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Learn What Questions to Ask Your Actuary

Nisha Singh, FCIA, FSA
PBI Actuarial Consultants Ltd.

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Agenda

- Some Pension Basics
- Funding Frameworks
- Actuarial Valuations
- Valuation Methods and Assumptions
- Gain and Loss
- Projections and Forecasting
- Realities of a Changing Pension World
- Key Questions for Your Actuary

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Types of pension plans

- Defined Contribution (DC)
- Defined Benefit (DB)
- Target Benefit (TBP)

	DC	DB	TBP
Benefits	Variable	Fixed	“Fixed”
Contributions	Fixed	Variable	Fixed

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Role of the actuary

- One of a number of professional advisors to the plan
- Financial “health” of pension plan
- Partnership with key stakeholders
- Plan “sustainability”

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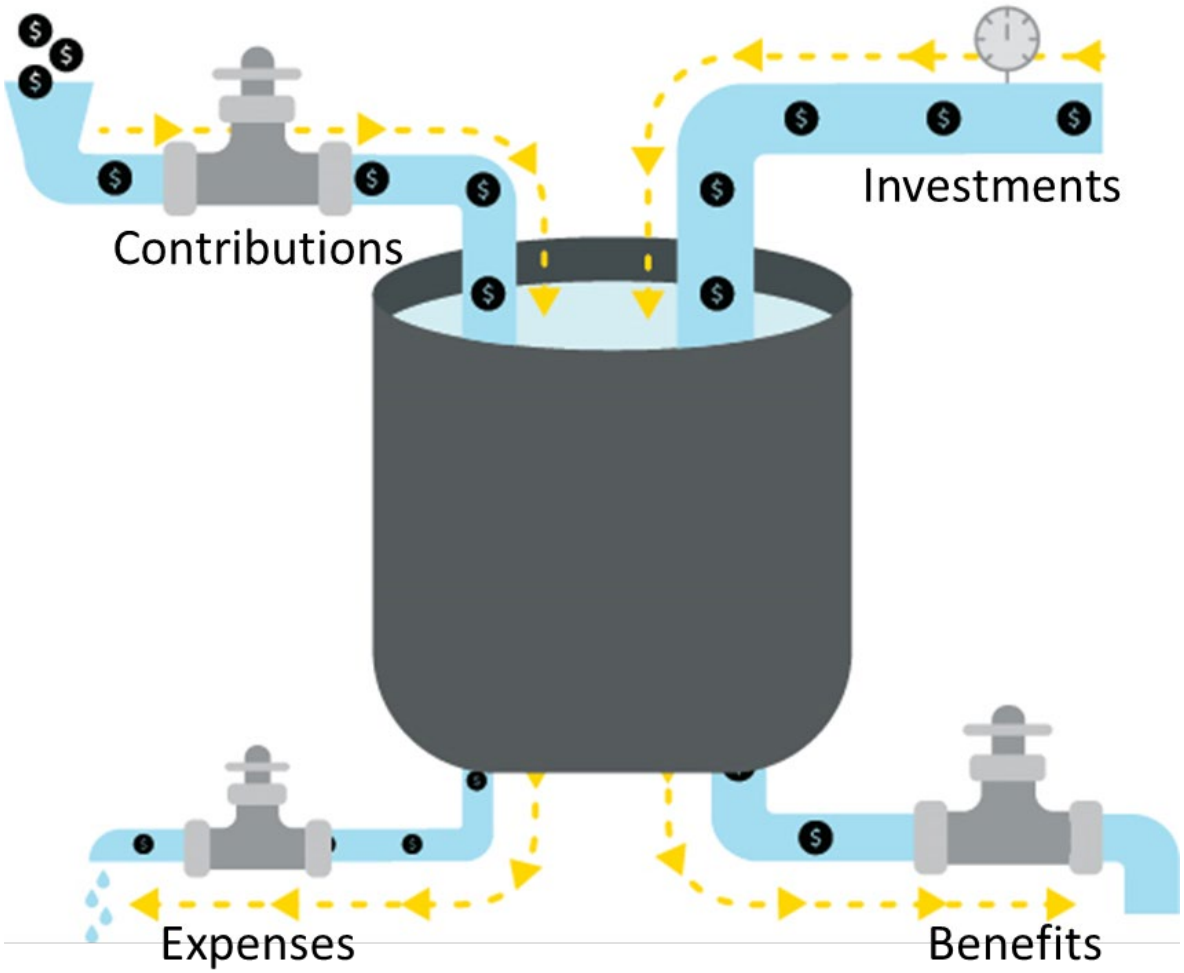
Mechanics of a pension fund



