ex post" rather than "ex ante."

PACICC has modelled the impact of such a cost-sharing program on our Tipping Point thresholds in British Columbia and Quebec. Specifically, we modelled the impact of a cost-sharing program where:

- The trigger threshold for any funding from the Federal Government ranged from a $25B insured loss event to a $45 billion insured loss event (in either Quebec or B.C.)
- Any losses below that trigger threshold are the direct responsibility of each individual insurer. Insurers must use reinsurance or their own capital to pay for the claims incurred from the quake event.
- Any losses above the trigger threshold are eligible for cost-sharing, with the Government of Canada paying 80%. Insurers remain responsible for 20% of claims above this level.

High-level modeled results can be seen in Figure 8 below.

**Figure 8 – PACICC Systemic Risk Model – Favourable Impact of a Cost-Sharing Mechanism**




Source: PACICC

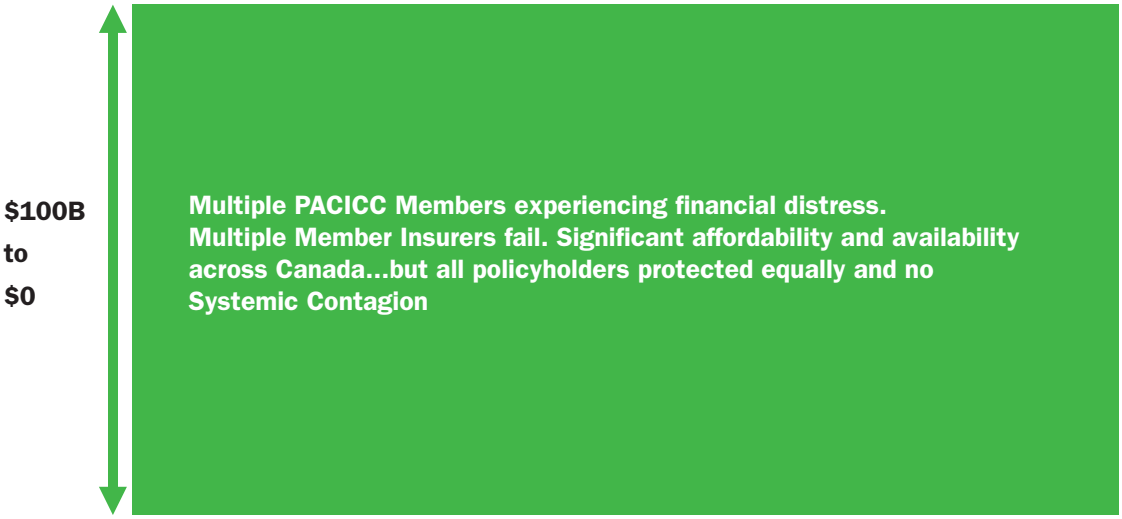
**Finding**

The key finding is that, for such a program to be effective, the threshold for government involvement must be set below the Tipping Point. If the Trigger is set below the Tipping Point, the program successfully raises the systemic risk threshold in either Region. The program has zero impact if the Trigger is set above the Tipping Point.

Another important insight is that while such a program makes the Tipping Point much higher, it does not eliminate it entirely. If insurers are still allowed to fail (when their 20% share of losses overwhelms their combined capital and reinsurance), then the Tipping Point moves upward – to somewhere in the $100B range. However, once insurers do fail and policyholders are at risk of "undue" loss, then PACICC is required to assess surviving Member Insurers. At some level of losses, the PACICC General Assessments would still trigger contagion. Thus, while the Tipping Point rises, systemic risk is not entirely mitigated.

