

Capital Adequacy Studies for Public Risk Pools

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May 15, 2025

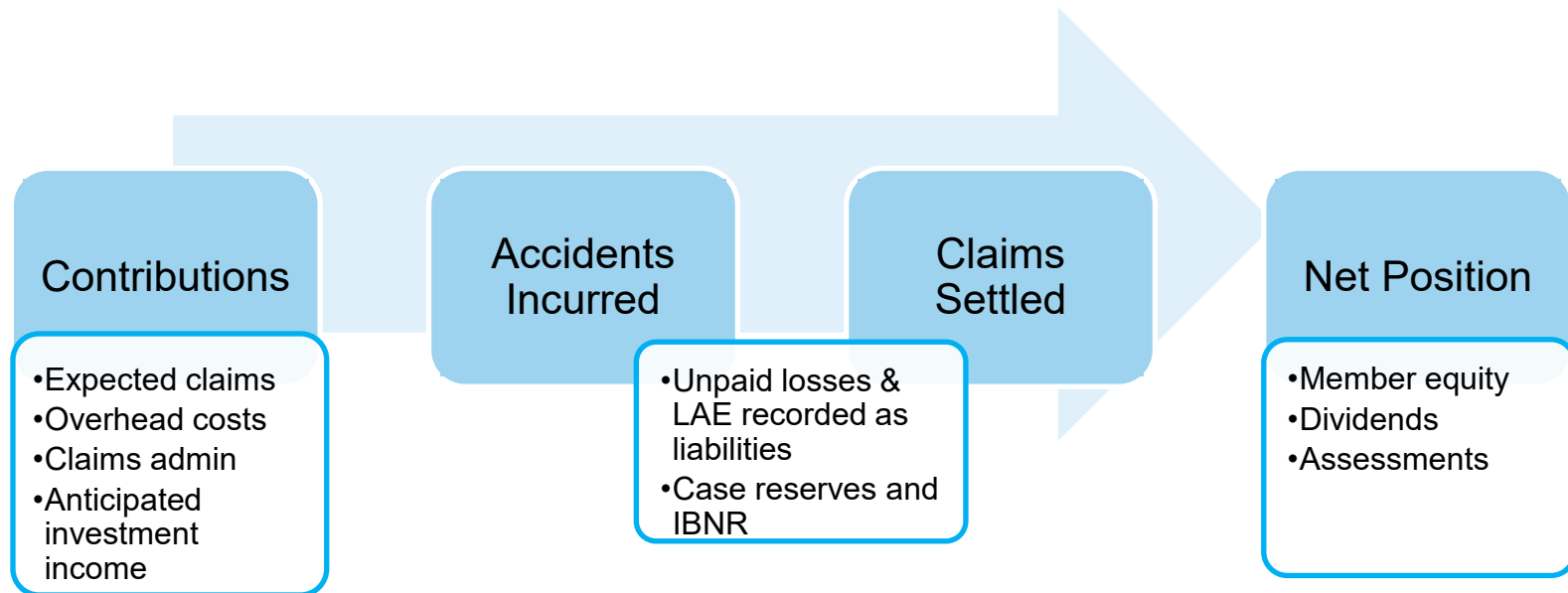
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Capital Adequacy Questions

