AUTORITÉ DES MARCHÉS FINANCIERS

Earthquake Exposure Data Form Guide

Septembre 2023

Legal Deposit – Bibliothèque et Archives nationales du Québec, 2023

TABLE OF CONTENTS

1. APPLICATION

The Earthquake Exposure Data form (EQ form) applies to ALL property and casualty (P&C) insurers authorized to carry on activities in Quebec regardless of whether the company has earthquake exposure or not. The EQ form can be either completed on an individual insurer level or on a group level. Currency amounts should be filed in Canadian dollars.

New insurer should file the EQ form regardless of whether the insurer has earthquake exposure or not currently. The Autorité des marches financiers (the AMF)'s earthquake form is forward looking, an insurer needs to confirm it will have sufficient financial resources to cover its earthquake losses during the "exposure period being assessed" for the reporting year.

The software used to complete P&C's regulatory financial statements, which also includes an Earthquake Exposure Data Return, must be used to send us the earthquake data. The EQ form is presented in Appendix 2 of this guide for information only.

2. GENERAL INSTRUCTIONS

The following instructions are provided to assist insurers in clarifying filing requirements in selected fields. Hence instructions are not provided for every field in the EQ Form.

Contact Person

Contact person refers to the person to contact regarding any questions pertaining to the information submitted with this EQ form.

Group Filing

Client number

If the filing is done on a group level, one P&C insurer is responsible for filing the group's earthquake exposure data. Other insurers in the group are only required to provide in their EQ forms the contact person information and the client number of the insurer making the group filing.

List and Rationale

If the filing is done on a group level, the insurer that is submitting on behalf of the group must provide the rationale to support why a group level filing is appropriate and list all insurers (with their names and client numbers) included in the filing.

Category Describing the Company's[1] Exposure to Earthquake Risk

[1] If the filing is done on a group level, insurer refers to the group for the remainder of the EQ form.

Some sections of the EQ form do not apply to all insurers. Refer to options A, B and C to determine which category best describes the insurer's exposure to earthquake risk and complete applicable sections. Section 6 only applies to primary insurers and section 7 only applies to reinsurers. Insurers with both insurance contracts issued (direct) and reinsurance contracts issued (assumed) business should complete section 6. The amounts reported in section 2 should include both insurance contracts issued and reinsurance contracts issued business.

Section 2 – Elements of the Reserving Formula

The purpose of section 2 is to provide information to demonstrate that the capital adequacy requirements are met. To meet these requirements, the earthquake risk exposure, the probable maximum loss 500 (PML500) must be ≤ (Capital and surplus + Reinsurance coverage + Capital market financing + Earthquake reserves). In order to do so, here are some details regarding the filing approach:

Countrywide PML (PML500)

Countrywide PML refers to a dollar amount that includes adjustments for data quality, non-modeled exposures and model uncertainty as outlined in Guideline Sound Management and Measurement of Earthquake Exposure.

Capital and surplus

Capital and surplus correspond to a maximum of 10% of total equity for Canadian P&C insurers or worldwide capital and surplus in Canadian dollars for Canadian branches as recorded at the end of the most recent fiscal statements.

For Canadian branches, the exchange rate reported should be consistent with the currency of the insurer's home jurisdiction as reported on page 10.60 of the P&C return.

Renewal date for the catastrophe program

The entered date must be the date of the first day from which the reinsurance program in force will no longer be applicable when completing the EQ form.

Example:

For a filing date of the EQ form at May 31, 2023, in the event a P&C insurer expecting a growth of the earthquake exposure has a fiscal year-end at December 31 and the data at April 30, 2022 to estimate the PML500, The AMF expects the following:

- PML500 to be estimated at the fiscal year-end at December 31, 2023 by applying a factor to the PML500 to reflect the growth of the exposure between April 30, 2022 and December 31, 2023. All other factors considered in sections 4.1 to 4.3. of the EQ form must also be included in the PML500.
- The amount of recoverable reinsurance to be assessed according to the reinsurance contracts held in force at June 1st, 2023, i.e. the day immediately following the filing date of May 31st.
- The capital and surplus correspond to the maximum of 10% of total equity of this insurer at March 31, 2023, if available.
- The renewal date of the catastrophe program to be January 1, 2024 (if the reinsurance program for 2023 is in force from January 1 to December 31).

Section 2.2

Total reinsurance collectable

Total reinsurance collectable (coordinate 2204) should reconcile with the sum of catastrophe treaty collectable (coordinate 2110) and other reinsurance collectable (coordinate 2120) in section 2.1.