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Moving parts of the pension fund

$$C + I = B + E$$

Where

C = Contributions
I = Investment income
B = Benefits
E = Expenses

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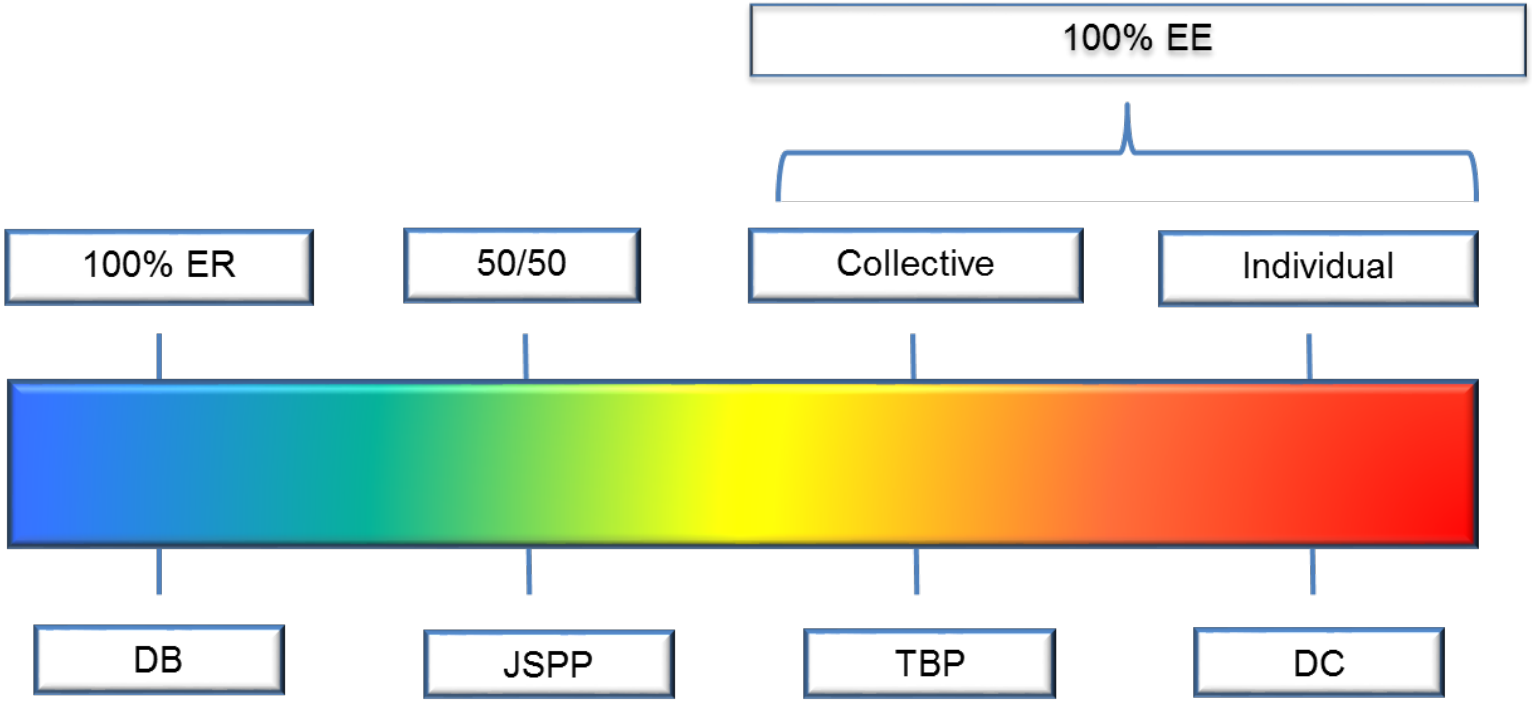
Spectrum of risk