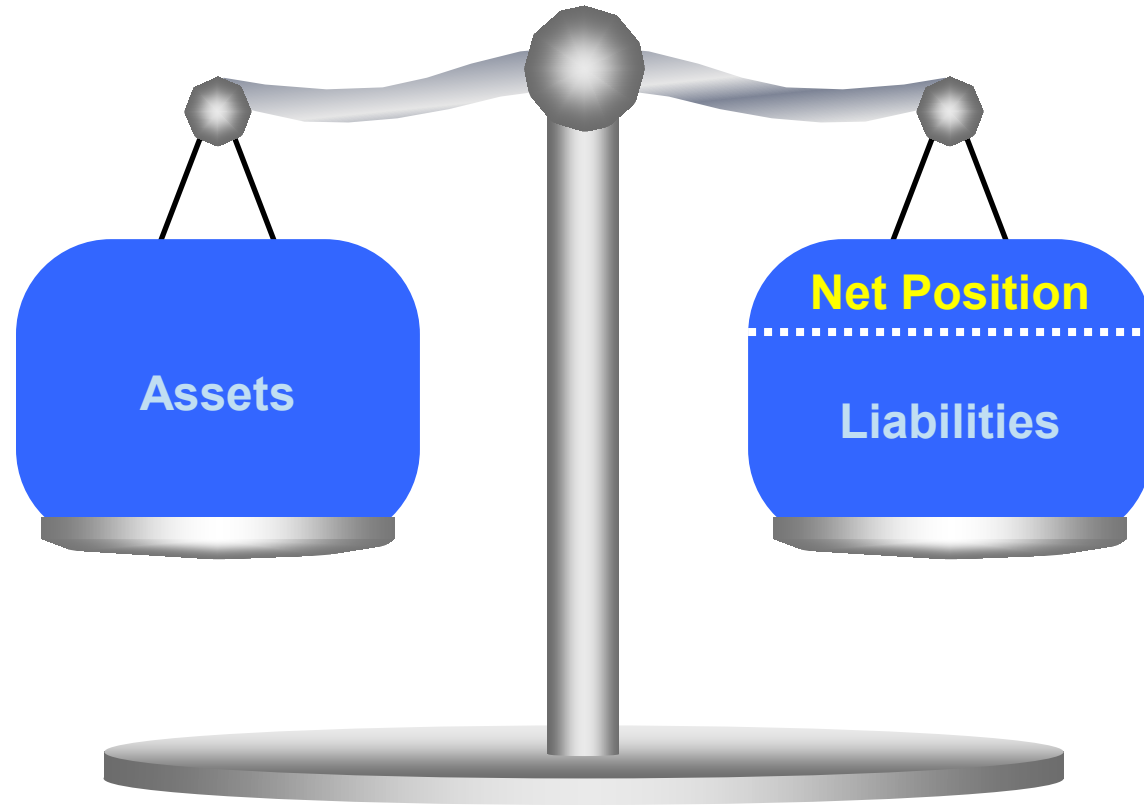
- What is it and why do we care about it?
- How can it be assessed?
- What data is needed for assessment?
- What are the typical outputs of an assessment?
- How can the results be used strategically?
- How do capital adequacy studies work in the real world?

Insurance Characteristics

- Pay generally fixed premium up-front for a promise to pay claims later
- Final value of claims not known for many years
- Surplus (net position) provides cushion for variability



Net Position on the Balance Sheet



- Net position = assets – liabilities
- a.k.a. surplus, capital, net assets, fund balance

Insurance Risks

- Pricing risk
- Reserving risk
- Asset risk
 - Fixed income, interest rate, equities
- Credit risk (including reinsurance recoverable)
- Operational risk
- Catastrophe risk (e.g., flood, hail, wildfire, civil unrest)
- New and emerging risks (e.g., cyber, pandemics)

 Net position provides protection against these risks

Capital Adequacy

Risk capital target

- *Preferred* level of capital
- May be a single value or a range
- Aligned with entity's risk tolerance

Risk capital threshold

- *Minimum* level of capital necessary for an entity to operate effectively
- Aligned with entity's risk tolerance

Source: *Actuarial Standard of Practice No. 55* (ASOP 55)