Section 3 – Model Selection

If one or more external models are used, specify the names and versions of the models used in section 3.1 and select Yes to indicate whether the models are operated by internal staff, reinsurance broker and/or others.

If an internal model is used, the insurer should indicate that it is run by internal staff (coordinate 3132) and provide a brief description of the insurer's internal estimation technique or model approach in section 3.2.

Section 4 – Non-modeled Perils and Model Adjustments

Section 4.1

For each of the perils listed,

- If the peril is included directly in the model output without post-model adjustment(s), then select Yes and summarize the underlying assumptions;
- If post-model adjustment(s) is made to the model output, then select Yes, provide the dollar amount for each peril included in the model and describe your assumptions or explain why the dollar amount cannot be quantified;
- If the peril has not been considered, then select No and provide an explanation.

Refer to the GLOSSORY OF PERILS OF SECTION 4.1 at the end of the document for definitions of the perils.

Section 4.3

If post-model adjustments are made to the model output for data quality or model deficiencies, provide the dollar impact on the PML estimate that results from these adjustments. If the insurer selects Yes to the line Other, provide a brief description in the space provided.

Section 6 – Model Results for Primary Insurer

Section 6.1

If data in this section includes post-model adjustments in section 4, the PMLs are expected to reconcile with those reported in section 2.

In general, the fire following PTIV is expected to be greater than or equal to the shake PTIV; if the shake PTIV is greater than the fire following PTIV provide a brief explanation in the comments field (coordinate 6190).

For subscription contracts, the reported PTIV should be the pro-rated share of the total insured value of the property being insured.

If participating on an excess layer, the reported PTIV should be the excess of the attachment point.

Section 6.3

Sum of PML500 from risks from insurance contracts issued (primary) and reinsurance contracts issued (assumed) is expected to reconcile with section 6.1 if data are recorded on the same basis for both sections.

Section 6.4

Provide the distribution of the level of geographic location detail that best describes how original PTIV data are recorded in the insurer's system. When more than one level of geographic location detail is applicable, the highest level of detail should be reported (i.e., each column should sum up to 100%).

Section 6.5

Provide the number of risk locations insured covered by region, property category, shake and fire following (either in the basic contract or by an endorsement).

Personal Property other than homeowners includes but not limited to tenants, rental dwelling, condominium, etc.

There are many ways to define and count risk locations. Regardless of the method used to count risk locations, once the insurer decides upon a methodology to count risk locations, ideally the insurer would continue to use the same counting methodology when completing future EQ forms.

Section 7 – Model Results for Reinsurer

In Section 7.1, if data in this section includes post-model adjustments in section 4, the PMLs are expected to reconcile with those reported in section 2.

3. APPENDIX 1 - GLOSSARY OF PERILS OF SECTION 4.1

Exposure growth

Exposure growth (if > 0) that could arise between the date on which the data were coded in the insurer's systems and the end of the relevant exposure period being assessed.

Business interruption

Coverage that pays for losses suffered by a company during the reconstruction of facilities following the interruption of business operations. These losses could be significant in the event of a major catastrophe.

Claims handling expenses

Expenses related to internal or external claims handling such as the costs for claims adjusters which could increase substantially in the event of a major catastrophe.

Adequacy of insurance to value

Possible underestimation of the insurer's exposure related to the inadequacy of the insured values compared to amounts payable, for instance, due to the undervalued rebuilding cost from insurers.

Guaranteed replacement cost

Coverage available through an endorsement that indemnifies according to the effective repair or rebuilding costs without considering the applicable amount of coverage. Generally, some conditions must be met for this coverage to be applicable. For instance, the amount of coverage must be 80% or 100% of the replacement value recognized by the insurer as well as the rebuilding must be made at the same location with materials of similar quality and within reasonable delays after the loss.

Debris removal

Coverage extension that compensates for the costs incurred for the debris removal and the site clean-up before the rebuilding in the event of a major catastrophe.

Increased seismicity after a large event

Increase in the risk of having subsequent seismic tremors following a major earthquake.

Blanket coverage

Coverage providing a unique and overall amount corresponding to the sum of the coverage amount for the building, detached private structure (outbuildings), contents and the additional living expenses. Some coverage may be limited or excluded in the event of an earthquake requiring the division of coverage amounts and some adjustments.

Coverage extensions (excluding debris removal)

Extensions providing coverage for specific additional risks in the event of an earthquake. They may encompass several coverages. Here are some examples:

- Repair or replacement cost for certain part of the property or the undamaged insured premises that must be removed or pulled out in order to repair the damage caused by an insured risk;
- Loss or damage caused to trees, shreds, outdoor plants and grass on the insured premises;
- Fees charged for the fire department intervention aiming to save and protect the insured goods against loss or damage;
- Loss or damage to food in a fridge or a freezer located on the insured premises.