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Funding frameworks

Provincial

- Priority is to ensure benefit security for members
- Pension Benefits Act and Regulation
- Regulator

Alberta Treasury Board and Finance

Retraite Québec

British Columbia

FSRA Financial Services Regulatory Authority of Ontario

New Nouveau Brunswick Canada

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Funding frameworks

Federal

- Priority is to ensure plan is working within the tax rules
- Income Tax Act
- Regulator is the Canada Revenue Agency (CRA)

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Funding frameworks

Actuarial

- Priority is to ensure actuaries are doing their job
- Standards of Practice
- Canadian Institute of Actuaries

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

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The actuarial valuation

"An actuarial valuation is a type of appraisal of a pension fund's assets versus liabilities, using investment, economic and demographic assumptions for the model to determine the funded status of a pension plan. The assumptions are based on a mix of statistical studies and experienced judgment."

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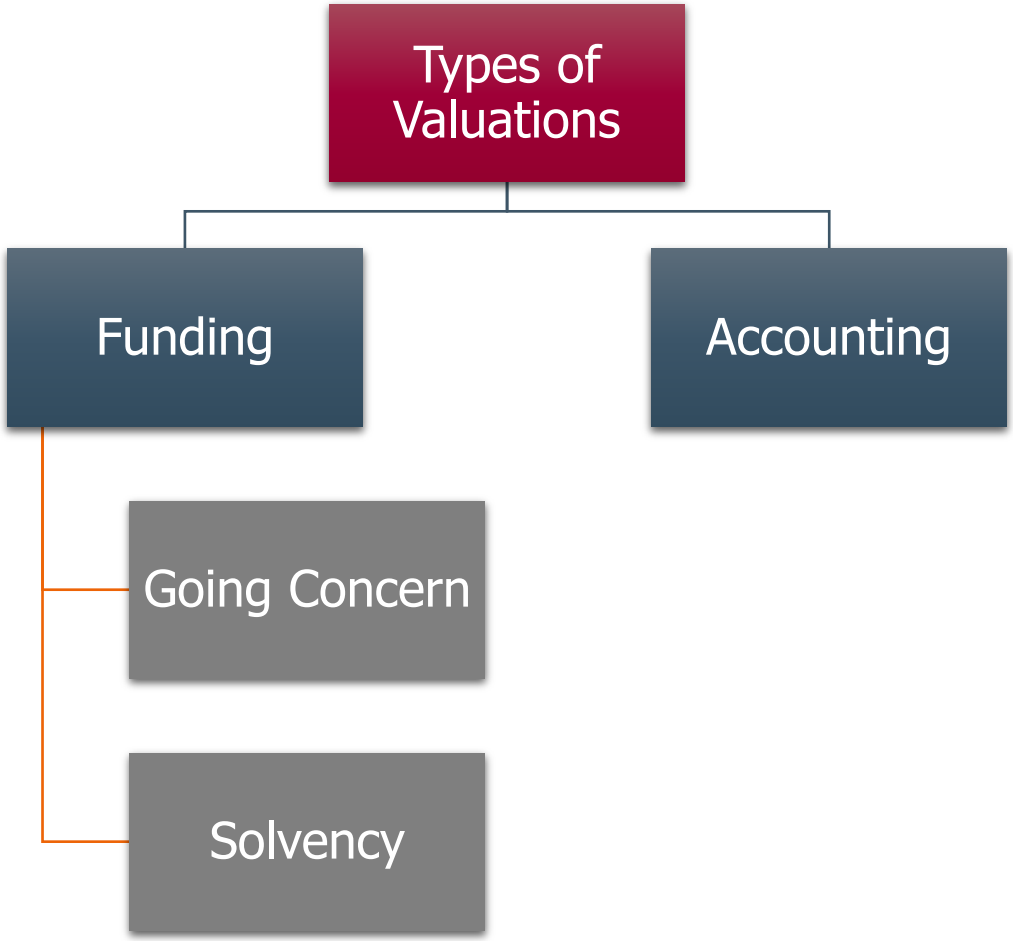
Types of valuations



