Avoid Seismic Financial Risk with a USRC Transaction Rating

Part 1—How Problematic PMLs Affect Us All

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For those not yet aware, the **USRC Transaction Rating** is designed to provide owners and the financial industry with earthquake building performance information that can be used for financial due diligence and real estate transaction purposes. A Transaction Rating consists of one to three stars awarded in each USRC performance category—safety, repair cost, and recovery time.

The purpose of a Transaction Rating is to supplement or replace what is regarded by some earthquake experts as sometimes shaky and inconsistent **Probable Maximum Loss (PML)** practices in pockets of the financial industry.

Part 1 of this article discusses what can make a PML problematic and the ways PML practices can affect all of us. Part 2, available separately, dives into what can be done about it.

> A USRC rating is the fastest straight-talk risk management service we can provide.
>
> - Jay Kumar, PE
> Partner Engineering and Science, Inc.

PMLs are One Tool for Approximating Seismic Risk

PML is a statistical estimate of potential building damage based on a postulated large magnitude earthquake scenario. Formally, it is the ratio of a building's expected cost of repair as a percentage of the building's total replacement cost.[1]

In real estate finance, PMLs are commonly used to evaluate the potential seismic losses of a property. A PML of 20% or higher commonly indicates high seismic risk requiring mitigation via insurance or seismic retrofit.

Property buyers, sellers, lenders, and underwriting specialists customarily factor PMLs into the decision to go forward with a deal, what interest rate to charge, insurance price or terms offered, or how much reinsurance to require, especially for high-value assets.

Limitations in the Current PML System

Estimating a PML involves internationally recognized standards[2], but those standards are more like guidance and minimum reporting requirements than a strict recipe for how a PML should be calculated.

1. Derhake, J. 2010, "Managing Seismic Risk," The RMA Journal, June 2010, 64-67.
2. ASTM standards E2026-16a and E2557-16a.

One PML is Not Like Another

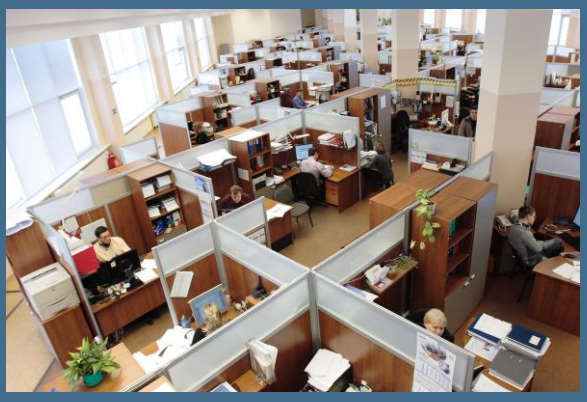
Many different approaches, models, and methods are used at the discretion of the providing engineer. Some methods in use are more than 30 years old and were never intended for individual building evaluation.

Results Vary and are Vulnerable to Circumstance

Method flexibility means two different engineers can produce two different PML values—not by error or breaking rules but by using different models, assumptions, or interpretation. Eager dealmakers (who ultimately won't end up carrying the risk) can pressure engineers to find legal but subjective "wiggle room" to stay under the 20% mark. Financiers may later bundle assets without ever looking into the assumptions made at prior stages in the lending or insurance process.

Potentially Misinformed Decisions

Without information about the quality and rigor of the PML assessment, financial actors may be making choices, and sometimes even safety determinations, with incomplete, out-of-date, or misleading information. In the event of an earthquake, this can obviously devastate an individual owner, tenant, or investor.



Think PML Practices Aren't Relevant to You? Think Again.

Consider this: PMLs are used as part of due diligence assessment in all kinds of property transactions from the stores and offices you visit daily to downtown buildings that house large local employers and companies in which you may own stock. PML practices underlie financial choices being made throughout the built environment in which we all live, work, and directly or indirectly depend. These are the property assets that underly pension funds, businesses, and municipalities in which you and others may unknowingly invest.

When financial actors rely on PML calculations from outdated or unreliable methods when buying, selling, or investing in individual properties or assembling portfolios, those assets may end up underinsured or over-valued relative to their true earthquake risk exposure. If enough properties in a local area or a lending or insurance portfolio depended on problematic PMLs, entire communities and economy sectors face extra and avoidable systemic risk.

What happens when large numbers of such properties are all *simultaneously* affected by a disaster event? The 2008 Financial Crisis showed how systematic miscalculated risk-taking can lead to bankruptcies, foreclosures, and system-wide shocks in the financial and real estate sectors, with profound ripple effects for employees, families, cities, and businesses.

A companion Part 2 of this article explains the complementary seismic risk assessment provided by a USRC Transactional Rating and the experiences of Certified Rating Professionals in delivering USRC Transactional Ratings to clients.

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