Demand surge

Increase in the cost of repairs and services following the strong demand for construction materials and labor in the event of a major catastrophe.

Secondary uncertainty

Uncertainty associated with the conversion from the location specific estimate of ground motion to damage levels for the PML calculation. In general, it is automatically recognized in the model outputs.

Time dependency

Model parameter enabling the earthquake probability to depend upon the elapsed time after an historical event.

4. APPENDIX 2 – EARTHQUAKE EXPOSURE DATA FORM

100	English	

Return Name	Earthquake Exposure Data Form (see note 1)
Return Code	740

Insurer Name	200		
Reporting date (YYYY-MM-DD)	300		

Autorité des marchés financiers			
Contact Person:	1000		
Contact Telephone:	1020		
Contact Email Address:	1030		
Group Filing – If the filing is done on a group level and the insurer's earthquake exposure data is submitted by another insurer, specify the client number of this insurer and disregard the remainder of the form. (see note 1)			
Client number:	1031		
Group Filing – If the filing is done on a group level and the insurer is submitting on behalf of the group, list all insurers (with the client number) included in this filing and provide the rationale to support why a group level filing is appropriate.			
List:	1032		
Rationale:	1033		

Please select the ONE category that best describes the insurer's exposure to earthquake risk. (see note 2)

		(Yes/No)	
A. No exposure to earthquake risk.	1040		
If the answer is A, please disregard the remainder of the form.			
		(Yes/No)	
B. The insurer has determined that there is non-material exposure to earthquake risk and that it will not be using an earthquake model to estimate its earthquake exposure. The insurer will instead use the standard approach formula outlined in the Capital Adequacy Requirements Guideline.	1050		
If the answer is B, please complete sections 1 and 2.			
		(Yes/No)	
C. For all other insurers, please complete sections 2-5, and section 6 or 7 as applicable.	1060		

1 .The Earthquake Exposure Data Form can either be completed on an individual insurer level or a group level. Insurer refers to Quebec or federally regulated property and casualty (P&C) insurer including a foreign P&C insurer operating in Canada on a branch basis or Canadian incorporated P&C insurer.

2 If the filing is done on a group level, "insurer" refers to the group for the remainder of the form.

Section 1 - Materiality (mandatory if category of exposure = B)

1.1 Describe how materiality was determined for earthquake risk.

	1100	

1.2 Please complete the following table:

Date of Data (YYYY-MM-DD)	1200			
Region		Property Total Insured Value for Earthquake Exposure (PTIV) ('000s)		Applicable Policyholder Deductibles ('000s)
East Canada	1210		1211	
West Canada	1220		1221	

Section 2 - Elements of the Reserving Formula (see note 3)

2.1 Complete the following table based on the requirements in the Capital Adequacy Requirements Guideline.

('000s)		Country-Wide PML
PML 500 (Total) (1) (see note 4)	2100	
Catastrophe treaty collectable (2) (see note 5)	2110	
Other reinsurance collectable (3) (see note 5)	2120	
Net earthquake risk exposure (1)-(2)-(3) (see note 6)	2130	
Capital & surplus (see note 7)	2140	
Exchange rate applied to capital & surplus (Canadian branches only)	2145	
Capital market financing	2150	
Earthquake premium reserve (EPR)	2160	
Earthquake reserve component (ERC)	2170	
Earthquake reserves (EPR+ERC)	2180	
Renewal date for catastrophe program (YYYY-MM-JJ)	2188	
Provide explanation if there is a material change to PML (i.e. change from prior year PML is greater than +/- 5%).	2190	

2.2 Divide the insurer's reinsurance (retrocession) collectable used to cover the Country-Wide PML for the year into the following categories:

		Reinsurance collectable ('000s)
Registered (non-Lloyd's)	2200	
Registered (Lloyd's)	2201	
Non-registered affiliates	2202	
Other non-registered	2203	
Total reinsurance collectable	2204	

3 The terms used in this section are same as those defined in the Capital Adequacy Requirements Guideline.

4 For category C: Country-wide PML500 should be calculated based on the requirements in the Capital Adequacy Requirements Guideline. That is Box 2100 = [(East Canada PML500 [Box 6137])^1.5 + (West Canada PML500 [Box 6167])^1.5] ^(1/1.5).

5 Catastrophe treaty collectable and other reinsurance collectable are the amounts of reinsurance collectable for a loss of the size of the PML, net of retention.

6 To meet the capital adequacy requirements, the following must hold: Net earthquake risk exposure ≤ (Capital & surplus + Capital market financing + Earthquake reserve component).