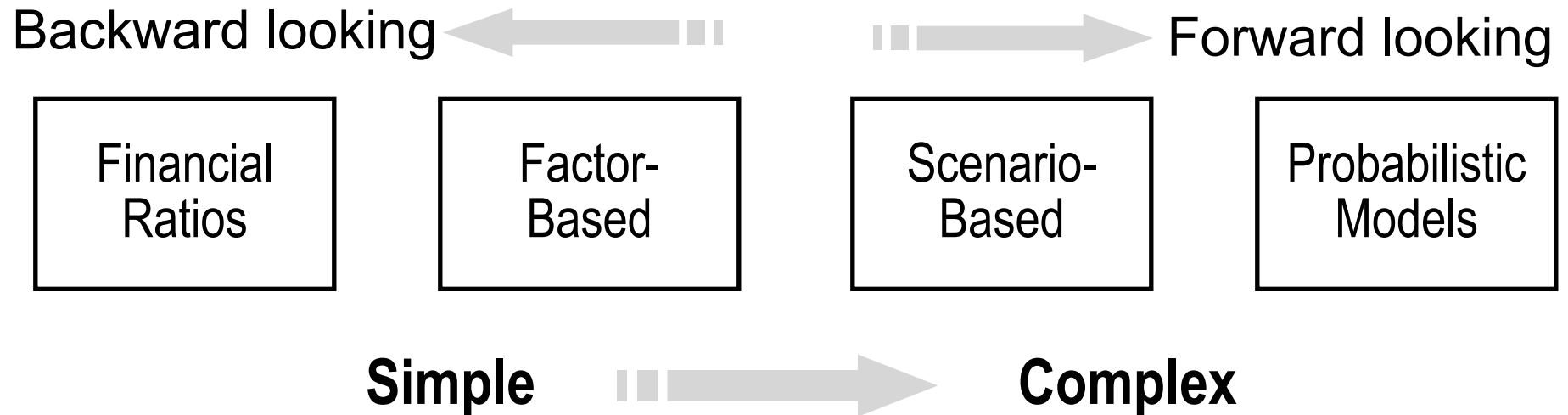
Capital Adequacy Considerations

- Risk profile (coverage, SIR, etc.)
- Business and risk drivers (legal, tax, regulatory, and economic environments)
- Plans and strategies
- Timing and variability of liability-related and asset-related cash flows
- Means and ability to replenish capital
- Valuation basis (GAAP, SAP, GASB)
- Existing or accessible resources (capital, data, computing power, human resources)
- Effect on capital adequacy of changes in risk profile
- Correlation of risks and events, concentration of exposures
- Projected future economic conditions
- Parameter uncertainty



No single formula or benchmark to determine appropriate risk capital target or risk capital threshold.

How Can Capital Adequacy Be Assessed?



Financial Ratios Study – Sample Results

Policy Year	Premium -to- Surplus	Reserves- to-Surplus	Expense Ratio	Operating Ratio	Liabilities- to-Liquid Assets
2019	46%	95%	26%	79%	57%
2020	43%	90%	30%	86%	55%
2021	41%	88%	25%	88%	55%
2022	53%	112%	24%	140%	61%
2023	54%	106%	24%	88%	61%

- Review trends over time
- Research anomalies

Financial Ratios - Pros and Cons

Pros

- Easy to understand and calculate from audited financial statements
- Easy to track over time
- Non-surplus-related ratios may be compared to similar entities

Cons

- Backward looking
- Ratios do *not* indicate appropriate risk capital target or risk capital threshold
- Rules of thumb not appropriate for all entities

Probabilistic Models – How Do They Work?

- Consider complex contingencies to determine the impact of adverse experience on capital adequacy