One way to eliminate contagion risk at this new, higher threshold would be to allow PACICC (or the Estates of the failed insurers) to also access the federal cost-sharing program to pay the legitimate claims of policyholders at the failed insurer. In the interests of fairness and equity to the policyholders of failed insurers, such claims should likely be paid up to policy limits, rather than be held to PACICC benefit limits. Figure 9 (below) shows that such an added design element to the cost-sharing framework would entirely eliminate systemic risk after a major earthquake event. While it would not fully solve the systemic challenge Canada would face regarding availability and affordability of insurance after such a major earthquake event, government measures to address this issue would be easier to implement in partnership with an industry that had successfully withstood such a major, adverse event.

## Figure 9 – PACICC Systemic Risk Model – Impact of a Cost Sharing Mechanism if PACICC has access to the Backstop




Source: PACICC

# Non-earthquake risks that could cause insurers to reach the Tipping Point

Fortunately, Canadians – and the insurance industry – have never experienced a disaster causing catastrophic loss and damage at the scale imagined in this paper. PACICC's consultation with the scientific and insurance communities confirms that relatively few perils could produce the level of catastrophic damage assumed in our Model. While such events are highly unlikely, they remain distinctly possible and would have severe adverse impacts on Canada – with the potential to overwhelm the capacity of the Canadian P&C insurance industry to respond.

### *Asteroid strike on Toronto or another urban centre*

*Meteoroids* are small particles or fragments of comets or asteroids, typically less than a metre wide. An estimated 15,000 tonnes of meteoroids enter the Earth's atmosphere each year. While most of this material burns up and appears as meteors, pieces of larger *meteoroids* (greater than 10 cm in diameter) may survive to reach the Earth's surface. These are called *meteorites*. Property insurance covers damage from falling objects, including claims arising from meteorites.

*Asteroids* are larger rocky bodies with diameters exceeding 30 metres. *Comets* are of similar size but are composed of ice mixed with rock. In 1908, a small asteroid or comet exploded over Siberia, knocking down 80 million trees over an area of 2,000 square kilometres. There is a five to 10 percent chance over the next 50 years that the planet will experience another asteroid or comet strike comparable to the 1908 event. Because almost 70 percent of the Earth's surface is covered by oceans, an asteroid or comet is most likely to strike water, potentially generating a tsunami that would damage coastal communities. If, however, it was to strike land and directly hit a city, the devastation would exceed anything previously experienced. A RMS model of a small asteroid strike or atmospheric explosion (similar to the 1908 event) in New York City estimated more than $1 trillion in damage.

The value of insured property in Toronto and other large urban areas in Canada is several hundred billion dollars. Although an asteroid strike on a city is extremely unlikely, such an event would almost certainly generate damage claims far beyond the ability of Canadian P&C insurers to cover.

### *Extreme space weather*

*Solar storms* can disrupt communications satellites, weather monitoring systems and electrical transmission lines, and can damage pipelines and spacecraft. They can also force the rerouting of air traffic to avoid increased radiation exposure in polar regions. For example, in 1989, a geomagnetic storm tripped circuit breakers on Hydro-Quebec's power grid, causing a 12-hour blackout that affected 5 million people and resulted in more than $2 billion in damages. Some satellites lost control for several hours, and shortwave radio signals were disrupted.

Society has become increasingly dependent on sensitive electrical and electronic equipment. Research aimed at understanding and managing the risks associated with the next solar superstorm, such as the 1859 Carrington Event, has been ongoing for about a decade, but the implications for society – and the potential impact on the insurance industry – are still emerging. The impact of an extreme space weather event on the Canadian insurance industry is unknown, but it could plausibly generate several tens of billions of dollars in claims, potentially exceeding the industry's financial capacity.