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Going concern valuation

- Assumes plan will continue indefinitely, i.e. for the long-term
- Purpose – to determine level of contributions required to ensure benefits are properly funded when members retire
- Required to be filed with regulatory authorities at least every 3 years, sometimes annually
- PBA sets minimum funding standards, such as the term over which deficits must be funded
- CRA sets maximum funding requirements, such as maximum contributions certified by actuary as necessary to fund benefits
- Flexibility in determination of underlying actuarial assumptions

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Solvency valuation

- Assumes plan will wind-up on valuation date, i.e. the short-term
- Purpose – to determine whether assets are sufficient to cover benefits if the plan were to be terminated on valuation date
- Required disclosure as part of valuation report
- Grow-in (Ontario and NS)
- Prescribed assumptions and methods

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Going concern – like chartering a sailboat

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Past versus future service

Past service

- Money in the bank (assets)
- Value of the pension benefits already accrued (liabilities)

Future service

- Contributions each year
- Value of pension benefit accruing each year (normal cost)

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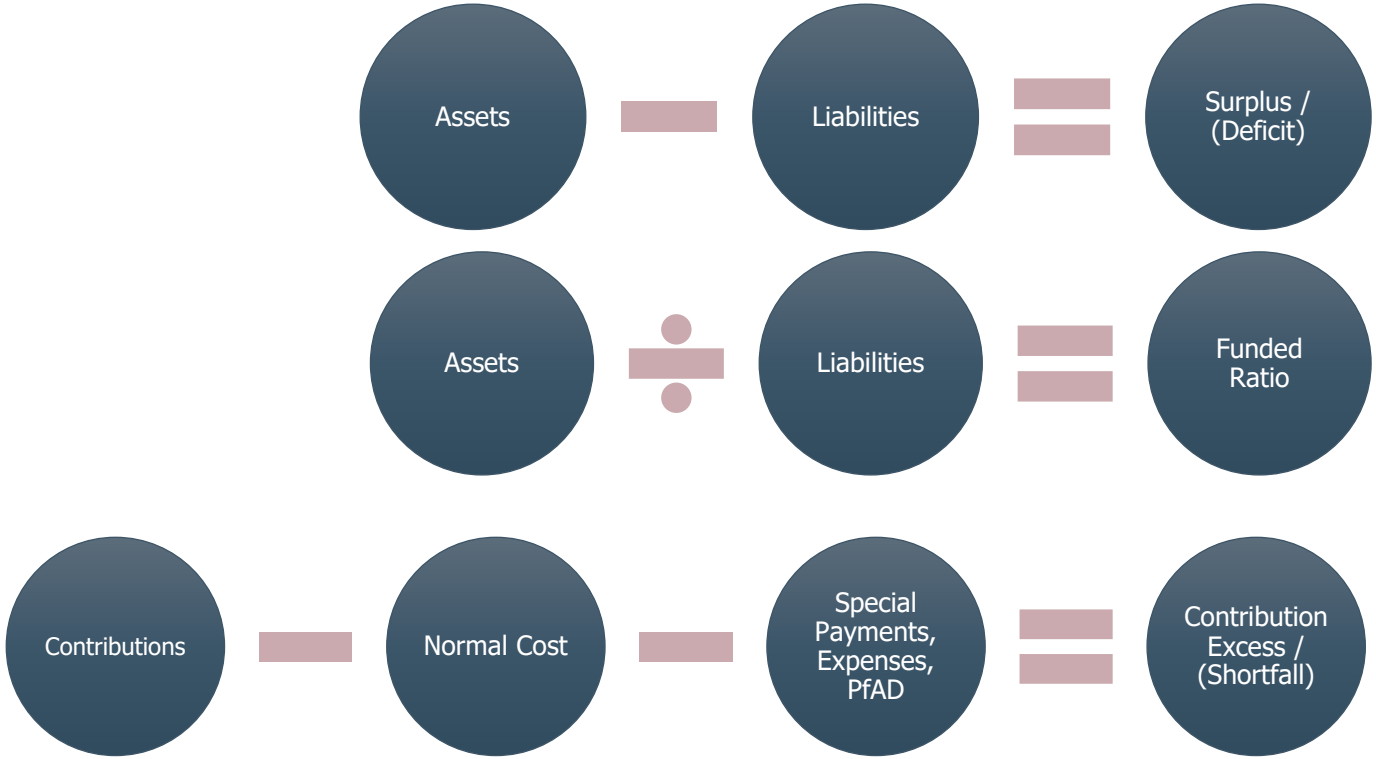
Actuarial terms and formulas