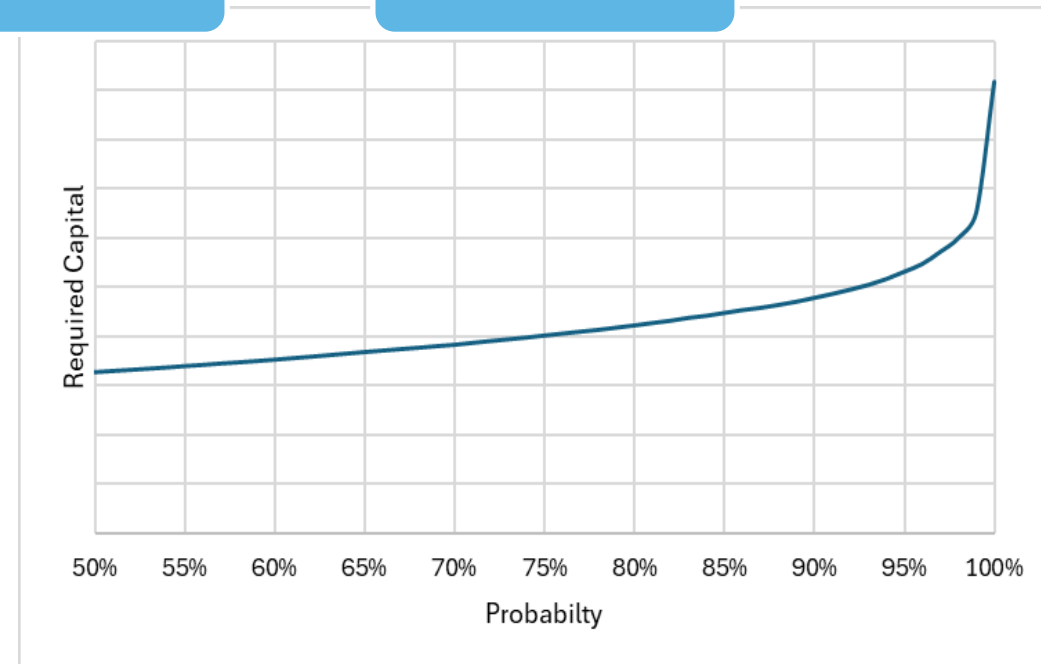
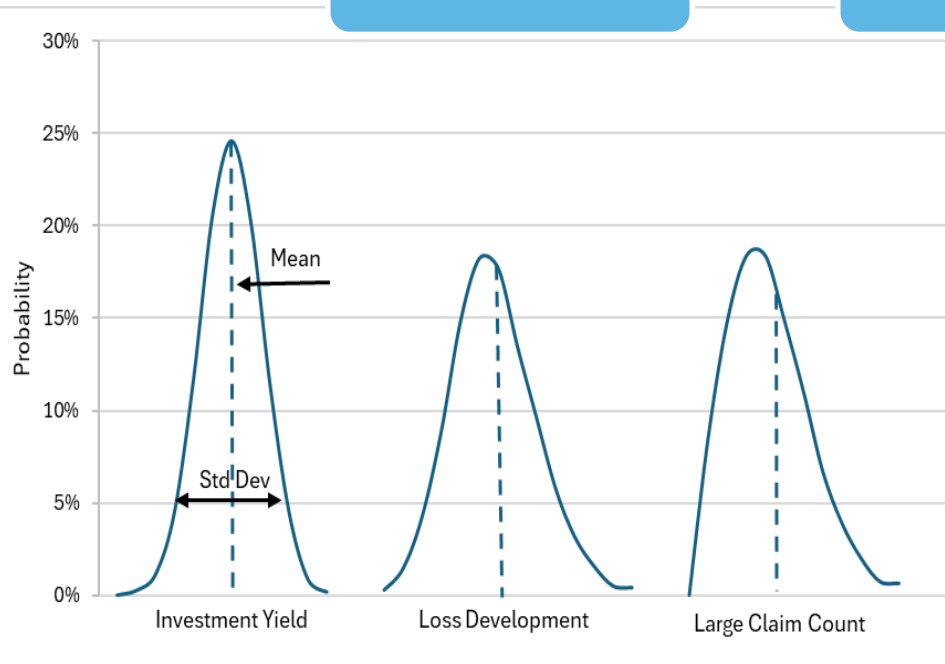
Randomized
inputs



Simulation



Outcomes as
probability
distributions



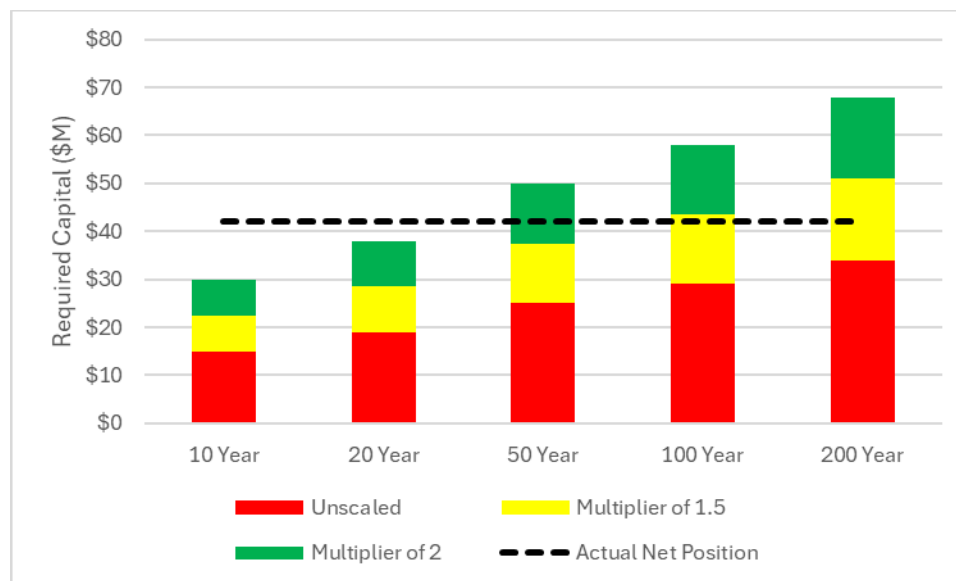
Probabilistic Models – What Data is Needed?