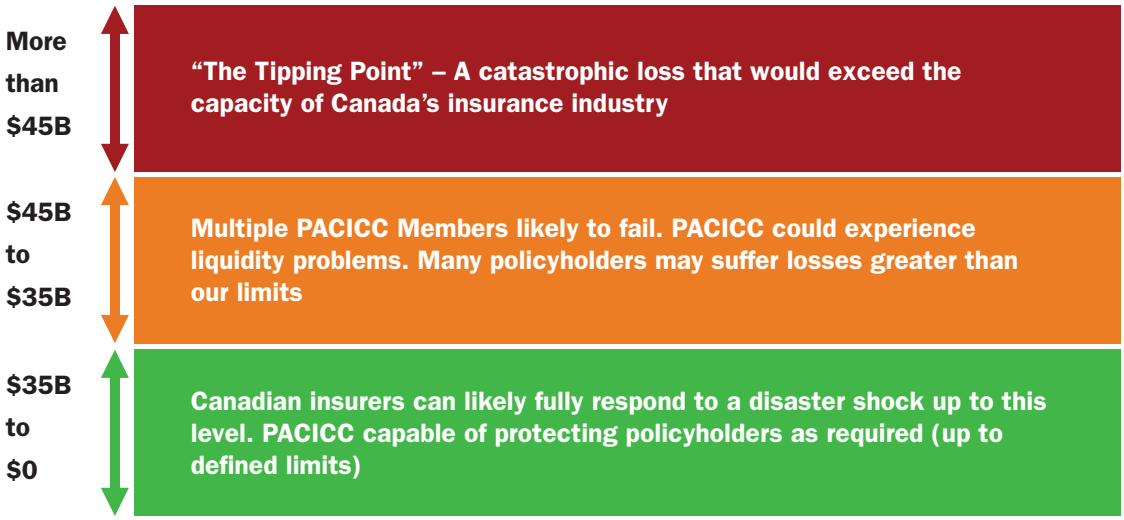
## Key Observations

This paper makes clear that, despite strong regulation and the best efforts of highly capitalized and well-resourced private insurers to anticipate a very large catastrophic event (such as a major earthquake), there are clear and definable limits to the financial capacity of Canada's private P&C insurance system. A compelling case is made for the establishment of a federal backstop mechanism to protect Canadians from the impact of a severe "tail-risk" event.

The following are key observations and recommendations from this paper:

1. Canada's P&C insurance system is prepared for a mega-catastrophic event that results in claims up to $35 billion, with minimal impact on solvency
2. This level of preparedness is almost seven-times larger than the largest natural disaster experienced in Canadian insurance history
3. Canadian scientists and insurance industry experts expect that a catastrophic earthquake will occur in B.C. or Eastern Canada, and an event causing the levels of damage modelled in this paper is likely to occur in Canada someday
4. An event that caused insured losses between $35 billion and $45 billion would cause multiple insurers to fail. The insurance system would be strained, but should be able to withstand such an event
5. A catastrophic event with insured losses greater than $45 billion would overwhelm Canada's P&C insurance industry – this is the Tipping Point (See Figure 10)
6. To recover from a catastrophic earthquake, Canada needs a government-insurance industry cost sharing program. We cannot control the timing of a quake. However, the timing for implementation of such a program is entirely in human hands. It is past time for this to be accomplished.

## Figure 10 – PACICC Systemic Risk Model – 2026 Update of The "Tipping Point"




Source: PACICC

a. PACICC introduces a claims shock of $25 billion, $35 billion, $45 billion, $55 billion and $100 billion in new insurance claims caused by a catastrophic event in B.C. or Quebec

b. The insured catastrophe claims are distributed across the lines of insurance as follows:

**Table 3 – PACICC'S Allocation of Earthquake Claims, by Line of Business**

| Insured losses in B.C | B.C. Personal Property | B.C. Auto | B.C. Commercial Property |
|---|---|---|---|
| $25B | 25.0% | 0.4% | 74.6% |
| $35B | 27.0% | 0.4% | 72.6% |
| $45B | 28.0% | 0.4% | 71.6% |
| $55B | 28.0% | 0.4% | 71.6% |
| $100B | 29.0% | 0.4% | 70.6% |

| Insured losses in Québec | Quebec Personal Property | QuebecAuto | Quebec Commercial Property |
|---|---|---|---|
| $25B | 25.0% | 0.4% | 74.6% |
| $35B | 27.0% | 0.4% | 72.6% |
| $45B | 25.0% | 0.4% | 74.6% |
| $55B | 25.0% | 0.4% | 74.6% |
| $100B | 23.0% | 0.4% | 76.6% |