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Example

Assets	$ 90 M
(Liabilities)	$(100) M
Surplus/(Deficit)	$(10) M
Funded Ratio	90%
Normal Cost	$4.5 M
Special Payment	$1.0 M
Total Cost	$5.5 M
Contribution	$6.0 M
Excess/(Shortfall)	$0.5 M

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Asset valuation method

Many different methods

Commonly either Market Value or Smoothed Value is used

Actuarial Value of Assets = Asset value

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Smoothed asset value example

Year	Investment Gain/(Loss)	% of Gain/(Loss) Deferred	Deferred Gain/(Loss)
2021	$ 300,000	80.0%	$ 240,000
2020	(100,000)	60.0%	(60,000)
2019	50,000	40.0%	20,000
2018	200,000	20.0%	40,000
Actuarial value adjustment			$ 240,000

Smoothed Value of Assets	December 31, 2021
Market value of assets	$ 10,000,000
Less: Smoothed value adjustment	240,000
Smoothed value of assets	$ 9,760,000

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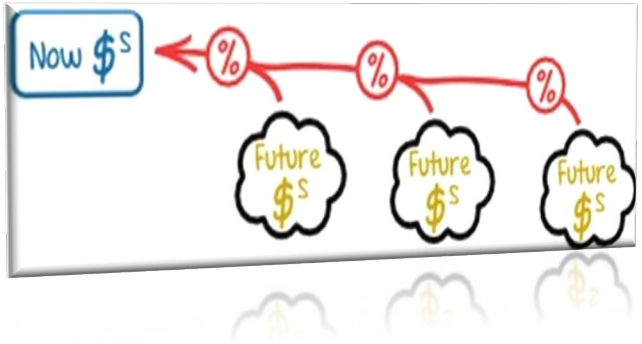
Liability valuation method

- Many different methods
- All based on the concept of Present Value



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Key actuarial assumptions

Economic

- Inflation rate
- Discount rate
- Salary scale
- YMPE/CRA max increase rate

Demographic

- Mortality rates
- Retirement rates
- Termination rates

Other

- Expenses

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Considerations in setting key assumptions

• Benefit/plan design	• Other assumptions and provisions (PfADs)—“best estimate” vs margins
• Demographics of the group	• Regulatory requirements
• Asset allocation and investment strategy (SIP&P)	• CIA professional standards
• Funding objectives (FP)	• Historical experience
• Current funded position surplus vs deficit	• Future expectations

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Setting key assumptions

Key Economic

- Building block approach
- Inflation + Real + ? = Nominal

Key Demographic

- Standard table with modifications versus plan's experience if large/credible enough

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Derivation of valuation interest (discount) rate