- Program structure – coverages, deductibles
- Detailed loss run
- Actuarial study (estimated ultimate losses, loss development, exposure)
- Audited financial statements
- Premiums and expenses by year, coverage
- Budgets
- Reinsurance details
- Rate-setting policy

Probabilistic Models – Typical Outputs

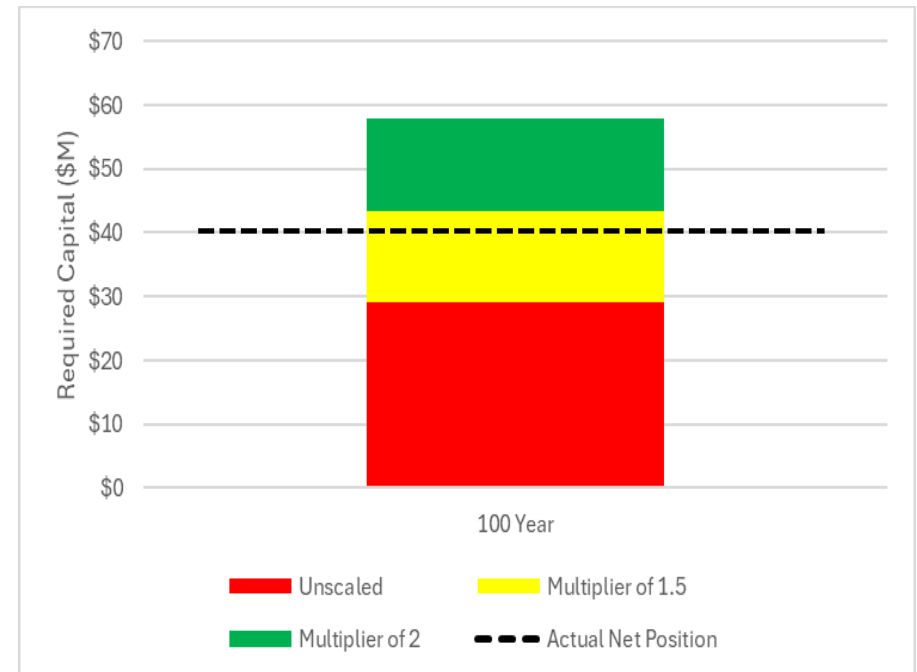
- Estimated required capital at various confidence levels

Confidence Level (1)	Return Period (2)	Unscaled Required Capital (3)	Target Net Position		
			Multiplier of 1.0 (4)	Multiplier of 1.5 (5)	Multiplier of 2.0 (6)
(A) 90.0%	10 Year	\$15,000,000	\$15,000,000	\$22,500,000	\$30,000,000
(B) 95.0%	20 Year	19,000,000	19,000,000	28,500,000	38,000,000
(C) 98.0%	50 Year	25,000,000	25,000,000	37,500,000	50,000,000
(D) 99.0%	100 Year	29,000,000	29,000,000	43,500,000	58,000,000
(E) 99.5%	200 Year	34,000,000	34,000,000	51,000,000	68,000,000



Probabilistic Models – How can the results be used strategically?