Source: PACICC

c. Catastrophic losses are distributed across insurers, based on market share by line of business, either in B.C. or in Quebec, as appropriate.

d. PACICC assumes that all reinsurance contracts will be honoured and cash will flow into Canada promptly following a catastrophe, right up to the point that the primary insurer is solvent. The rationale for this assumption is that the global reinsurance industry has a demonstrated history of paying claims following mega-catastrophes outside of Canada. Assumption 14(b) notes that once the primary insurer fails, PACICC's best estimate recognizes that only 80% of unregistered reinsurance is expected to be collected.

e. Following a large catastrophic loss, impacted insurers will use all of their available financial resources to pay earthquake claims in the following order:

- **First: Dedicated earthquake reserves –** On the balance sheet of the failed insurer
- **Second: Other (non-Cat) Reinsurance –** The percentage of non-Cat reinsurance disclosed by the insurer in its B-9 earthquake regulatory filing, divided by the insurer's PML, multiplied by 1.15. This recognizes that insurers hold significant reinsurance as part of their normal risk management framework. This reinsurance has limits, and it will run out at 15% above the company's PML
- **Third: Catastrophe Reinsurance Retention –** Catastrophe reinsurance contracts require the primary insurer to pay a portion of the loss, such as a deductible
- **Fourth: Catastrophe Reinsurance –** Remaining catastrophe losses above the retention are paid using catastrophe reinsurance. The amount of catastrophe reinsurance assigned to each insurer (or insurance group) was provided directly to PACICC
- **Fifth: Excess Capital –** Any claims above the catastrophe reinsurance remain with the company. If modelled losses exceed the amount of reinsurance available, then these excess claims must be paid by the insurer directly out of the company's capital. This impacts the insurer's MCT score.

f. The insurer must recognize all retained catastrophe insurance claims by setting up a margin for liability for incurred claims equal to 1.10 times the claim calculated Margin for liability for incurred claims = $1.10 \times \sum$class of insurance risk factor × (best estimate liability for incurred claims for insurance contracts issued less the best estimate asset for incurred claims for reinsurance contracts held).

g. In a normal situation, a Canadian prudential supervisor would intervene with any insurer that reports a MCT below its Internal Capital Target. An insurer with a score below 150% could be considered insolvent. However, we anticipate that, following a catastrophic event, Canadian regulators would exercise significant "regulatory forbearance." Thus, in our Model, any insurer that reports a MCT of less than 100% following a catastrophic event is deemed to be "distressed," but is allowed to continue operations.

h. Our Model assumes capital and reinsurance flows in from related companies regulated in Canada, which would allow some distressed insurers to increase their MCT score back above 100%. In our Model, these transfers "save" the distressed insurer, unless and until the capital inflow required exceeds the total capital and reinsurance available at the related entities. If the required capital exceeds this amount, the distressed insurer and all related entities are deemed insolvent.

i. Following a catastrophe, regulators will permit any company with MCT scores above 100% to keep operating, if the company can access extra reinsurance or capital from a related Canadian-regulated entity, or if the necessary capital injection for a branch insurer is less than 10% of the parent company's global capital base. The model assumes that funds will flow into Canada, allowing the insurer to continue operations.

j. A "branch insurer" operates in Canada as a licensed company but retains ties to a parent insurer in another country. When establishing a branch in Canada, the parent company must pledge 10% of its total capital base to the Canadian operation. Likely, a distressed branch would not fail if its foreign parent had enough capital. However, our Model recognizes there is a practical limit beyond which foreign parents would cease to provide further capital to pay PACICC General Assessments to fund policyholder compensation after the failure of another insurer.