Long-term expected inflation rate	2.00%
Long-term expected real rate of return of assets	4.25%
Long-term expected nominal rate of return	6.25%
Passive Investment fees	(0.10%)
Additional return less fees for active mgmt	0.00%
Premium for diversification/rebalancing	0.40%
Provision for Adverse Deviation (PfAD)	(0.55%)
Valuation Interest Rate	**6.00%**

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Actuarial gain/loss

- Compares what was expected based on the valuation assumptions to what actually happened (experience)
- Assumptions will never be right
- Gains and losses arise
- Want to avoid patterns of gain/loss

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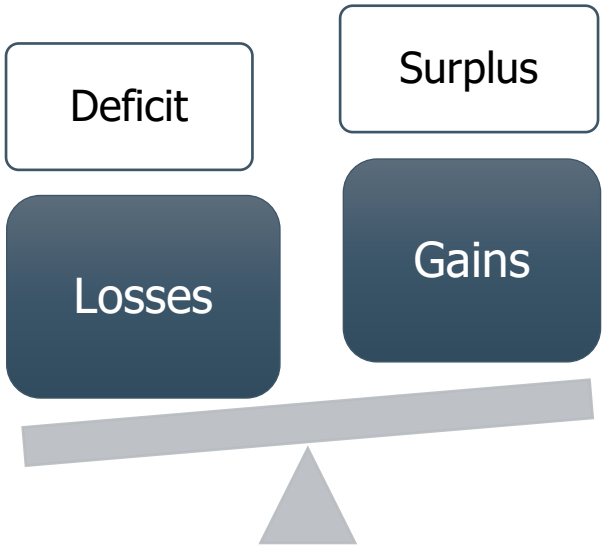
Actuarial surplus/deficit

- Surplus/deficit is the accumulation of gain/loss
- PfADs help to ensure more gain than loss
- Focus on the longer term but need to weather any short-term storms



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Today versus tomorrow

Valuation – point in time today

- Liability surplus/deficit
- Contribution excess/shortfall
- Other margins

Projections – what the future might look like

- Deterministic – No probability attached, “what if” scenarios
- Stochastic – Probability attached, results only as good as the input parameters and assumptions
- Probability of underfunding
- Funding policy
- Stress testing plausible scenarios

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Remember the sailboat?

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Funding – a tricky balancing act

- Benefit security
- Benefit adequacy
- Affordability
- Contribution stability
- Intergenerational equity

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Levers for dealing with surplus/deficit

- Recall: C + I = B + E over the long-term
- Key levers to balance equation:
  - Contribution increases (actives only)
  - Benefit reductions (future service only except TBPs)
  - Investment strategy (impact not immediate)
  - Expense reduction (minimal)
- Different perspectives of unions/employees and management/employers as to utilization of key levers
- Documented in the Funding Policy

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Adapting to the realities of a changing pension world

- Volatile investment markets
- Low/declining interest rates
- Aging/maturing workforce
- Increasing longevity/declining mortality rates
- Changing workforce resulting from new technologies
- Unforeseen new events – pandemic!
- Complex regulatory environment

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Key questions for your actuary

- **What is the basis for the underlying valuation assumptions and how much margin/PfAD is in those assumptions? What does that mean in terms of "the balancing act"?**
- **What are the main risks to our plan? How are those being addressed?**

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Key questions for your actuary

- If all goes according to “plan”, what do the next 10 years look like?
- What does the future look like if there is a market or economic downturn, or one of the risks of our plan actually materializes? Are we prepared?
- Is there anything else we need to know?

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Key takeaways

- Study the actuarial valuation results – lots of information there
- Understand the margins/PfADs within the valuation assumptions and implications
- Have an idea of what the future might look like – the good, the bad and the ugly
- Know the levers available to the plan should something unexpected happen
- Ask questions!!!!

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Caring for the future… now.

Nisha Singh
nisha.singh@pbiactuarial.ca
647-654-6285

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