- Establish net position policy
- Current year rates
 - Rate stabilization
 - Rate increases to stay within target range
 - Competitive pressure
- Expanded coverage
- Self-insured retention
- Budget (e.g., capital improvements, technology)
- Optimize efficient use of capital

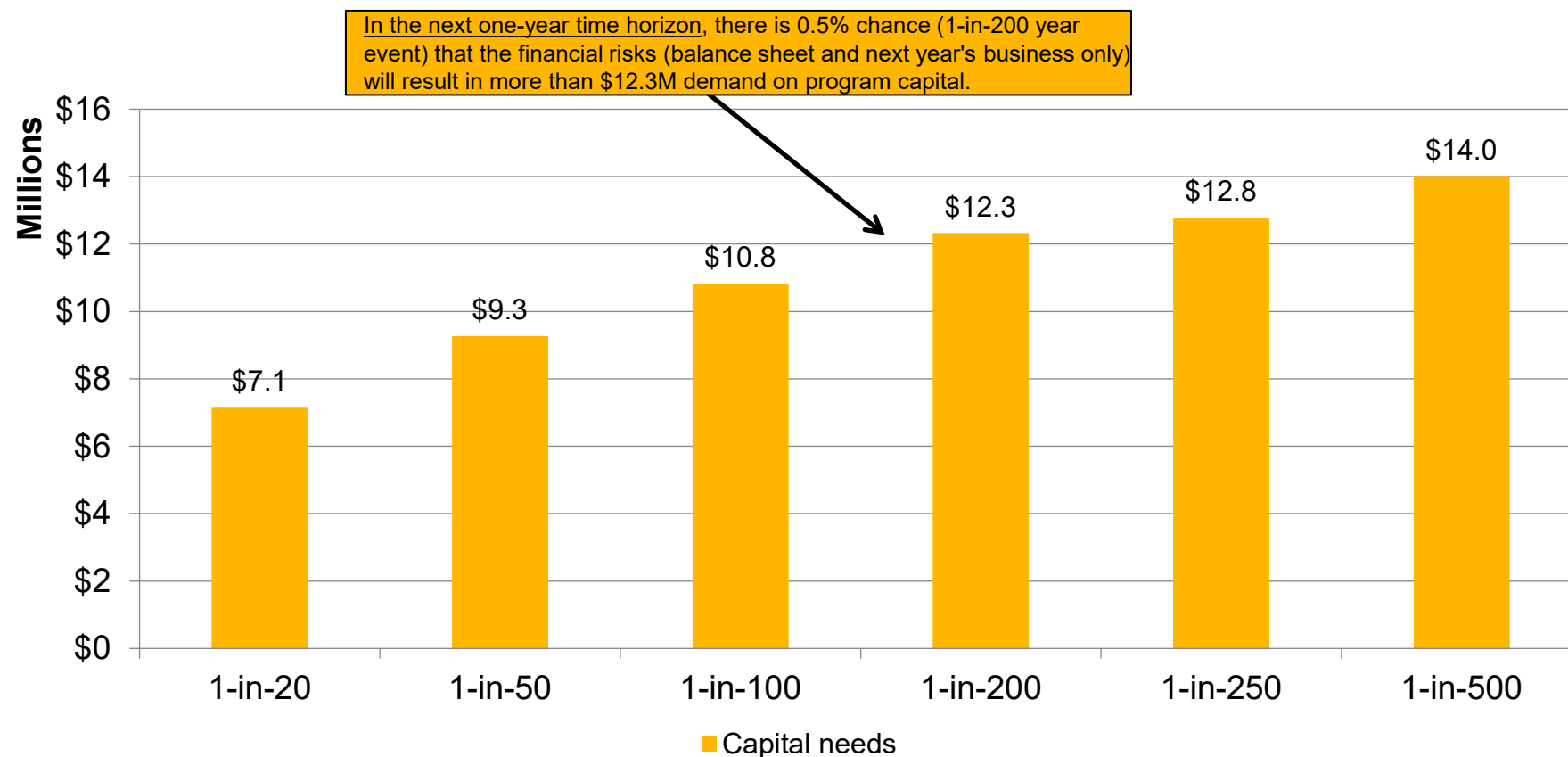


Case Study – SDML WC FUND

- Capital Adequacy Assessment in 2023
 - Multiple attempts by a single legislator to regulate and oversee pools
 - Discussions with NLC RISC
 - Board approved the CAA project budget
 - Met with 2 actuarial firms – Milliman & PwC
 - Board approved proposal from PwC
 - Provided docs for CAA
 - CAA presented to the Board
 - Committee formed to develop a Target Fund Balance Policy
 - Committee meetings with PwC for guidance
 - Administrator gathered policies from other pools
 - Determined Risk Capital Target Range based on unique characteristics & risk tolerance of the pool