7 Capital & surplus corresponds to a maximum of 10% of total capital and surplus for Canadian P&C insurers or worldwide capital and surplus in Canadian dollars for Canadian branches. Please refer to the Capital Adequacy Requirements Guideline for more details.

Section 3 - Model Selection

3.1 If the insurer faces material earthquake risk, it is required to use a model (external or internal) to determine its earthquake exposure. Complete the following table, as applicable, on the models used by the insurer.

						Operated By (Yes/No)				
Provider		Model name		Model version		Internal Staff		Outsourced - Reinsurance Broker		Outsourced - Others
RMS	3100		3101		3102		3103		3104	
Verisk (formerly AIR)	3110		3111		3112		3113		3114	
CoreLogic (formerly EQE)	3120		3121		3122		3123		3124	
Other	3140		3141		3142		3143		3144	
Internal Model (please describe in 3.2)					3132					
Please briefly describe how the model(s) above are used to determine the PML reported in section 2. (see note 8)	3150									

3.2 Internal models can vary significantly in sophistication (and simple approaches may be appropriate for some insurers). Please briefly describe the insurer's internal estimation technique or model approach.

	3200	

8 If more than one model is listed in Table 3.1, explain how each model is being considered in deriving the PML reported in Section 2.

Section 4 - Non-modelled Perils and Model Adjustments

4.1 Indicate by Yes/No whether the following risks are considered in the estimated PML included in this form. If the answer is Yes, describe the approach to take them into account, specify the assumptions used (e.g. loading factors) and indicate the corresponding additional losses. These considerations could have been made to the data, in some model parameters or by the appliance of a loading factor after modeling. If the answer is No (i.e. the risk has not been considered), explain the reason.

Risk		Included in PML (Yes/No)		Description		Dollar Amount ('000s) (see note 11)
Exposure growth (see note 9)	4100		4101		4150	
Business interruption	4102		4103		4151	
Claims handling expenses	4104		4105		4152	
Adequacy of insurance to value	4106		4107		4153	
Guaranteed replacement cost	4108		4109		4154	
Debris removal	4110		4111		4155	
Increased seismicity after a large event	4112		4113		4156	
Blanket coverage	4114		4115		4157	
Coverage extensions (excl. debris removal)	4116		4117		4158	
Demand surge	4118		4119		4159	
Other	4120		4121		4160	

4.2 Supplemental perils and model options:

		Included in PML (Yes/No)		Dollar Amount ('000s) (see note 11)
Tsunami	4200		4250	
Secondary uncertainty	4210		4260	
Time dependency (see note 10)	4220		4270	

4.3 Other adjustments made to the output from the model in section 3 to derive the PML500 used in section 2:

				Dollar Amount ('000s) (see note 11)		
		(Yes/No)		East		West
Adjustments for exposure data quality	4300		4301		4302	
Adjustments for model deficiencies - severity	4310		4311		4312	
Adjustments for model deficiencies - frequency	4320		4321		4322	
Other*	4330		4331		4332	
* Please briefly describe other adjustments in section 4.3.	4390					

9 Please provide the date(s) currently in your underlying systems ("as of" date) and future "as of" date(s) used to determine the period of projection.

10 Time dependency: select Yes if the probability distribution of the earthquake event in the model depends on the time since a historical event.

11 Amounts are required when a loading factor after modeling is being applied.

Section 5 - Data Quality Control			
5.1 Describe the insurer's quality control processes around data collection and entry including materiality standards.			
	5100		
5.2 Describe the insurer's review processes independent of those responsible for data collection and data quality (e.g. internal or external review).			
	5200		

Section 6 - Model Results for Primary Insurer (see note 12)

6.1 Complete the following table with the range of modelled output:

		(Yes/No)
Does the data below include the post model adjustments in section 4?	6100	

('000s)		Personal Property						Commercial Property						Auto		
		Shake		Fire Following		Other		Shake		Fire Following		Other		All Perils		Total
		(1)		(2)		(3)		(4)		(5)		(6)		(7)		
East Canada																
PTIV	6110		6111		6112		6113		6114		6115					
Applicable policyholder deductibles (linked to the PTIV)	6030		6031		6032											
PML500	6130		6131		6132		6133		6134		6135		6136		6137	
West Canada																
PTIV	6140		6141		6142		6143		6144		6145					
Applicable policyholder deductibles (linked to the PTIV)	6060		6061		6062											
PML500	6160		6161		6162		6163		6164		6165		6166		6167	
Worldwide (see note 13)																
PTIV	6170		6171		6172		6173		6174		6175					
Applicable policyholder deductibles (linked to the PTIV)	6080		6081		6082											
PML500	6180		6181		6182		6183		6184		6185		6186		6187	
Comments or additional details regarding the answers of this section	6190															