k. If the post-catastrophe MCT is below 100% and PACICC cannot identify sources of additional reinsurance or capital available at a related insurer regulated in Canada, or by a foreign parent (as defined above), the distressed insurer is deemed to have failed, and the regulator will seek to liquidate the insurer under *WURA*.

l. When an insurer fails, the Court freezes the assets of the failed insurer.

m. If a Member Insurer fails, PACICC will seek to fulfil its mission to protect policyholders from undue financial loss. PACICC will not pull its "Circuit Breaker."

n. The resulting PACICC General Assessment on surviving insurers using the methodology in its MoO. PACICC's "best estimate" of the required General Assessment will be calculated to be the sum of:

a. **Rebate for Premiums paid in Advance** is calculated to be: Liability for Remaining Coverage (page 20.14, column (02), row 629) + Loss Component (page 20.14, column (06), row 629). LRC is reduced to 25% if Commercial Direct Premiums Written are 80% of the insurer's total business. If LRC is negative, rebate is zero.

**+**

b. **Non-Earthquake Claims:** are the sum of: [Liabilities for incurred claims not under PPA (page 20.14, column (10), row 629) + Expected Present Value of Future Cash Flows (page 20.14, column (12), row 629) + Risk Adjustment (page 20.14, column (16), row 629)]*110%[6] LESS: 100% of Registered Reinsurance Assets (page 70.50, column (79), row 29) + 80% of Unregistered Reinsurance Assets (page 70.60, column (79), row 29).

**+**

c. **Earthquake Claims:** All earthquake claims that are not covered by reinsurance treaties.

o. PACICC would assess Member Insurers for any administrative and legal costs required to settle the estate of the failed insurer. In past insolvencies, these costs have been high. This Model assumes a flat 15% surcharge on the PACICC best estimate to cover these expenses.

p. PACICC Member Insurers would be required to recognize their share of the PACICC General Assessment under current International Financial Reporting Standards.

q. Regulators and policymakers do not change the MCT following the catastrophic event.

r. Estimates of PACICC's cash flow needs follow this claims development curve:

[6] PACICC's experience in managing insolvencies suggests that claims settlement costs would be higher than average, as the Liquidator would likely pay a premium (relative to a going-concern) to settle claims as quickly as possible.

## Table 4 – Estimates of PACICC's cash flow needs follow this claims development curve

| Quarter following catastrophic event | % of claims that settle each quarter | % of unearned premium rebated each quarter | Share of PACICC expenses by quarter |
|---|---|---|---|
| 1 | 12.0% | 25% | 7.5% |
| 2 | 42.0% | 25% | 7.5% |
| 3 | 58.0% | 25% | 7.5% |
| 4 | 62.0% | 25% | 7.5% |
| 5 | 72.0% | | 3.0% |
| 6 | 78.0% | | 3.0% |
| 7 | 80.0% | | 3.0% |
| 8 | 82.0% | | 3.0% |
| 9 | 84.0% | | 3.0% |
| 10 | 86.0% | | 3.0% |
| 11 | 88.0% | | 2.0% |
| 12 | 90.0% | | 2.0% |
| 13 | 92.0% | | 2.0% |
| 14 | 94.0% | | 2.0% |
| 15 | 95.0% | | 2.0% |
| 16 | 96.0% | | 3.0% |
| 17 | 97.0% | | 3.0% |
| 18 | 97.5% | | 3.0% |
| 19 | 98.0% | | 3.0% |
| 20 | 98.5% | | 30.0% |

Source: PACICC

**Property and Casualty Insurance**
**Compensation Corporation**
80 Richmond Street Westt
Suite 607
Toronto, Ontario  M5H 2A4
Phone (416) 364-8677
Website: www.pacicc.ca
Linked-In: www.linkedin.com/company/pacicc-canada/
Twitter: www.twitter.com/PACICCcanada