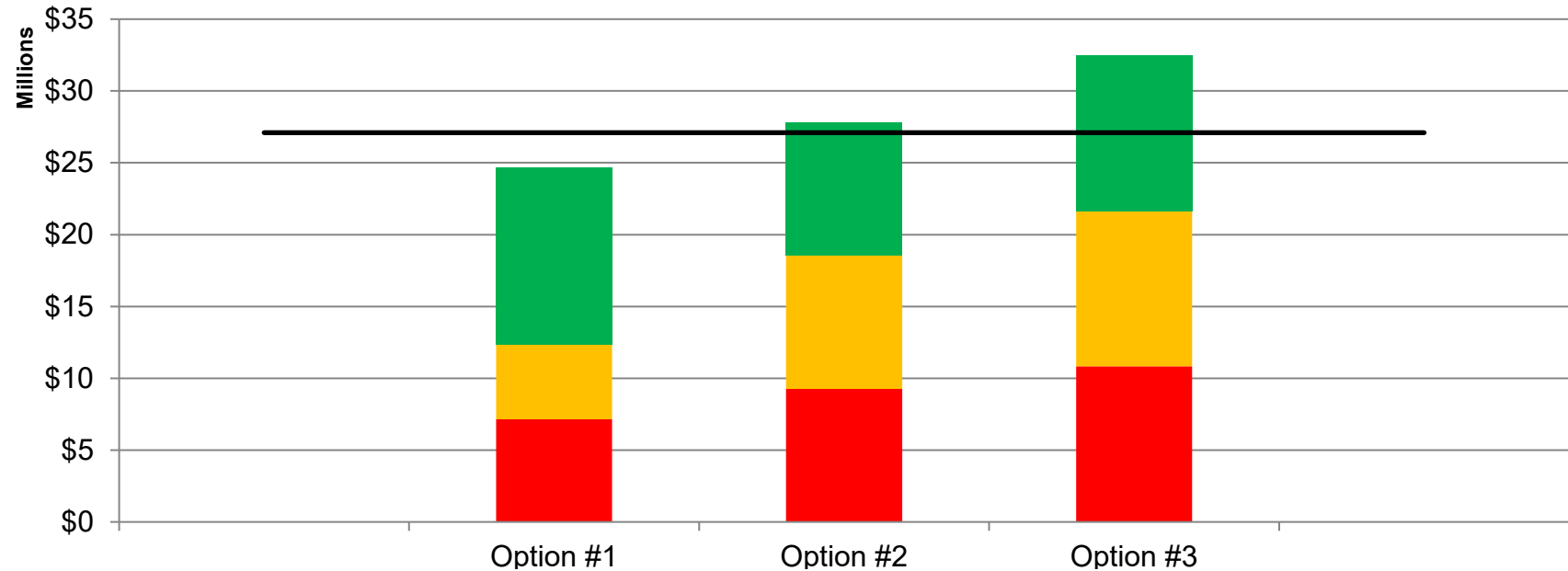
Overall results

Building blocks for risk capital target range



DRAFT - Contents are subject to amendment or withdrawal and the definitive opinions and conclusions will be those contained in the final report.
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Target range options



Option #1

Minimum: 1-in-20 year level (\$7.1 million)
Lower bound: 1-in-200 year level (\$12.3 million)
Upper bound: 2 times 1-in-200 year level (\$24.7 million)

Option #2

Minimum: 1-in-50 year level (\$9.3 million)
Lower bound: 2 times 1-in-50 year level (\$18.5 million)
Upper bound: 3 times 1-in-50 year level (\$27.8 million)

Option #3

Minimum: 1-in-100 year level (\$10.8 million)
Lower bound: 2 times 1-in-100 year level (\$21.7 million)
Upper bound: 3 times 1-in-100 year level (\$32.5 million)

Case Study – SDML WC FUND

- Capital Adequacy Assessment in 2023
 - Committee recommended Option 3 for the Risk Capital Target Range
 - Target Fund Balance between two and three 1-100 year events
 - Draft Policy & Summary reviewed by legal counsel
 - Board approved the Policy & Summary
 - Annual update to be performed & full study every 3-5 years
 - Policy gives peace & confidence to address Capital Fund Balance questions

Questions?