6.2 Complete the following table with regard to Shake PTIV:

		Top 3 forward sortation areas (FSA) in terms of Shake PTIV (e.g., V6E) (see note 14)		Shake PTIV ('000s)
East Canada	6200		6201	
	6210		6211	
	6220		6221	
West Canada	6240		6241	
	6250		6251	
	6260		6261	

6.3 Divide the PML500 into the following categories:

		(Yes/No)
Does the data below include the post model adjustments in section 4?	6300	

('000s)		East		West		Worldwide
Risks from insurance contracts issued (Primary risks)	6310		6311		6312	
Risks from reinsurance contracts issued (Assumed risks)	6320		6321		6322	

6.4 Complete the following table with regard to the level of detail to which data is coded:

		% of PTIV		
		Personal Property		Commercial Property
Geographic coordinate system	6400		6401	
Exact street address	6410		6411	
6-digit postal code	6420		6421	
FSA	6430		6431	
Legal subdivision (LSD)	6440		6441	
Other	6450		6451	

6.5 Complete the following table with the number of risk locations to allow the calculation of the take-up rate:

		Number of risk locations written				
Quebec		Shake (see note 15)		Fire Following (see note 16)		Total (see note 17)
Personal Property - Homeowners	6500		6501		6502	
Personal Property other than homeowners	6503		6504		6505	
Commercial Property	6506		6507		6508	
British Columbia						
Personal Property - Homeowners	6509		6510		6511	

Personal Property other than homeowners	6512		6513		6514		
Commercial Property	6515		6516		6517		
Rest of Canada							
Personal Property - Homeowners	6518		6519		6520		
Personal Property other than homeowners	6521		6522		6523		
Commercial Property	6524		6525		6526		
Comments or additional details regarding the answers of this section	6527						

12 Model results are those presented to senior management, the Board or chief agent.

13 Worldwide PMLs should be based on exceedance probability curves based on worldwide exposure for Quebec or Canadian insurers or Canada wide PMLs should be based on Canada wide exposure for foreign insurers. An exceedance probability curve is a cumulative distribution showing the probablility that the losses in a year will exceed a certain amount.

14 A forward sortation area (FSA) is a geographical region in which all postal codes start with the same three characters.

15 Number of risk locations covered for shake.

16 Number of risk locations covered for fire following, either in the basic policy or by an endorsement.

17 Total number of risk locations corresponds to total number of risk locations insured.

Section 7 - Model Results for Reinsurer (see note 18)

7.1 Complete the following table with the range of modelled output:

		(Yes/No)
Does the data below include the post model adjustments in section 4?	7100	

('000s)		Excess of Loss				Proportional				Facultative				
		Catastrophe		Per Risk		Proportional		Other		XOL		Proportional		Total
		(1)		(2)		(3)		(4)		(5)		(6)		
East Canada														
Limit Provided	7110		7111		7112		7113		7114		7115		7116	
PML500	7130		7131		7132		7133		7134		7135		7136	
West Canada														
Limit Provided	7140		7141		7142		7143		7144		7145		7146	
PML500	7160		7161		7162		7163		7164		7165		7166	
Worldwide (see note 19)														
Limit Provided	7170		7171		7172		7173		7174		7175		7176	
PML500	7180		7181		7182		7183		7184		7185		7186	

7.2 Complete the following table with regard to Average Annual Loss (AAL) for all lines and all perils combined as produced by the insurer's model: (see note 20)

		(Yes/No)
Does the data below include the post model adjustments in section 4?	7200	

		Top 3 cedents in terms of AAL		AAL ('000s)
	7210		7211	
	7220		7221	
	7230		7231	
		Overall AAL	7241	

7.3 Complete the following table with regard to the insurer's catastrophe-excess of loss coverage (Cat XOL).

		Top 3 cedents in terms of Cat XOL		Limit Provided
	7310		7311	
	7320		7321	
	7330		7331	
		Overall catastrophe excess of loss	7341	

18 Model results are those presented to senior management, the Board or chief agent.

19 Worldwide PMLs should be based on exceedance probability curves based on worldwide exposure for Canadian insurers or Canada wide PMLs should be based on Canada wide exposure for foreign insurers. These PMLs should be reported to senior management and the Board or chief agent.

20 Average Annual Loss (AAL) is the pure premium quantified by aggregate exceedance probability curve. Aggregate exceedance probability curve is a cumulative distribution showing the probability that aggregate losses in a year will exceed a certain amount.